

# THE POSSIBILITIES OF PM APPLICATION IN THE PROCESS OF TERRAIN PREPARATION FOR CONSTRUCTION

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## **Abstract**

This paper deals with the problems that most often occur during terrain preparation and equipment for construction in most of local units of Croatia. Adequate terrain administration is in general interest of the society, and it is also significant from viewpoint of clients who invest into construction. In most of the countries, particularly those in transition, investors wishing to invest into construction often face a series of difficulties and problems during the process of acquiring all required grants and construction permits.

With having in mind the fact that available space appropriate to build, is, really, very limited natural resource, as well as, the fact of increased building necessities, problem of qualitative and adequate construction terrain preparation becomes particularly important.

The emphasis is on problems of urban administration segments, emphasized as particularly important: urban planning, proprietary-legal issues and infrastructural terrain equipment.

Certain solutions are proposed, based on application of knowledge and particular PM techniques. Their possible application has been demonstrated on a case study.

**Key words:** terrain preparation and equipment for construction, urban documentation, proprietary-legal relationships, infrastructure, project management, local administration.

## **1 Introduction**

The main research objective, considering numerous problems, so far, in the area of construction terrain regulation in Croatia, is to present some new solutions based on application of PM knowledge and particular techniques in related segments of local administration. Of course, respective valid laws need to be the starting point in solution determining. Therefore, these laws are presented here in general outline.

When it comes to terrain preparation and equipment, it needs to be pointed that Croatian experience so far, reveals numerous problems that have caused considerable cost increasing. The general idea is that system does not operate effectively and organised enough. Procedures are often rather complex and long-lasting, but without adequate communication and interaction among participants. It is obviously that some changes in the system need to be done, and some of them are possible using PM knowledge.

## **2 Research subject**

According to the 11<sup>th</sup> paragraph of the Urban Regulation Law, regulation of construction terrain encompasses:

- 1) terrain preparation for construction (urban plans design, proprietary-legal actions etc.)
- 2) building of communal and telecommunication installations, buildings and devices for individual and public consumption.

According to the mentioned Law, local administration units are obliged to organize these terrain regulation procedures. Even more, they are the main bearers of these procedures. So, pointed parts, including the possibilities of effectiveness increasing are the main research subject.

## **3 Valid respective laws in Croatia**

Respective laws that considerably determine possible scope of acting in terrain regulation domain are:

- 1) Urban Regulation Law
- 2) Expropriation Law
- 3) Communal Management Law

all from the 1994.

But nevertheless, there is a free space in the system for better organizational solutions that could increase system effectiveness.

## **4 The analysis of existing state in the area of construction terrain regulation**

### ***4.1 Existing state in the area of urban planning***

Existing conditions in the domain of urban planning has been researched in order to reveal the main problems in this segment and offer the better solutions.

Urban planning system in Croatia has been so structured that local administration units are main bearers of urban documentation making. Those bodies are not equipped to make urban documentation and their task is coordination and supervision during making and bringing of the plan. The making itself is entrusted to companies registered for such activities. Research indicates that significant problems in practice occur precisely in the segment of making of urban documentation. As a matter of fact, relevant individuals in administrative bodies for urban planning see the main problem in inadequate quality and training of project designers – urban planners. On the other hand, project designers complain about exaggerated and unnecessary limitations imposed by expert bodies, a kind of conservatism, as it were, in regard with urban solutions.

Research showed that there were cases of misuse in the urban planning segment regarding the change in designation of space in direct agreement between urban planners and leading people of towns and municipalities, without agreement by terrain owners. It will be later explained in the first case study.

Administrative bodies must have the yearly program of measures to improve the condition in the space which represents the basic planning document to create urban documentation. Reports on what has been accomplished in the expired year period are made with regard to the planned program of measures.

As for the financing of the planned documentation, it is financed from the budget, while detailed plan may be financed by the client on whose initiative the plan is made.

According to the research, there is often the problem of matching the interests of investor and local administration units in terms of planned activities. Precisely this has been pointed out as the main cause for possible delay in making of the plan.

After the urban plan proposal has been made, the bearer must make sure that the public debate is conducted in which all interested parties have a right to participate.

Experiences, so far, point on possible abuses and manipulations in urban planning area, as in urban documentation design, so in later application phase. Private investors are ready to put planners and local administration under pressure in order to realize the planned goal in regard with building possibility just in way they want to do it.

Besides, the situations of, we can say so, “dotted urbanism” are not rare in real practice. What does it mean? It means that particular area, in urban solutions determining, is considered as separated entity. Problem is, that very often terrain near by this zone is private, so we could not count with safety on these lots in order to solve respective problem in the future. On the contrary, local unit would act promptly, immediately. It will be more explained later in a case study.

The problem is also that important documents, report about state in the space, as well as program of measures to improve the condition in the space are treated and made as formal documents. So, the real intention of Urban Law – space protection is not achieved.

#### ***4.2 Existing conditions in the area of proprietary-legal issues***

According to the Expropriation Law which has been in force since 1994, real estate can be expropriated when it is necessary for construction of objects of interest for Republic of Croatia and the decision on that is brought by the Government, on the strength of opinion of County Parliament. This law regulates the expropriation procedure, as well. Compensation for the expropriated real estate is defined, as a rule, as a grant to another real estate, but if the owner of the expropriated real estate does not accept the real estate offered to him, then the compensation is given as money in the real estate market value. If the interest of the Republic is not ascertained, the real estate cannot be expropriated, and potential investor must settle the issue of terrain sale and its price with its owner.

#### ***4.3 Existing conditions in the area of communal development of the terrain***

Main operative subject in the area of communal development of the terrain is the constituting unit for plan and development in town administration department for the communal system. It is in charge of planning and construction of big traffic and infrastructure objects. Communal infrastructure equipment is financed mainly from local unit budget, specifically from the communal contribution that each investor has to pay before building. Nowadays, local unit bonds income is also used for this purpose. But, very often local unit has not enough money for capital investments, so loan need to be taken.

Here, it comes to capital investments primarily. It means, investments over 200.000,00 kunas. For these investments building permit is obliged, as well as public competition for awarding of construction.

#### ***4.4 The most significant problems in the area of construction terrain regulation***

Research conducted pointed at following most significant problems in the area of construction terrain regulation:

- 1) Inadequate quality and training of project designers – urban planners
- 2) Problems of bringing into agreement planned solutions and demands of expert offices at local administration units
- 3) Problems of matching the interests of investors and local administration units in terms of planned activities in the area. This is one of the main reasons of failure to meet the deadline of plan completion. Sometimes there are cases of authority misuse by leading people, i.e. of bypassing the terrain owners during process of change in designation of space
- 4) Difficulties of settling the sale issues with terrain owners. Significant extension of preparation phase is possible.
- 5) Protracted plan making
- 6) Disagreement between cadastre and land registry data prolongs preparation time
- 7) Inadequate work coordination and connection between offices on different parts of urban regulation.
- 8) Lack of finances particularly in the area of communal infrastructure equipment. Loan need to be taken.

## **5 Improvement proposals in the area of construction terrain regulation by application of PM - techniques**

### **5.1 Introductory analysis**

Some of the registered problems in the area of construction terrain regulation imply an essential shortcoming, which is no or insufficient connection between particular segments and factors and lack of coordination. It is safe to believe that significant improvements could be achieved through organisation on project principles and application of particular PM knowledge and skills. Certain organisational requirements are necessary, but position of particular subjects in the area of terrain preparation and equipment is determined by legal provisions, and although in fact they are dislocated, belonging to different offices and administrative units, in reality, in order to ensure quality and efficiency, the connection and coordination of their function must be secured.

Essential factors in the area of construction terrain regulation are:

- office for urban regulation, environmental protection, civil engineering and proprietary-legal affairs – this is a state administration body, in a way, figuratively, a "branch office" of the Ministry for environmental protection, urban regulation and civil engineering
- department conducting urban regulation tasks at the county level
- municipal department for urban regulation tasks and terrain management
- department for communal activities and terrain management at the county level
- municipal department for communal activities
- cadastre and land registry
- companies registered for project designing in the area of civil engineering and urban regulation
- municipal communal organisations.

Existing services operate separately with weaker function connections, except in case of creation of urban plans at the county and town level, as well as urban planning, proprietary-legal preparation and communal development of the terrain at the municipal

level where those connections are somewhat stronger (figure 1). Besides, research has shown that there is no clear mutual perception and understanding of scope of activities among factors, even those at town and county level.

The most interesting, operative level of construction terrain regulation is precisely the municipal level where particular segments of regulation of construction terrain are carried out in two organisational units, i.e. department for urban planning and proprietary-legal preparation and department for communal equipment of terrain. The basic idea behind it is that precisely at this level, through application of PM knowledge and techniques, a quality shift may be achieved in the domain of construction terrain regulation.

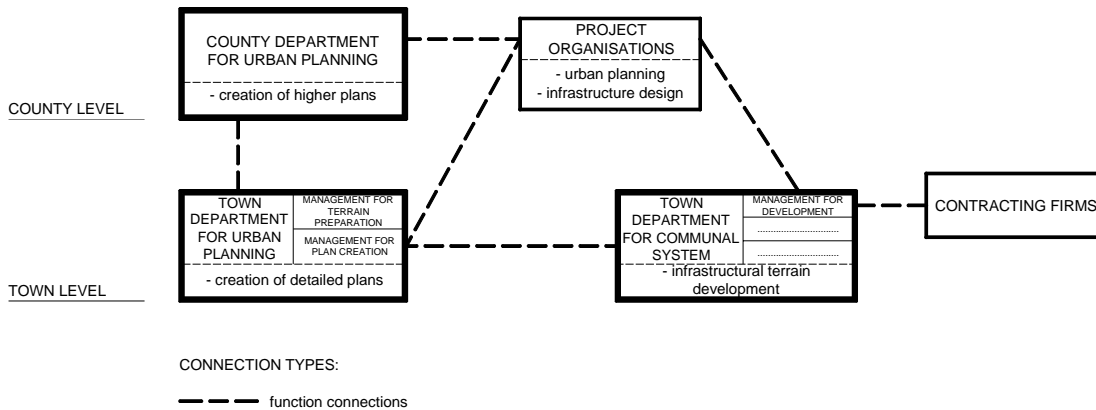


Figure 1. Existing scheme of key participants in the area of construction terrain regulation

## 5.2 Characteristics of design model of construction terrain regulation

Construction terrain regulation for certain planned undertaking may be regarded as a design type work and organised and conducted according to PM principles. Two cases must be discerned in doing so:

- 1) a case when the zone of undertaking encompasses municipal terrain only
- 2) a case when the zone of undertaking encompasses mixed private and municipal or only private terrain, so terms must be settled with private owners.

Only second case will be explained here as it is more complicated and usually of a lot longer duration, compared to the first one.

So, the primary goal of consideration is to determine a proposal of construction terrain regulation model which will be based on design principles. Indeed, regulation of construction terrain is a process with all design characteristics, but it is not organised in such way in reality, due to either unfamiliarity with or poor knowledge of PM on the part of participants, as well as due to inertness of bureaucracy apparatus and unwillingness to introduce more significant changes, something that has been noted in some circles.

In case that construction terrain regulation is treated as a project, following groups of activities can be defined:

- 1) Initiating creation of an adequate urban plan  
Local administration unit and interested investors can start the initiative. Interested clients are obliged to finance the plan creation.
- 2) Actions preceding the plan creation

Examination of coordination between planned contents with higher-order plans, possibility and price of terrain purchase.

3) Creation and passing of the plan

Plan creation bearer is under any circumstances local administration unit, but plan creation itself is entrusted to a registered company. An outstanding problem is to coordinate interests of wider community, investors and plot owners.

4) Actions preceding the construction terrain development

Infrastructural construction terrain development level is defined by detailed urban plan (DPU), whereas development itself is financed by communal tax.

5) Construction terrain development

This is basically a development project, conducted by a local administration unit through adequate expert service, which invites tenders to choose the contractor.

As seen in figure 1., existing situation is characterised by disparity of departments and services working on terrain regulation. There are functional connections, but not clearly defined, and major problem is non-existence of a team or service to coordinate the work of them all. Therefore in reality, terrain regulation does not unfold as a continuous design process, but rather each service does its job partially. This way is not rational because it is time consuming and creates higher costs, and often negatively affects project quality, either in its entirety or in some parts. Higher costs are created for several reasons, i.e. lengthy work, in coordination of work between various services, poor time planning etc. Analysis indicates that there is a need for a common factor, best as a project team and work organisation on project principles. Figure 2 shows a proposal for organisation scheme of participants in terrain regulation where, compared to present situation, two cohesive factors are introduced, conducting of terrain regulation and PM department. Accordingly, a solution is chosen that will retain existing organisational structure of terrain regulation with three departments, specialised in proprietary-legal preparation, urban planning and development of the terrain, but they are now united within common management. Furthermore, forming of PM department is proposed, out of tested, licensed PM experts and PM educated staff from all quoted departments. They will form project teams which will organise and lead terrain regulation projects. Making of projects will be carried out by segments (subprojects) in existing departments. In case of conflict of authorities between management of Department for regulation and project leader, final decision lies with project leader.

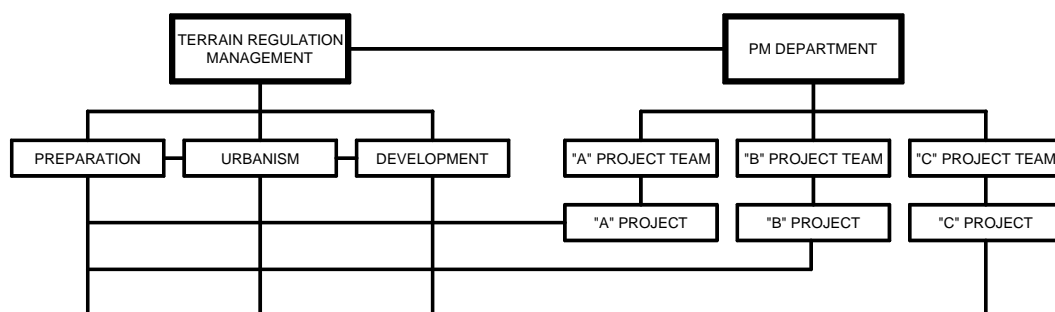


Figure 2. Proposal for organisation scheme of participants in terrain regulation according to project model

Given proposal does not radically alter an existing organisational structure, which makes it a realistically achievable option within a relatively short time, with an earlier

observation of requisite PM education of personnel, computer equipment and adequate software to conduct projects.

## **6 Example of «K» zone terrain regulation – comparison between existing and proposed model**

«K» zone is a construction area in a small municipality in vicinity of Rijeka, Croatia. Urban plan existed for that area and according to it the zone is earmarked for residential development. Municipal expert service established that there was an interest to invest into the zone in terms of varied commercial development. It was possible to achieve through a change of urban plan, terrain purchase from private terrain owners and creation of a detailed development plan brought into accord with the urban plan. Entire preparation and planning process was riddled with a whole series of inconsistencies and irregularities. It has been going on for two years now and there is no end to it in sight. Majority of problems was created due to lack of coordination, but also due to attempts to avoid the procedure as specified by law. Problem was that the private plot owners did not agree to the change of assignment from residential to commercial development and sale. The final result is that change of assignment from residential to commercial development zone went through without owners' agreement, but with agreement of leading people in the municipality, which initiated a series of appeals of owners that suffered damage. Entire process came to a stall due to a series of court disputes.

The project team role would have been manifested from the very beginning, ever since the interest to invest into the zone was established. On one hand, so that the interests of private plot owners in terms of change of assignment and plot sale, as well as the size of demanded compensation would be investigated, which would be included in total project costs. On the other hand, it would stop illegal change from residential to business zone without consent of plot owners. Preliminary analysis of proprietary-legal relationships and cost estimate should have been conducted by Department for Preparation, and only after the agreements for change of assignment of terrain had been obtained, urban plan change could have been carried out, and consequently all other preliminary activities with creation of a detailed development plan. That would have been done by Department for Urban Planning which would have hired an appropriate project firm. However, all these works would have been organised and lead by an appointed project team. After the urban documentation, i.e. changes of urban and later detailed plan would have been adopted, project team would have organised and led activities in regard with terrain development in terms of communal and traffic infrastructure, up to the level determined by detailed urban regulation plan and in such a way as any other construction project is conducted.

Project team has a special role in matching the interests of interested investors with interests of wider social community, i.e. local administration unit. Those interests are often in conflict for on one hand there is an interest of profit and on the other an ecological, aesthetical or some other interest. This is where the role and quality of project team particularly become prominent, in addition to its standard role of being in step with the project in terms of time frame and costs.

The next case describes the problem of, we can say so, “dotted urbanism”. Here, will be present the case of urban plan design of “G” zone which is intended for cemetery with entirely 2.500 burial places. It is foreseen that this cemetery will meet the needs for the next fifty years. In this zone also the parking area is planned, but for just ten parking places. Obviously, it will not be enough, not even nowadays, and particularly not in the future. Nut, urban planner warrant it with the lack of space in respective zone.

Unfortunately, adjacent lots are in private own, so local unit could not count with safety on these lots in order to solve parking problem in the future. On the contrary, local unit would act promptly, immediately and buy needed lots.

## 7 Summary

Investigation of construction terrain regulation system has revealed that existing services act separately with weak functional connections, with an exception of creation of urban plans at county and town level, and urban planning, proprietary-legal preparation and communal development of the terrain at the municipal level where those connections are somewhat stronger. Besides, there is no clear mutual perception and understanding of scope of activities among factors, even those at town and county level. Therefore the introduction of project model of terrain regulation is proposed where three existing departments would be retained and a common department superior to them is leading terrain regulation activities. PM department is introduced where project teams are formed to lead projects with the most crucial role for project success. Given proposal does not radically alter an existing organisational structure, which makes it a realistically achievable option within a relatively short time, with an earlier observation of requisite PM education of personnel, computer equipment and adequate software to conduct projects.

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