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INFORMATION SYSTEM SPECIFIC IN ACHIEVEMENT OF CONSTRUCTION PROJECTS

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Because of the economic changes from our country and also of the rapid adjusting necessity to the requirements of a market economy, it is observed a huge request for information, and especially techniques, tools, methodologies that would facilitate the managerial activity in any field.

In the construction field the problem is even more serious because of the specific aspects and of the traditional information system that is very stiff, formal and bureaucratic, and this makes the adjusting process of the specialist to the economic realities to be more difficult.

1. Introduction

The accomplishment of a construction project supposes a series of technical, organizing, economic, administrative, etc., actions that put into function a complex system through which adequate resources are organized and used in a structural and controlled manners established into the context of a set of constraints (deadlines, expenses, quality requests, etc.).

In this direction is imposed itself the knowledge and use of a set of coherent and linear procedures that are based on a good analysis and use of the information concerning the various technical, economical, investing, legislative, managing features, specific in achievement of a construction project.

To solve the above mentioned problems the implied persons in achievement of the construction projects must appeal to two important exigencies: to know and to competently action. These two exigencies are materialized into the following:

- a) to be always informed concerning the technical, economic, etc., elements specific for the construction projects;
- b) to have information structured on categories, importance and unity levels concerning the possible modalities for execution under technical and economic conditions of performance.

2. The Informational System Specific in Achievement of Construction Projects

Taking into account the above mentioned aspects there can be added that the designing and implementation of a construction project includes the use of a complex information system because of the various and component stages.

An information system includes the totality of methods and tools used for gathering, registration, transfer and also processing and capitalization of the necessary information for a construction project, ensuring also the transfer of the information from the deciding factors to all operational levels.

Such a system is composed from the following elements:

1. *Information sources* – consists of the used data in achieving a construction project in all his component stages.

2. *Data* – contains the descriptions of a phenomenon, stages or actions that constitute the entering components in the processing process and that by means of conversion are becoming information.

3. *Informational circuits* – represent the set of the connections that exist among different stages in achievement of the actions from a construction project.

4. *Information flow* – the totality of information that are going through the information circuits.

5. *Information procedures* – the totality of representations, interrogations, data ordinance methods and techniques.

6. *Information administration means* – given by the totality of equipments and software products that ensures the obtaining of the final information.

Because of the complexity and diversity of the actions and procedures that characterize the achievement of a construction project it is necessary to use these vast information sources and that are very well organized and that will allow the rapid access and the possibility to take decision that are well grounded connected to project achievement.

In this paper the following structure of the information sources used in achieving a construction project is proposed:

G r o u p I – Technical-organizational information sources.

G r o u p II – Economic information sources.

G r o u p III – Quality information sources.

G r o u p IV – Juridical information sources.

G r o u p V – Historical information sources (archive).

2.1. Group I – Technical-organizational Sources of Information

This group includes information with technical character necessary to draw up the technical documentation specific to the projects in construction, namely:

a) *during the designing stage* – the technical information is used to draw up: the computation abstracts for establishing the dimensions of the construction and installation elements, the specialized technical reports, technical conditions, lists with

the necessary quantities of works, equipment and machinery, technical specifications for the technological installations;

b) *during the execution stage* – this information is used to draw up the following documentation: job management project, process charts for carrying up the construction processes, execution charts for the construction processes, working instructions, dimensioning the constituent activities from the point of view of the technological content, realization duration and workers number, as well as of the necessary resources; the working programs, the supplying charts, dimensioning the workers teams, etc.

The information sources of this group consist of:

- a) technical regulations in constructions (standards, norms, specifications, technical regulations);
- b) norms, codes, designing guides for construction structures and elements;
- c) technical specifications;
- d) conditions/prescriptions concerning the execution of certain process categories;
- e) technical instructions concerning the design and execution of construction elements;
- f) technical norms concerning the construction elements and structures computation;
- g) technical regulations concerning the utilization and repairing the mounting-construction;
- h) technical norms concerning the works of repair and maintenance of the constructions and component systems;
- i) methodologies and procedures for fire protection, trials in constructions, exploitation of construction systems;
- j) the collection of “Working Norms in Constructions”;
- k) statistical publications with data concerning the duration of execution for different processes in constructions, constructive versions, technologies, resources, etc.;
- l) publications concerning the physical wear coefficients in constructions, service life per elements, units and sub-units, service life for different types of constructions.

2.2. Group II – Economical Information Sources

The information sources from this group include data with economic character, being used for the economic analysis and decision concerning the solutions for project accomplishment. These data can be used for:

- a) the estimation of the total cost for the realization of a construction project;
- b) elaboration of the analytic estimates and tender estimate;
- c) computation of the costs of the activities included in the project;
- d) estimating the costs of supplying the materials on the building yard (purchasing, transportation, depositing, manipulation);
- e) estimation of the costs with the labor force and its utilization (net wages per hour, taxes, social taxes, etc.);
- f) estimation of the cost to ensure and use the equipment;
- g) drawing up the tenders and the specific forms for tender procedures;

- h) drawing up the lists with process quantities and excerpts of resources and technological equipment;
- i) drawing up the certificates of measurement;
- j) drawing up the graphs of costs spread up (programmed costs and cumulative costs per certain calendar periods);
- k) estimation of the works for job management;
- l) drawing up the pre-feasibility and feasibility studies;
- m) technical-economical documents to obtain the funding sources.

The information sources from this group consist of:

- a) the collection of norms indicators for bills of quantities;
- b) materials lists and tables with supplier unit prices;
- c) labor force lists, per occupations, categories and tariff rates;
- d) list of technological equipment and machinery per groups, capacities and technical characteristics;
- e) lists with special analyses of resource consumption and price specific to certain process categories;
- f) statistic bulletins with up-dating indices, prices for fuel and energy, average monthly wages in the field;
- g) publications with design and execution costs of the construction per reference units (total developed area, developed volume, networks lengths, etc.);
- h) publications or statistic bulletins with data concerning the costs of equipment, maintenance, utilities, taxes, services, etc.;
- i) records concerning the costs of resources: materials, labor force, technological machinery and equipment;
- j) guides, methodological norms concerning the tender content and presentation, the lists with processes quantities, resources excerpts;
- k) the methodologies on drawing up the average resource consumption norms per item of bill of quantities for the construction-installation works and afferent installations.

2.3. Group III – Quality Information Sources

The information sources from this group contain data that are referring to the establishment and ensure of the quality requirements and conditions in achieving the construction projects.

These data can be used for:

- a) drawing up the documentation concerning the quality;
- b) establishing the quality requirements and detailing their content according to Act 10/1995 – *Quality Act*;
- c) specification of the quality conditions in supplying with construction-equipment materials and elements;
- d) specification of the quality conditions in the execution of the construction processes, activities, elements, fittings and units;
- e) specification of the quality conditions in endowment with machines, equipments and technologic installations;

f) specification, application establishment and administration of the documents for quality registration (suppliers' documents, execution documents, inspection and control documents);

g) drawing up the quality admeasurement cards;

h) specifying of the factors implied in quality ensuring for the construction projects;

i) designing the quality control and providing system;

j) drawing up the quality manual for the organizations implied in project achievement;

k) drawing up the procedures necessary for system function concerning quality providing (technical procedures, control procedures, inspection procedures, evaluation procedures, managing procedures);

l) quality plans elaboration;

m) quality file drawing up;

n) planning the programs for ensuring the quality requirements for the construction activities;

o) planning the quality control programs.

The information sources from this group consist of:

a) technical regulations concerning quality inspection and reception of the construction and installing activities;

b) regulations concerning the quality in construction;

c) ISO international standards series;

d) C56-85 guidelines – *Guidelines for quality inspection in quality execution and reception of constructions works and their respective installations*;

e) methodologies for ensuring the quality requirements in constructions;

f) guidelines for quality control programming of the works accomplished at the building site;

g) norms and regulations concerning the particularization of the quality requirements content established in Act 10/1995;

h) regulations for construction classification in importance categories;

i) standard procedures corresponding to the quality system;

j) technical and quality specifications for construction products and their corresponding installation ;

k) security and labor protection norms in achievement of construction works;

l) technical regulations in constructions for the elements of the quality system;

m) suppliers' and material producers' list with specification of the features and achievements (conformity certificates, technical agreements);

n) regulations concerning the achievement parameters in constructions and technical achievement conditions.

2.4. Group IV – Information Sources of Juridical Character

The information sources from this group consist of data concerning the legislation regulations specific for construction achievement. The characteristics specific in

construction activities, their importance, economic, social and political context led in time to numerous legal regulations in this field. In addition there is also a high rhythm of modification and supplementation of these regulations. In this way the information sources from this group are remarkable vast and complex, referring to an impressive number of legal regulations concerning designing and accomplishment of constructions. For a good information synthesization their structure the following pattern is proposed:

- a) application field: construction quality, attestation of constructions, auctions, expertise-verification, attestation, accreditation, agreement, design, execution, construction acceptance, following their behavior in time, etc.;
- b) legislative document type: act, governmental decision, decree, order, provision, regulation, methodological prescription;
- c) publication type: Official Gazette, Construction Bulletin, Finance Ministry, MLPTL, etc.;
- d) elaboration authority of the legislative document: Government, Competence Ministry, COCC, etc.;
- e) number and year of publication of the legislative document.

2.5. Group V – Historical Information Source (Archive)

The information sources from this group contain information registered by organizations implied in accomplishment of construction projects. The structure of these information sources is made according to the fields presented in the four groups described above and has the following features:

- a) data registration for the achievement cost for construction projects along the achieved stages;
- b) offers technical, economic and quality information for projects of the same nature;
- c) offers patterns of the achieved costs and resource consumption for different constructive alternatives;
- d) allows the registration of the exploitation construction achievements;
- e) allows the registration of the CAD and multimedia information connected to different designing and/or execution stages.

3. Conclusions

The designing and implementation of a construction project makes use of a complex informational system because of the various actions and the component stages. With this purpose, in the accomplishment of a construction project is necessary the knowledge and application of a series of coherent and linear actions that are based on a good analysis and use of the information concerning the various technical, econo-

mical, investing, legislation, leading features that are specific in the accomplishment of the construction projects.

Received, July 18, 2005

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SISTEMUL INFORMAȚIONAL SPECIFIC REALIZĂRII PROIECTELOR DE CONSTRUCȚII

(Rezumat)

Realizarea unui proiect de construcții presupune o serie de acțiuni tehnice, organizatorice, economice, administrative etc., care pun în mișcare un angrenaj complex prin care se organizează și utilizează resurse adecvate, într-un mod structurat și controlat, stabilite în contextul unui set de constrângeri (termene, costuri, cerințe de calitate etc.).

În acest sens se impune cunoașterea și aplicarea unui set de proceduri coerente și ordonate care se bazează pe o bună analiză și utilizare a informațiilor referitoare la diversele caracteristici tehnice, economice, investiționale, legislative, de conducere, specifice realizării proiectelor de construcție.