CONSTRUCTION INDUSTRY MANAGER. SEVERAL BASIC COMPONENTS OF THE CONSTRUCTION MANAGEMENT

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Let's imagine the construction management split in four basic components: 1 - construction management itself; 2 - project management; 3 - staff management; 4 - financial management.
In order to commence the construction it is necessary to execute the contract between client and contractor. The so called general terms and conditions are attached to the contract.
Management of the construction industry is based on the so called linear and functional principles. Linear principle is fundamental.
Management objects are dynamic systems which are permanently changing and require revision.
Certain system of the purposeful actions in the management system of the construction industry may be called technological management.
There are three types of the management work:

1. ***work within which the execution prevails – low level management;***
2. ***work consisting of management and execution elements basically in managing small teams – medium level management;***
3. ***work which represents the highest management step – high level management.***

An important stage in work coordination of the construction-erection organizations (firms, companies) is prompt planning of the financial plans and documentationof the construction.

One of the promptest methods for the construction management is dispatching method of the construction management.

Let's imagine the construction management split in four basic components: (1) construction management itself – accurate selection of construction materials and structures and selection of the best construction technology for particular projects; (2) project management – accurate planning, coordination and control of the material usage during construction; (3) staff management – management of effectiveness and agreed and coordinated work of the personnel involved in the construction; (4) financial management – construction is business, therefore the controlover the costs occurred and funds spent on project financing is one of the most significant components of the construction management.

All four above listed components are within the project manager's competence and responsibilities.

Construction as any business starts with contract. From this stage the role of the construction manager is very important.

Manager's role at the design stage is the following:

1. **provide consultations in preparing the project;**
2. **prepare the schedule;**
3. **prepare construction budget;**
4. **coordinate preparation of contract papers.**

Manager's role at the construction stage is the following:

1. **select subcontractors for the decree package;**
2. **provide project supervision during the construction;**
3. **control schedule and prices;**
4. **assist work holder during obtaining permits for implementing the project;**
5. **determine procedure sequence for possible changes;**
6. **consult with work holder about inviting necessary consultants;**
7. **inspect works on site and commission or cancel them;**
8. **mediate between the subcontractorand the work holder in order to agree the project interpretations;**
9. **set up and run design bureau with civil engineer – architect;**
10. **manage and maintain the process relating to the report notes and local documents;**
11. **estimate reliable project termination term and prepare the list of unused resources;**
12. **receive, review and cancel unnecessary and invalid documents.**

Construction Contracts

In order to commence the construction it is necessary to execute the contract between client and contractor. The so called general terms and conditions are attached to the contract.

General terms and conditions may be included in the project specification or may be drafted separately;

Let's briefly discuss what the general terms and conditions consist of:

1. **Contract documents:**

Except for the list of the contract documents, it is mentioned in this section that the contractor has scouted the construction location and is well familiar with contract terms and conditions.

2. **Holder:**

Work holder's i. e. client's rights and obligations, payment term and payment conditions are provided.

3. **Contractor:**

Contractor's rights and obligations are provided.

4. **Contract administration:**

Work commencement procedure, i.e. contractor's and client's relations with the architect.

5. **Subcontractors:**

The contractor shall choose subcontractors. This section describes their rights and obligations. It should be noted that both work holder and architect may disagree with the option provided by the subcontractor.

6. **Construction by the holder or pursuant to the separate contracts:**

Reserve rights of the work holder enabling the work holder to perform any part of the work with his forces or using any other subcontractor.

7. **Changes in work:**

General terms and conditions describe the rights which are granted to the client and architect, in particular, such rights relate to making changes to any part of the project during the construction.

8. Term:

Contract term is given in calendar days other than in working days.

9. Payment:

Financial sides of the contract relating to salaries.

10. Protection of persons and values:

This section describes contractor's responsibilities relating to labor protection and HSE.

11. Insurance and liabilities:

Basic terms and conditions of the agreements made between the work holder (client) and insurance companies are provided in this section.

12. Change of work:

The contractor is entitled to require additional financing in case there arise such circumstances when the work process or the project need to be changed.

13. Additional terms and conditions:

Work holder, i.e. the client is entitles to inspect construction and its quality using external company.

14. Breach of contract:

This section describes the circumstances when the client is entitled to terminate or suspend the contract.

Linear and Functional Management

Management of the construction industry is based on the so called linear and functional principles. Linear principle is fundamental. Main essence of this principle is decision making and instructions to the management systems andimmediate management of subordinates.

In the management system category we should differentiate such concept as the management unit and management stage.

The management unit is the independent structural sub-division performing particular or several roles (functions) of the management.

Management stage is the unity of the certain level units of the hierarchy.

Fulfillment of the instructions of linear units of the management system is obligatory for all subordinate sub-divisions.

In linear management the unity of the management is ensured and manager's responsibility to the work of the subordinate sub-division grows.

Organizational chart of the construction company is based on the linear management.It significantly impacts the efficiency of functioning of the entire management mechanism.

Rational organization of the linear management should (1) be made of hierarchical management stages given their minimal amount; (2) consider efficient functioning of the linear management, i.e. any instructions issued by any units of the linear management

should be applicable to all the units which are in-between and to the unit to which the instruction was made.

Second fundamental principle of structuring the construction management is the functional principle which includes the function distribution among the linear system managers. The basis in structuring the functional units should also be the linear principle of organization.

If the linear management involves the presence of hierarchically built management units, the functional management which fills up the linear one, performs orderly management by performing particular management functions.

Organizational System of Operations Management

Management objects are dynamic systems which are permanently changing and require revision.

Systems in the management field means organized unity of such elements which are closely associated with one another and this is exactly why they act and change as one living body.

Responsibilities of organizational system of the management are the following:

- **provision of promptness, reliability (stability) and unity as well as managerial control;**
- **provision of smooth operation of auxiliary workshops serving the operations;**
- **determination of correct interrelations between the management bodies;**
- **provision of highly efficient operation of the construction plant;**
- **integral part of the management organizational systems is the management of its units;**

The responsibility of the management organization of the plant is not only processing of the management structure which is its major element, it is establishment of interrelation (information movement) between the management bodies. This function allows to eliminate parallelism and duplication during working between the certain bodies.

Selection and processing of scientifically justified document system which is necessary for the coordination of the plant movement is significant precondition for complex mechanization and automation of preparation and executionof such documents. This provides rationalization of the management based on use of contemporary organizational technology.

Decision – Result of Managerial Work

Certain system of the purposeful actions in the management system of the construction industry may be called technological management. Technological management contains the following units:

The first unit is identification of the management objective and compilation of information in order to closely get familiar with the management subject;

The second unit is decision making;

The third unit is recording and controlling the decision made;

- **Management process will be conducted in an objective manner based on science when all the units are in harmony when performing the entire technological process of the management.**

Compilation of information

Availability of operative and true information is the basis for the management. The management's quality depends on its accuracy.

The management is impossible without knowledge of real situation and without economic forecast of technical and organizational activities.

There are two types of information - external and internal. Content of the information and the receipt terms depend on the management level of the plant.

Basic information is provisionally the constant (reference-normative) information. It is 60-70% of all the necessary information.

The most difficult is variable input information describing the dynamism of the plant and its economic activities.

The so called processed (secondary) information is used in the management. It is received as a result of processing the provisionally constant and variable information.

All types of the information necessary for the plant management all together form the information system.

The management system at any level of the management as well as the information system are very closely connected to each other however they differ with their designation and structure.

The truer and more diverse the information is the more objective the decision made by the manager is.

Decision Making

Decision is made by the construction leader (General Manager, Executive Manager, etc.), it is the definer of the course of the action of the management system or its sub-division which is aimed at accomplishing the objectives set by the manageable system.

Concept of the decision is the most important act of the management process and is its culmination.

For the optimization of the management process it is very important to properly select the functions of all the sub-divisions and accurately define the responsibilities of all level managers in the management system.

Decisions may be general concerning the entire operations. General decisions reflect cardinal changes in the plant.

Decisions may be private concerning only particular sub-divisions. Private decisions are made for current issues.

Decisions can be classified according to the period of their effectiveness and hierarchical levels of mutual subjugation of the decision maker sub-divisions.

Preparation works are necessary for making the decision. Decision preparation and making period consists of several stages. It starts with defining the intention and objective of the decision. Determination of the objective is the initial stage for processing strategic plan of the decision making.

The following stage is processing the decision and determining the criteria of execution results. It is necessary to process several decision options.

Final stage is the decision making.

The third unit after the management technologies is organization of execution of the decisions made. This unit includes performance of the following operations:

1. **Execution of the decision in form of decree and/or statement. Action plan (programme) for executing the mentioned decisions is set in the decree and/or statement;**
2. **In case the decision in made by the manager individually without agreeing it with the subordinates, it is necessary to make them aware on the essence and expected outcome of such decision;**
3. **If the decision concerns the entire organization setting big objectives relating to particular departments and sub-divisions of the organization, it is necessary to run organizational activities.**

The final unit of the management technology is recording and controlling the decision.

Organizational Basics for Management Work

Scientific organization of the management work is first of all aimed at its rational division.

Scientific organization of the management work includes elaboration and introduction of progressive management methods as well as non-stop development of the entire management process. There are three types of the management work:

4. **work within which the execution prevails – low level management;**
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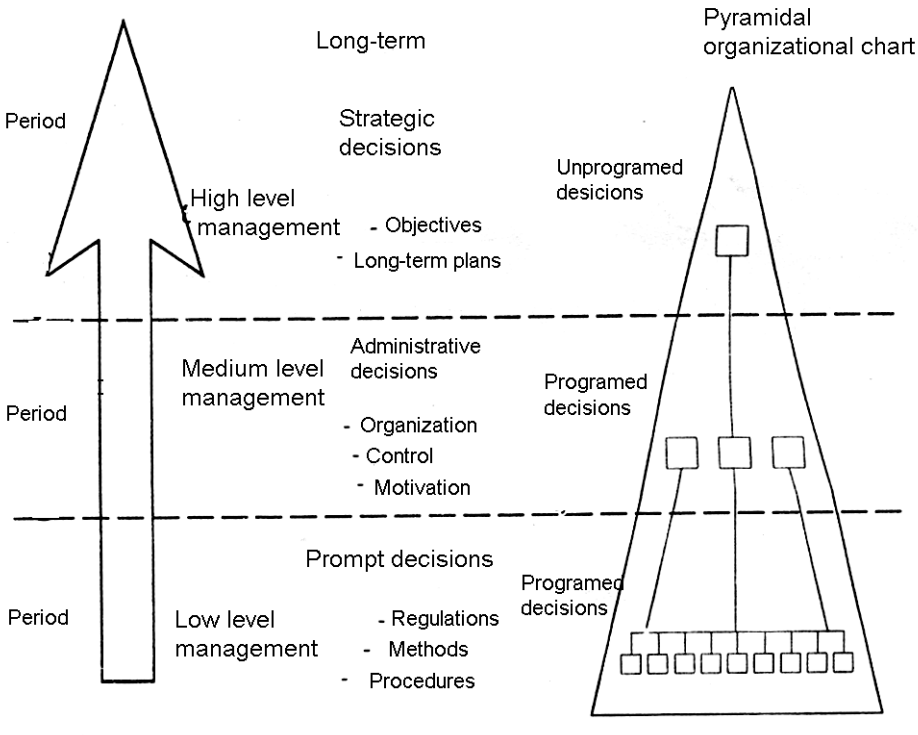
6. **work which represents the highest management step – high level management.**



Drawing 1. Different Level Management Roles

An important stage in work coordination of the construction-erection organizations (firms, companies) is prompt planning of the financial plans and documentationof the construction.

The ways of accomplishing the contract terms and conditions are defined and annual plans by months or quarters are determined in the financial plansof the construction. Such plans also include the quantity of inventory and personnel necessary for their fulfillment.

The main objective for prompt planning in the construction is provision of the terms of the construction of the units (facilities) provided in the contract.

The documents should include pooling of all the operational resources, timely and complex supply of the construction with the construction inventory.

Complex network schedules enabling to revise and correct the plan provided in the contract for this period in order to comply them with realistic conditions and opportunities is extremely important for prompt planning.

For the prompt planning and management of the construction industry the simpler and more flexible schedule (linear, control charts, etc.) processed based on the network schedules of the units (facilities) can be developed. In order to speed up the processing of the documentation relating tosuch plans and reducing its work load, it is reasonable to unify nomenclature of the network chart work and the documentation of the prompt plan.

Dispatching System of the Construction Management

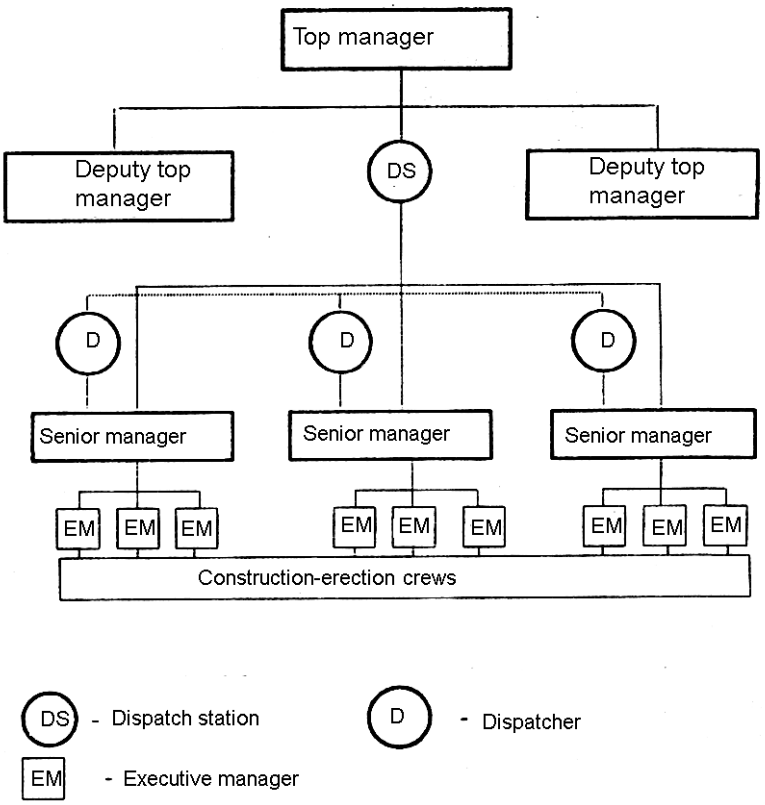
One of the promptest methods for the construction management is dispatching method of the construction management.

Dispatching system of the management is such a system of the prompt management when all the works are conducted according to the plans made in advance (provided in the contract).

The operations are regulated and controlled and construction equipment and materials are moved by special dispatchers.

Introduction of dispatching in the construction sub-division starts by organizing the dispatching service.

Dispatching service includes all the elements of the construction industry and its services.



Drawing 2. Organization Chart of Dispatching in the Construction Department

Main principals using the dispatching in the construction are:

- **introduction of prompt weekly and daily planning and accounting into the operations, organization of continuous control and regulation of the performance of the prompt plansof the construction, provision of the construction with work and inventory;**
- **engagement of the dispatchers having the right on the operating control and operations regulation in the organizational chart of the construction management;**
- **organization of the dispatch stations equipped with technical means necessary for the dispatch communication, automated registration and dispatching tele-mechanic control.**

Dispatch personnel is responsible for the accuracy of data relating to the execution of the optimal work plan and some other data which they submit to the construction management in form of report cards.

In most cases operating instructions of the construction manager are submitted to the personnel directly executing the construction through the dispatching services.

Fulfillment of the dispatcher's instructions is obligatory for the executive managers.

The dispatching personnel within the operative plan acts in a following manner:

Continuously records, controls and regulates the performance of works;

Participates in the preparation and review of the work schedules, controls timely and complex supply of the units (facilities) with manpower, transport, mechanisms and inventory;

Technically analyses and generalizes current information about the conduct of works by work performers;

For operative record and control of the construction course the dispatching personnel maintains the dispatch register;

In order to run the construction operations in an orderly and prompt manner the dispatching personnel uses the following:

- **summarizing and local complex network schedules;**
- **minutes of the dispatch meetings;**
- **weekly and daily schedules prepared for the construction sites;**
- **schedules forthe supply of the construction operations inventory.**

The dispatch communication should work in combination with the alarm, automation, tele-mechanics and computation equipment. These are the equipment used in automated construction management systems.

The dispatch service in the construction tries to avoid and eliminate the stand-by and communication breaks.

Optimum control provided by the construction dispatchers is:

- **identification of deviations in works and delays in timeline of the works to be conducted under the contract;**
- **measures for their elimination.**

REFERENCES

1. Sidney M.Levi. Project Management in Construction. Second Edition. Mc Graw-Hill. Inc. 1994.