

The department of construction management: A historical overview

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HISTORICAL DATA ARE PRESENTED DATING FROM THE FOUNDATION OF THE DEPARTMENT OF CONSTRUCTION MANAGEMENT, FACULTY OF CIVIL ENGINEERING, UNIVERSITY OF ZAGREB up to the present day. The work of the department is presented through teaching and scientific activities, international cooperation, publishing work, the organization of teaching for undergraduate, post-graduate and PhD studies, and work by scientists at international congresses and publication of articles.

INTRODUCTION

The scientific, teaching and professional field of the “Organization and Economics of Construction” developed in parallel with the development of the Faculty of Civil Engineering in Zagreb. It is possible to divide that development into at least three phases:

- A) The Technical Faculty (1947-1956) which included civil engineering courses
- b) The Faculty of Architecture, Civil Engineering and Surveying (1956-1962), and finally
- C) The Faculty of Civil Engineering (from 1962 to the present, as an independent Faculty of Zagreb University).

The beginnings of the field of the “Organization and Economics of Construction” already began in the first phase within the course “Execution of Construction” which unites the following teaching content: the parts of organization of a building site, calculation of the costs of construction, selected technological processes and planning of construction, and the use

of construction machinery. The first teacher chosen to teach this field was Vladimir Leskovac, dipl.ing.građ., technical director of the enterprise “Viadukt”, Zagreb.

In the third phase, after the formation of the Faculty of Civil Engineering as an independent institution (from 1962 onwards), this field began to develop intensively in both quality and quantity. Josip Klepac dipl.ing.građ., was appointed as the first permanent teacher of the course, in the position of senior lecturer, as the technical director of the company “Tempo”, Zagreb, who from the 1963/64 academic year to 1965/66 continued to teach the subject “Execution of Construction”.

From the 1966/67 academic year, two new subjects were added to the courses Construction, Traffic and Hydrotechnology: Organization of Construction and Construction Machinery, which are still taught today. The teaching content (mainly practical exercises) was adapted to the existing courses. A great deal of attention was paid to improving the programs and student professional practice was introduced, taking place on building sites for a period of one month.

The foundation of the Chair and Institute

In April 1970 the Chair of Organization of Construction was founded and already in October 1970 a separate organizational unit within the faculty was also founded known as the "Department of Organization and Technology of Construction" which, after it changed its name in 1981 to the "Department of Construction Management," has been continuously active until the present day. The goal of founding the Institute was to make it possible to develop the work of the profession alongside teaching work.

From the 1970/71 academic year, a new course known as "Organization Technology" (OT) was introduced which later changed its name to the "Organization of Construction" (OG) and has continued to the present day. The following subjects were added to the course: Construction Technology, Business Organization, Organization of Construction 2, Planning Methods, Basic Economics, Basic Law, Industrial Sociology, Industrialization and Assembly, Finishing Work, and Operative Research, and, from the 1976/77 academic year: Construction Regulations. A multi-discipline approach to developing the field is made possible by linking together construction, economics, sociology, law and applied maths.

After the integration of two colleges with the faculty at the end of 1976, in terms of staffing and space the conditions were met for a separate specialized course to be founded in the 1976/77 academic year in organization and economics of construction, aimed at making it possible for students to transfer or continue their studies when they had completed college level studies (VI/1st level) and had completed the first two years of university studies (VII/1st level). The head of this course

was senior lecturer mr.sc. Miloš Delač, dipl.jur. After thirteen years the course was discontinued in the 1988/89 academic year and returned to the regular courses of the Civil Engineering Faculty after the basic aims of its foundation had been achieved. 730 students graduated from that course.

In the middle of 1977 the Faculty of Civil Engineering and the Civil Engineering Institute of Croatia were merged into the joint organization known as the Civil Engineering Institute. In this way the vital material, staffing and spatial conditions were met for the comprehensive development of the field of organization and economics of construction. In the Institute scientific and professional work went on alongside teaching. At that time there were 36 employees at the Institute, engaged in teaching, scientific and professional work.

In October 1980 a post-graduate course was introduced in organization of construction which has made possible the continuation of the scientific education of graduate engineers in the field of organization of construction right up to the present day. The work has progressed significantly within the Institute overall. So far 435 candidates have gained their master's degrees and 22 scientists have gained doctorates.

A significant contribution to the development of teaching activities came from the first head of the institute, prof. Josip Klepac (1971-1981) and the second head prof.dr.sc. Anton Denona (1981-1986), prof.dr.sc. Dušan Zubrinić and deputy head Ivan Phillip, dipl.inž. građ. Prof.dr.sc. Juraj Marušić, prof.dr.sc. Marko Žaja and prof.dr.sc. Mariza Katavić made a significant contribution in terms of providing links with the wider world and developing scientific work, as the first heads of the post-graduate course. The technical

head of the institute, senior lecturer Vladimir Škrbina, dipl.inž.građ., professional advisor Zdravko Kolar, dipl.oec. and prof.dr.sc. Slavko Rex, dipl.inž.građ made a special contribution to the development of the profession. It is worth pointing out that prof.dr.sc. Stjepan Haladin, prof.phil at one time successfully ran the Professional Studies of the faculty (VI /level).

The contribution of the Mathematics Institute was particularly outstanding, as it helped significantly in the introduction of special courses in the field of applied maths in both undergraduate and post-graduate courses. The successful implementation of teaching content was particularly aided by the mathematicians: deputy head, mr.sc. Miroslav Filić, prof.dr.sc. Željko Pauše, doc.dr.sc. Srećko Polić and prof.dr.sc. Bogdan Zelenko (VI /level).

In 1991 the joint Civil Engineering Institute was divided into the Faculty of Civil Engineering and the Institute of Civil Engineering of Croatia (IGH) and the staff were also reassigned. The teachers who were mainly responsible for running courses and the scientific assistants mostly remained within the Department of Construction Management as part of the faculty. The department took over most of the earlier professional work. The heads of the department were: prof.dr.sc. Marko Žaja, dipl.oec. (1986-1993); prof.dr.sc. Mariza Katavić, dipl.oec. (1993-1998), prof.dr.sc. Rudolf Lončarić, dipl.inž.građ. (1998- 2002); Prof.dr.sc. Jadranko Izetbegović dipl.inž.građ. (2002-2006) and prof.dr.sc. Vjerman Mlinarić dipl.inž.građ. (2006-2010).

During the time since they have been in charge, the work of the department has encompassed a larger amount of teaching and scientific work, and also professional work to a certain extent. Developments in this field are

aimed at the areas of management and project management. In line with the relevant legislation, more attention is now given to employing young research fellows, who take an active part in scientific research projects by the Institute, approved and financed by the Ministry of Science and Technology of the Republic of Croatia.

International Cooperation

A great deal of effort is invested in development of international cooperation with related faculties and institutes, both in the region of the former Yugoslavia and throughout Europe and the world (Austria – Graz and Vienna, Czech republic – Prague and Brno, Greece – Athens, Hungary – Budapest, Germany – Munich, Stuttgart, Wiesbaden, Slovakia – Košice and Bratislava, United Kingdom – Reading, Salford, Manchester, Dundee and the USA – Pennsylvania State University). These links were facilitated by staff who studied for their doctorates at foreign universities: prof.dr.sc. Anita Cerić and prof.dr.sc. Saša Marenjak, or who took part in various projects: prof.dr.sc. Ivica Završki. Prof.dr.sc. Mladen Radujković achieved particularly good results, when as vice dean and dean he worked hard to establish and realize international cooperation both on the level of the Institute and on the level of the faculty and university (Prague, Košice).

As a result, several international conferences have been organized: 1986, the International Symposium on Organization in Construction, CIB W-55 International Conference “Project Modelling and Productivity”, Dubrovnik, 1991; 2nd East meets West International Conference “Investment Strategies and Management of Construction”, Brijuni, 1994; CIB W-55 International Symposium, Zagreb, 1996, and 2nd SENET Conference on Project

Management, Cavtat, 2002, CIB W-55 and W 65 International Symposium, Organization and Management of Construction, Dubrovnik 2009. The quality of these conferences is also shown by the award received for the best organization of a CIB congress, presented in May 2010 in Manchester. In cooperation with the Economics Faculty, since the 2003/04 academic year a post-graduate course has been organized entitled “Business Management in Construction” in Dubrovnik (MBA in Construction). Prof.dr.sc. Mariza Katavić, as the head of the course, and the vice dean for scientific work of the faculty, prof.dr. Mladen Radujković, have made an important contribution to organizing this course.

Connections with the Profession

The Society for Organization in Construction of the Socialist Republic of Croatia was founded in November 1988 on the initiative of teachers from the Faculty of Civil Engineering in Zagreb and representatives of construction companies in Croatia.

The main purpose of the association was:

- ▶ bringing together scientists and professionals in the field of organization in construction to develop the field and disseminate knowledge,
- ▶ promoting the application of scientific results in CM both in the country and abroad,
- ▶ affirming the role of contemporary CM and the development of technology and organization in construction, affirming the role of CM in economic and social life.
- ▶ The Society for Organization in Construction was the organiser or co-organiser of the:
- ▶ 5th Symposium on Construction Management, (editor: Petar Đukan), Zagreb 1993,

- ▶ 6th International Conference, Organization, Technology and Management in Construction (editor: Moščenička Draga) 2003,
- ▶ 7th International Conference, Organization, Technology and Management in Construction (editor: Zadar), 2006
- ▶ 8th International Conference, Organization, Technology and Management in Construction (editor: Umag), 2008
- ▶ 9th International Conference, Organization, Technology and Management in Construction (editor: Dubrovnik), 2009
- ▶ The Croatian Association for Project Management was another organization founded in 1999 by teachers from the Faculty of Civil Engineering in Zagreb and representatives of construction companies in Croatia. In 2000 it joined the International Project Management Association.

Publishing Work

In 2009 the OTMC journal was launched, entitled “Organization, Technology & Management in Construction – an international journal”. OTMC is an international journal that promotes and facilitates development of organization, technology and management in construction, within the regions of Central and Southeast Europe. The journal provides to those from public and private sectors with: the latest research results, models and methodology case studies of best practice, research trends and future directions.

Articles published by members of the Department in the past 10 years

According to University library data, in the past 10 years members of the Institute have both independently or

in cooperation with scientists from other scientific institutions published: 5 original books, 7 editorial books, 11 chapters in books, 8 textbooks and scripts, 40 articles in scientific journals, given 7 invited lectures, 179 papers in proceedings from conferences with international reviews, and 36 papers at other conferences with a review.

Scientific Programs and Projects

So far 10 projects have been completed at the Institute and one program is currently active with 3 projects, and there are two more projects financed by the Ministry of Science on the level of the Republic of Croatia. A total of 29 researchers are active in these programs and projects.

International projects were as follows:

Tempus SCM – Co09A06 – 2006

– Lifelong Learning in University

Context, 2006–007

Countries involved: Austria, Finland, Croatia, Ireland, Hungary and Great Britain.

Project coordinator: prof.dr.sc. Ivica Završki,

Beneficiary institution: University of Zagreb, Faculty of Civil Engineering

ALIS link No. 240 – Factors affecting labour productivity, 1992- 1995

Countries involved: Croatia i Great Britain, financed form British Council and The Croatian Ministry of Science
Project manager: prof.dr.sc. Mariza Katavić

Beneficiary institution: University of Zagreb, Faculty of Civil Engineering i Dundee University Scotland

TEMPUS CD JEP- 16042-2001 – MBA in Construction, 2002-2004

CARDS 2001 Curriculum Development Joint European Project

Parties involved: University of Zagreb, Faculty of Economics and Business; Technische Universitat Munchen, Institut fur Geotechnik und Baubetrieb

Beneficiary institution: University of Dundee (UK), Prof. Malcolm R.W. Horner

Project Coordinator: University of Zagreb, Faculty of Civil Engineering, prof.dr.sc Mariza Katavić

The Current Teaching Work of the Institute

Following the reorganization of courses, with the introduction of the “Bologna Process” as part of the undergraduate course in civil engineering the staff of the Institute hold lectures in mandatory and elective subjects in all three years: in the first year – two elective subjects, in the second year one mandatory subject and in the third year two mandatory and two elective subjects.

The post-graduate course in Construction Management is organized over 4 semesters with thirteen mandatory subjects, a thesis and fourteen elective subjects on offer taught by staff employed at the Institute and Faculty.

There is also a post-graduate doctorate course in Construction Management. It is run on a regular basis over 3 years and for extraordinary students over 4 years. There are 2 semesters of lectures, and for extraordinary students the length of the research period is extended.

Students enrol for 4 of the 8 mandatory subjects offered in the first semester (30 ECTS points) and gain 30 ECTS points from the 7 elective subjects offered.

The Department organizes and runs post-graduate specialized studies in

organization and management in construction as an extraordinary course lasting one year over two semesters. In the first semester there are organized lectures and in the second they produce specialized papers. The students need to collect 60 ECTS points, of which 30 are from passing the courses and 30 from the paper. There is one mandatory subject available and 13 elective subjects, which are chosen according to the students' affinities.

So far 22 students have attained a doctorate within the Institute, 44 master's degrees and 2 specialized master's degrees in civil engineering in the field of organization and management in construction.

The Staffing Structure of the Department

More than 50 members of staff have worked in the department to date since its foundation, apart from those already mentioned, primarily teachers employed as lecturers or assistant professors, and experts who worked on scientific projects during the time of joint operations within the Civil Engineering Institute.

The Department is run by the head. The Department is divided into three chairs, each with its own head: The Chair for Organization of Construction, the Chair for Construction Technology and the Chair for Social Sciences.

There are three permanent, full time professors teaching at the department, three full-time professors, two associate professors, one assistant professor, two assistants, of which one has a master's degree and 6 research fellows of which 3 have master's degrees. One professional associate is involved in professional tasks (dipl.ing.grad) and there is one administrator.