

The Role of Cadastre in the Development of Regional and Local Planning Structure in Croatia

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Key words: county and municipality spatial plans, spatial documentation, cadastre

SUMMARY

By managing to achieve a complete regional and local coverage with spatial plans the Republic of Croatia has created the necessary presumptions for further planned sustainable development adjusted to the needs of the society and simultaneous environmental protection. The period of ten years was needed to reach the level of covering Croatia with spatial plans, as well as a few iterations in developing the legislative framework, the establishment of direct implementation institutions and the engagement of back up institutions as it is the State Geodetic Administration with its cadastral offices that have provided a set of new updated and digitized spatial documents.

Right now Croatia is in the process of applying the existing spatial plans, which includes not only the activities defined by adequate ordinances regulating not only the area of spatial planning and construction, but also the area of the protection of environment and the nature, cultural heritage, and many other special provisions. Since the life is changing on the daily basis, the plans are also subject to changes, and the whole mentioned process is developing accompanied by active participation of the State Geodetic Administration, i.e. at the regional and local level of cadastral offices in the first place.

The paper offers the overview of overall activities in the production of spatial planning documentation in Croatia with the special emphasis on the role of the State Geodetic Administration and its cadastral offices, and the present cadastral activities in the implementation of spatial planning and construction activities in the Krapinsko-zagorska County.

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1. INTRODUCTION

After the Act on Spatial Development and Construction (hereinafter SDC) (Republic of Croatia, 2007) entered into force on the 1. October 2007, the reform of the old system of spatial development and construction started to be carried out regulated by separate provisions about spatial development from 1994, about the construction from 2003, and about the Croatian Chamber of Architects and Civil Engineers from 1998. The old system has been gradually replaced by the new system that is regulated apart from the Act on SDC, by the provisions on construction products from 2008 and on the procedures and conditions of construction intended to encourage investments from 2009, indicated in Bienenfeld, 2009.

Thus, the area of spatial development and construction was for the first time uniquely included into the same act on the basis of the approach to the natural course of procedures within these administration areas, as well as within their mutual procedure and legal connection and determination. It is of essential importance to point at the fact, that the issue of environmental protection, in spite of its own documents and methods is closely connected and integrated into both areas, which can be related especially to the production and passing of spatial plans, as well as to the procedures of issuing location and building permits for certain types of structures.

It is also important to mention that the changes of provision that regulate the authorities of local and regional self-government in Croatia in 2005 have decentralized the issuance of permits, i.e. of the acts intended for the implementation of spatial plans and for building and usage of structures.

The Act on SDC regulated the system of spatial development and construction, the competences of state authority bodies and the units of local and regional self-government in administration and other procedures, as well as administration and inspection surveillance.

The spatial development provides the conditions for the development of economic, social, natural, cultural and ecological starting points for the sustainable development in the area of the Republic of Croatia being especially valuable and limited national wealth according to the principle of integral approach to spatial planning along with the connection of the territory of the Republic of Croatia with the European spatial systems and with respect to the preservation, cultivation and development of regional spatial characteristics.

The construction in the sense of the Act on SDC includes designing, building, usage and removing the structures carried out according to the provisions of the Act on SDC, and the regulations relating to the construction of new structures are applied in the adequate way in the reconstruction, removal and maintenance of structures. The basic goal of the construction is to promote good designing and building that provide safety, health, ecology and energy characteristics of structures, and equalize the rights of persons with reduced mobility applying the European principles.

The above mentioned emphasizes the necessity and obligation for various institutional levels

and degrees (state, units of local and regional self-government, the person with public authorities) to collaborate mutually in order to reach the goals and define the starting points, to produce the documents of spatial development and other development documents that affect the spatial development, environmental protection, construction and urban renewal, and the performance of other activities needed in the procedures of spatial development.

The principle of the participation of the public and of the approach to the information and data has provided the right for the public to participate in the procedures of the production and passing of documents related to spatial development in accordance with the Act on SDC. The state and the bodies of local and regional self-government must inform the public about the situation in the regions, make it possible for the public and encourage its participation by developing the social correlation and by increasing its awareness of the need to protect the environmental, and by managing the participation (gathering and organising of proposals, providing professional opinions about public attitudes, media procurement and similar).

2. DOCUMENTS AND PLANS OF SPATIAL DEVELOPMENT

2.1 Obligation of spatial development insurance

The efficiency of spatial development of Croatia is provided by the Croatian National Parliament and the Government of the Republic of Croatia, as well as by representative and executive bodies of local and regional self-government, by passing the documents of spatial development and other documents defined by the Act on SDC. The professional quality of the documents is provided by the competent bodies of the state and the bodies of the units of local and regional self-government established to perform professional tasks in the field of spatial development, as well as legal entities established and registered for the production of such documents, and licensed architects performing professional tasks of spatial planning independently.

The activity of spatial development defined by the Act on SDC is performed by the Croatian Institute for Spatial Development for the State, and the institutes for spatial development for counties, i.e. the City of Zagreb, founded as public institutions. The spatial plans on local level are passed by the units of local self-government, i.e. cities and municipalities. In this way the system of spatial development reflects completely the national, regional (county) and local level accompanied by the obligation and the need to provide vertical and horizontal cooperation of mentioned institutions.

2.2 Documents of spatial development

The documents of spatial development at the state level are the Strategy of Spatial Development and the Programme of Spatial Development of the Republic of Croatia, as well as the spatial plans for the areas with special characteristics, if it is regulated by the Act on SDC. The documents of spatial development at the regional level are spatial plans of counties, i.e. of the City of Zagreb, and the spatial plan of the areas with special characteristics, if they are to be produced and passed by these plans. The documents of spatial development at the local level are spatial plans for the development of a big city, town, i.e. municipality, urban development plan and detailed development plan, as it is described in details in Blažević

Perušić, 2009. The overview of the documents of spatial development is given in the Figure 1 and the manner of passing the documents referring to the issues of competence is given in the Figure 2.

Strategic documents of spatial development		Feasibility documents of spatial development	
State level ↓	The area of regional level ↓	Local level ↓	
Strategy of Spatial Development of the Republic of Croatia	County /City of Zagreb Spatial Plan	Spatial Development Plans of the Big City, Town and Municipality	Urban Development Plan
Programme of Spatial Development of the Republic of Croatia			
Spatial plan for the areas with special characteristics	Spatial Plan for the areas with special characteristics		

Figure 1. Purpose and level of the production of spatial development documents

The level and the body passing the spatial development documents	Documents of spatial development	Obligation of territorial production and passing of the Act on SDC
Republic of Croatia Croatian Parliament	Strategy of Spatial Development of the Republic of Croatia	for the territory of the Republic of Croatia
	Spatial Plan for the areas with special characteristics	national park, nature park and the areas with special characteristic defined by the Strategy and Programme
Republic of Croatia Government of the Republic of Croatia	Programme of Spatial Development of the Republic of Croatia	for the territory of the Republic of Croatia
County/City of Zagreb County/City Assembly	Spatial plan of county/ City of Zagreb	county/City of Zagreb
	Spatial Plan for the areas with special characteristics	the areas with special characteristics defined by the spatial plan of counties/City of Zagreb
Big city, town, and municipality Town council/municipality council	Spatial development plan of the big city, town, municipality	big city, town, municipality
	Urban development plan	undeveloped parts of the building area in settlements and undeveloped separated building areas outside of settlements
	Detailed development plan	for the parts of settlements intended for urban land consolidation

Figure 2. Passing of spatial development documents

2.3 County spatial plans

The Republic of Croatia is divided into twenty counties, and the City of Zagreb is a unit with special rights and obligations of the county. The spatial distribution of the counties and the years in which county spatial plans were passed, all of them passed after the year 2000, are given in the Figure 3.

Further to the given plans there were also the amendments to the plans made. It refers especially to the counties at the seaside that were adjusting their spatial plans to special provisions referring to the protected coastal area for the purpose of protecting the landscape at the seaside and to protect the area from devastations and illegal construction.

Krapinsko-zagorska County, the county that will be presented later in terms of plans, passed the spatial plan in 2002, and the amendments of the spatial plan were entered in 2010.

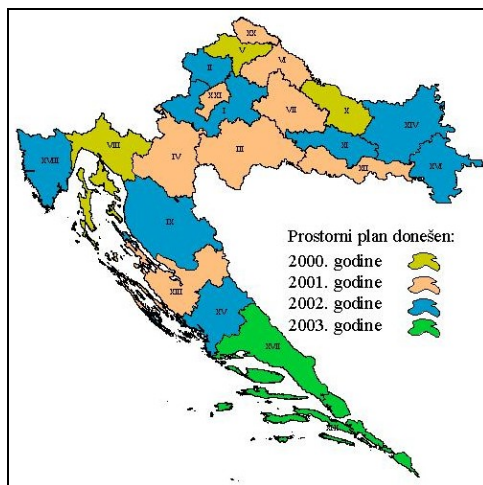


Figure 3. Division of RC into counties and the years of basic plans



Figure 4. Division of Krapinsko-zagorska County into the units of local self-government

2.4 Spatial development plans of towns and municipalities

The spatial development plan is the basic document of spatial development in every unit of local self-government. The spatial development plan of a big city, town or municipality, or a part of some settlement is prepared more detailed by means of urban development plan, i.e. by means of detailed development plan that should be made in accordance with the spatial plan.

The example of Krapinsko-zagorska County, Figure 4 shows the units of local self-government. This county has got 32 of such units. Out of that number there are 25 municipalities and 7 towns. The capital and the administrative centre of Krapinsko-zagorska County is the town Krapina being the only one in the county numbering ten thousand inhabitants.

All units of local self-government have passed for their areas the spatial plan for municipalities (PPUO)/ towns (PPUG), and accordingly and pursuant to the Act on SDC also the plans for the restricted areas, i.e. the urban development plan (UOU) and a detailed development plan (DPU).

According to the old regulations on spatial development from the year 1994, a general urban

plan (GUP) could have passed for the restricted area and the development spatial plan (PUP) that can remain in effect ten years after they have been passed, although they are not planned by the new Act on SDC. The example of the Town Krapina shows the passed plans, their publication and the years in which they were passed, see Figure 5.

TOWN KRAPINA		
PPUG	Krapina	Official Gazette of the Town Krapina No. 2/02,12/03, 16/04, 5/07
GUP	of the Town Krapina	Official Gazette of the Town Krapina No. 2/02,12/03, 13/03, 16/04, 5/07, 7/09
UPU	“Krapina nova – West”	Official Gazette of the Town Krapina No. 2/05
UPU	“Krapina nova – South”	Official Gazette of the Town Krapina No. 1/09
PUP	Southern zone - Mihaljekov Jarek	Official Gazette of the Krapinsko-zagorska County No. 11/94, 20/94

Figure 5. Passed spatial plans of the Town Krapina

3. THE CONTENTS OF THE SPATIAL PLANS AND CARTOGRAPHIC BASES THAT THEY ARE MADE ON

3.1 Cartographic presentations needed for passing the spatial plans

The spatial plan contains both textual and graphic part. The textual part includes the explanation of the starting point for the plan production, the goals of spatial development and spatial development plan, as well as the regulations for the implementation of a plan and obligatory documents (professional explanations and the documents referring to the procedures of production and passing). The graphic part includes cartographic presentations and graphic attachments presenting the situation and the planned activities in the region, and it depends on the quality of details and the level of the spatial plan itself.

According to the Act on SDC the Book of Rules on the contents, map scale, obligatory spatial indicators and the document standard for spatial plans has remained in effect from the year 1998. The new technological and digital achievements require new provisions on the contents of spatial plans to be passed.

Cartographic presentations containing a graphic part of a spatial plan, defined by the mentioned Book of Rules, are made on the basis that is prepared by means of analogous or digital technique in accordance with the regulations about land surveying and cadastre. Cartographic presentations are made for:

- the county spatial plan on the topographic map at the scale of: 1:100.000,
- the spatial plan of the City of Zagreb on the topographic map at the scale of 1:25.000,
- the spatial plan for the areas with special characteristics on the topographic map at the scale of 1:100.000 and/or 1:25.000 or on the state base map at the scale of 1:5.000 and/or 1:10.000 depending on the type of characteristics and the area encompassed by the plan,
- the spatial development plan for a municipality or a town on topographic map at the scale of 1:25.000, and building areas in settlements are defined on the cadastral map at the scale of 1:5.000,
- general urban plan on the state base map at the scale of 1:5.000 and /or 1:10.000,

- urban development plan on the state base map at the scale of 1:5.000 or on the topographic cadastral map at the scale of 1:1.000 or 1:2.000,
- detailed development plan on the topographic cadastral map or cadastral map at the scale of 1:1.000 or 1:500.

3.2 Topographic maps and other cartographic presentations

The State Geodetic Administration of Croatia (hereinafter SGA) is responsible for official cartography and it produces a wide range of cartographic products for the purpose of providing necessary topographic maps and cartographic presentations. The products needed in spatial planning are as follows:

- Topographic map at the scale of 1:100.000 (TK100) made in the period 1980–1984 for the entire state territory in 56 sheets available in analogous (polychromous print on paper) and digital (geocoded in TIF format) form. After Croatia had become independent, the names of the sheets were corrected, the geographic names were standardized and the toponyms attributed.
- Topographic map at the scale of 1:25.000 (TK25) has been conceived, processed and made in digital procedures in the period from 1996–2010 for the area of the entire Croatia and it represents the most updated topographic map that is available for Croatia.
- Croatian base map 1:5.000 (HOK) was made in period from 1954 -2009. There were 9678 sheets made out of the total number of sheets being 9756, available in analogous from (polychromous print on paper in 3 or 4 colours) and digital form (geocoded TIF format).
- Orthophoto map at the scale of 1:5.000 (DOF5) was made in digital form out of aerial photographs by means of digital relief model. The resolution is 50 cm, and the accuracy 1 m. It was made for the territory of the entire state and it is being cyclically updated. During the years 2009 and 2010 there was 63% of sheets updated for the purpose of establishing the Land Parcel Identification System in agriculture.

3.3 Cadastral maps

Until 1990 all cadastral maps in Croatia were kept and maintained in analogous form on the maps at the scale of 1:1000, 1:2000, 1:2880 and 1:2904. 78,4 % of them belonged to the Austro-Hungarian Monarchy. The remaining maps were made in Gauss-Krueger projection of meridian zones, i.e. 14,0 % were made in the procedure of land consolidation, 4,9 % by means of photogrammetric method, and 2,7 % by means of orthogonal method and tachymetry. Out of that, 2% of the area of the Republic of Croatia was included into the cadastral surveying between 1918 and 1941, and till the end of the year 1990 further 20% of the territory was covered (Pešun et al, 2010).

The programme of state survey and real estate cadastre 2001-2005 (Republic of Croatia, 2001.), adopted by the Croatian National Parliament, and the new cadastral survey enabled the production of the new cadastral documents for about 5% of cadastral municipalities and in the period from 2005 to 2008 further 2% of cadastral municipalities at the territory of Croatia were included into the new survey.

Until the year 2000 almost all cadastral maps were kept and maintained in analogous form,

and the transformation of these analogous maps itself into digital form started at the beginning of the nineties when the technical presumptions for such processes were provided. Systematic vectoring started in 2002 as the first technical specification was made as well. Since the cadastral maps were vectorized in various periods of time, by several various producers and by the application of different production logic, they are being standardized today, and they will gradually be transferred from CAD environment into the object-oriented environment. The cadastral offices are introducing the application «Vektoria» being the application for the implementation of changes and the maintenance of cadastral maps in the transition period until the Common Land Information System (LIS) is established.

The majority of cadastral maps (cadastral maps made in the period of Austro-Hungarian Monarchy at the scale of 1:2880) were located through the vectorizing procedure in the real, defined space by georienting the sheet margins, so that they do not reflect the real situation referring to the real estates in certain area, but only the picture of the area and cadastral parcels. Before using such plans as the basis for spatial plans, the cadastral maps should be homogenized and transformed into the state coordinate system. The works in this respect are being prepared and it is expected that the homogenization of cadastral maps will start in 2011.

4. GEODETIC AND CADASTRAL WORKS IN KRAPINSKO-ZAGORSKA COUNTY

Within the scope of the mentioned SGA programme, Krapinsko-zagorska County and the units of local self-government have initiated the following geodetic and cadastral works using the model of mutual financing:

- the preparation of TK25 for the area of the entire County,
- the preparation of DOF5 for the area of the entire County,
- the preparation of digital cadastral map (DKP),
- new cadastral survey in the part of the Town Krapina.

Within the Programme during the year 2002 for the area of Krapinsko-zagorska County the preparation of TK25 and DOF5 was initiated. The maps were made and they are being used. During the years 2009 and 2010 the new issue of DOF5 was made.

The transformation of cadastral maps from analogous into digital form started in 2003. Today all maps are vectorized, standardized and in the branch cadastral office Krapina (hereinafter PUK Krapina) the application «Vektoria» is used as the application for the transformation of the changes and maintenance of cadastral maps in the transition period to be carried out until the Mutual Information System will be established. (LIS).

The possibility of the Programme of State Survey and Real Estate Cadastre intended to initiate the new survey or technical reambulation (partial survey) in its area was used by means of mutual financing with SGA. The new survey and the production of documents has been made for one part of the cadastral municipality on the area of 500 hectares in the years 2009 and 2010. The public inspection and usage of real estate cadastre (the status of data about cadastral plots that the state can guarantee and be responsible for) for a new cadastral municipality. The new survey for a part of cadastral municipality Krapina is planned that would encompass the area of intensive building and the area of expanded industrial zone.

5. THE APPLICATION OF THE ACT ON SDC AND THE ROLE OF PUK KRAPINA IN THE CONSTRUCTION ACTIVITIES

According to the Act on SDC, every activity in some region is carried out according to the documents of spatial development, to the special provisions and location permits. The location permit is issued for all structures apart from the buildings whose construction area (gross) is not larger than 600 m, the buildings that are intended only for agricultural activities SDCG.

The town Krapina has decided to build the regional primary school in its area. This kind of activity must be allowed by the spatial plan.

As it is to be seen from the attached presentation of the extract from the spatial development plan (Figure 6 and 7) the school has been built in the area marked on the plan with D3-school: The task of the local self-government unit (the Town Krapina) in the given activity is the following:

- the issuance of the local permit (Figure 10) in which the formation of a building plot (joining of cadastral plots) is conditioned by means of subdivision documents,
- the certification of the main project and of the working structure design, on the example of the school,
- the issuance of building permit,
- the issuance of operating permit after the technical inspection,
- the certification of subdivision documents confirming that it was done in accordance with the location permit,
- the registration of geodetic documents of utility cadastre for all built utility lines,
- the registration of the house number for the structure.



Figure 6. Extract from the spatial plan



Figure 7. Extract from the spatial plan overlapped over DOF

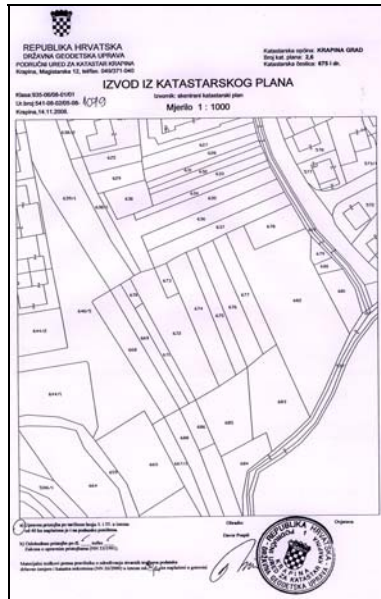


Figure 8. Extract from the cadastral map



Figure 9. Special geodetic document

The tasks of natural person or legal person authorized to perform the jobs of state survey and real estate cadastre (licensed surveyors) defined by the Act on Performing Geodetic Activity (Republic of Croatia, 2008) are as follows starting with the procedure needed to obtain location permit, building permit up to registration of the structure:

- preparation of adequate special geodetic documents (Figure 9) needed to obtain the location permit. Adequate special geodetic documents are cartographic documents (digital orthophoto plan with vertical presentation – contour lines and elevation lines with the included cadastral map or topographic presentation with the included cadastral map or topographic presentation with included cadastral map), made at adequate scale and verified by the competent body for state survey and real estate cadastre, i.e. by the cadastral office. On the adequate special geodetic documents the designer presents the planned building plot and the planned location of the structure within the building plot, i.e. the activity in the region,
- the preparation of the subdivision documents (Figure 11) for the performance of the location permit whose integral parts are defined by the Book of Rules on Subdivision and other geodetic documents (Republic of Croatia, 2008),
- the preparation of documents for the layout of the structure. The layout documents of the structure are the documents that present the layout of the structure in the field and the method used to stabilize the points planned for the structure,
- the layout of the structure within the building plot, i.e. on cadastral plot formed by means of subdivision. The layout of the structure presents the transfer of the plan of external figure of the structure or the axis of the structure allowed to be built in the filed within the building plot,
- the preparation of the layout geodetic plan of the real situation (situation, Figure 13) for the built structure in accordance with the passed act that has been verified by cadastral office as a part of geodetic documentation for the purpose of obtaining the operating licence,

- the preparation of geodetic documentation of utility lines cadastre (gas pipeline, water supply lines, power supply lines, telephone, etc., Figure 12) verified by cadastral office for the purpose of obtaining the operating licence. The geodetic documents of the utility lines cadastre are made for the administration body, in this case for the Town Krapina, who ordered the documents, the manager of the lines and producer of the documents,
- the preparation of geodetic documents for the purpose registration, deletion or change of the data about buildings and other structures (Figure 14).



Figure 10. Location permit (title page)

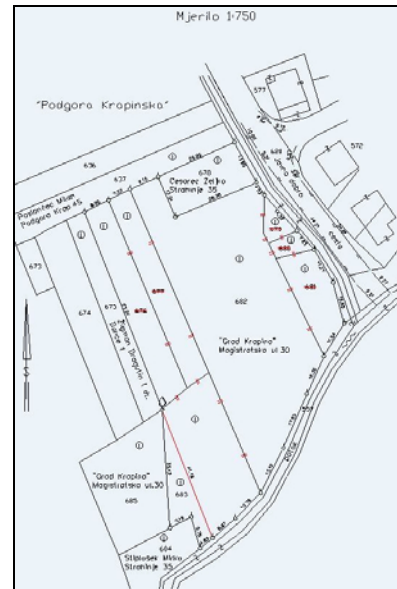


Figure 11. Survey sketch of subdivision documents

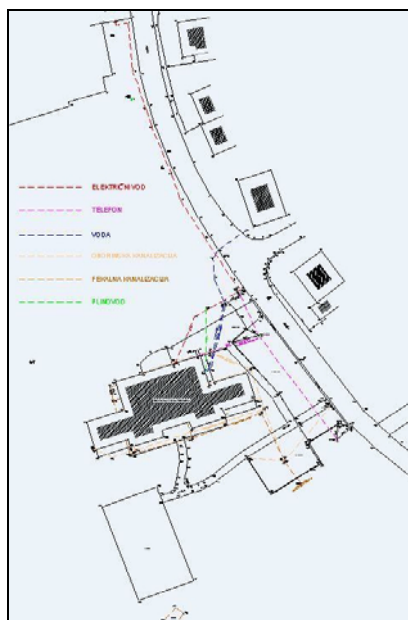


Figure 12. Presentation of utility lines cadastre

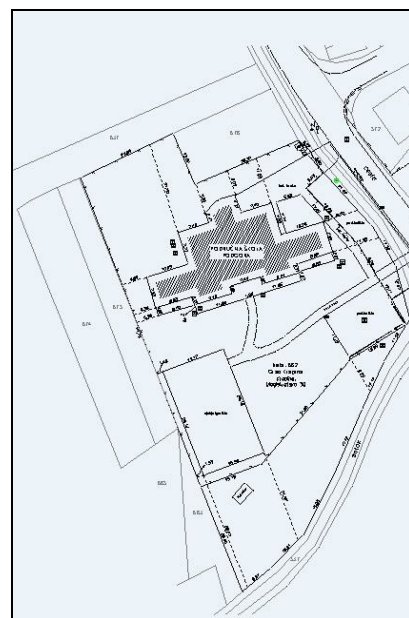


Figure 13. Situation

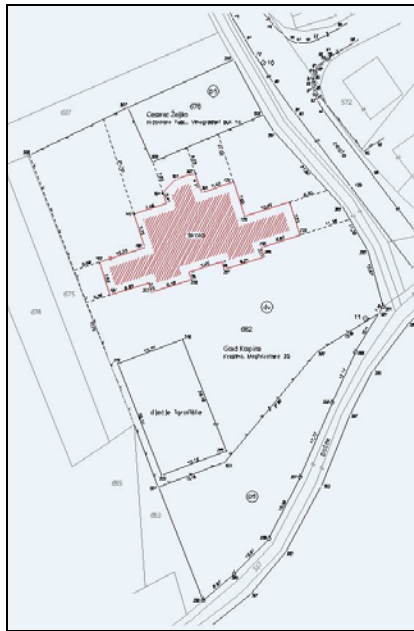


Figure 14. The sketch of geodetic document for the registration of the structure



Figure 15. Cadastral map after the implementation of geodetic documents

The role of PUK Krapina in the given area is the following:

- the issuance of the extract from cadastral map (Figure 8) and the list of permanent geodetic points for surveying in the field in state coordinate system needed for the purpose of making adequate special geodetic documents,
- the inspection and verification of adequate special geodetic documents that the cadastral office is obliged to make within thirty days, i.e. fifteen days if it is the matter of the construction intended for the purpose of investment promotion,
- the issuance of the extract from the cadastral map and the list of cadastral plots with owners needed for the production of subdivision documents,
- inspection and confirmation of subdivision documents verified by the competent administration body of the Town of Krapina that it has been done in accordance with acts on building, in this case referring to the location permit,
- production of the subdivision documents using cadastral documentation after the decision in the administration procedure has been made legally valid and the copies of applications for the land registry delivered officially to the land registry department of the Municipal Court in Krapina,
- the inspection and confirmation of geodetic situation plan of the real situation for the built structure in accordance with the passed act,
- the inspection and confirmation of geodetic documents of the utility lines cadastre,
- the inspection and confirmation of geodetic documents for the registration, deletion or change of data about the buildings and other structures,
- the implementation of geodetic documents needed for the registration, deletion or the change of data about the building and other structures (Figure 15) by means of cadastral documents after the decision passed in the administrative procedure has been made

legally valid and the copies of the application to the land registry has been officially delivered to the land registry department of the Municipality Court in Krapina.

The given example emphasizes the role of persons authorized for the jobs of state survey and real estate cadastre, of branch cadastral offices, the bodies responsible for land registry and their connection with the bodies competent for spatial development and construction. It would be impossible to unite the activities of issuing the acts on construction, the construction itself and the registration of structure in cadastral documents and land registry without the extract from cadastral evidence, without a number of mentioned activities performed by the persons authorized to perform the jobs of state survey and real estate cadastre, without the inspection and confirmation of subdivision and other geodetic documents by branch cadastral offices.

6. CONCLUSION

Topographic and cadastral data are the basic data about the space and the spatial development plans are made on the basis of these data, and also high quality decision about the activities in the region are made according to these data, i.e. all these data have crucial significance for all records about the region. Further goal of the State Geodetic Administration is to work on the unification and unique presentation of topographic and cadastral data and products, and to update the activities in the region using its services, having in mind that geodetic and cadastral data and works are the beginning and the end of every spatial development and construction.

The State Geodetic Administration improves the business and standards in the production of transparent and easily accessible spatial information through its cadastral offices and their administrative and professional works, being the imperative of regular business for the benefit of the state, but also of every individual, in accordance with the European spatial systems and standards.

REFERENCES

1. Bienenfeld, J.: Prostorno uređenje i gradnja, 2009, Proceedings "Aktualnosti u prostornom uređenju i gradnji-2009", ISBN 978-953-7327-71-2, page 67-125, Zagreb, Novi informator
2. Blažević - Perušić. J.: Pravilnik o sadržaju prostornih planova, 2009, Proceedings "Prostorno uređenje, gradnja i komunalno gospodarstvo", ISBN 978-53-7327-64-4, page 25-41, Zagreb, Novi informator
3. Pešun, M., Pešun, K., Mikšik, J.: Katastar kroz povijest, 2010, Proceedings "Zbornik radova Četvrtog Hrvatskog kongresa o katastru", ISBN 978-953-97081-8-2, page 415-439, Zagreb, Hrvatsko geodetsko društvo
4. Republic of Croatia 2001: Program of State Survey and Real-estate Cadastre 2001-2005, Official Gazette of Croatia nr. 64/2001.
5. Republic of Croatia 2007: The Law on State Survey and Real Estate Cadastre, Official Gazette of Croatia nr. 16/2007.
6. Republic of Croatia 2007: The Law on Physical Planning and Construction, Official Gazette of Croatia nr. 76/2007.
7. Republic of Croatia 2008: The Law on performing of geodetic activity, Official Gazette of Croatia nr. 152/2008.

8. State Geodetic Administration 2007: Bylaw on parcelation and other geodetic elaborates, Official Gazette of Croatia nr. 86/2007.
9. State Geodetic Administration 2007: Bylaw on content, scales of cartographic presentations, obligatory spatial indicators and standard of cadastral maps elaborate, Official Gazette of Croatia nr. 106/1998.

BIOGRAPHICAL NOTES

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Education:
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11/1983 - 12/1993 Municipalities Krapina, Cadastre Office, advisor
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05/2000 - State Geodetic Administration of Republic of Croatia, Krapina regional Cadastre office, Head of Regional Cadastre Office

Memberships:

Since 1983 Croatian Geodetic Association, member
Since 1999 Croatian Chamber of Chartered Engineers in Geodesy , member

Conferences & statement (in past 2 y):

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1979-1986 Dipl. Ing. University of Zagreb, Faculty of geodesy
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Employers:

12/1987 - 07/1997	University of Zagreb, Faculty of Geodesy – teaching assistant
07/1997 –	University of Zagreb, Faculty of Geodesy – professor
08/1999 - 07/2000	State Geodetic Administration of Republic of Croatia, Deputy Director General
07/2000 -	State Geodetic Administration of Republic of Croatia, Director General

Memberships:

Since 1987	Croatian Geodetic Association, member
Since 2005	Geodetic Association of Herceg-Bosna, honorary member
Since 2009	Croatian Cartographica Association, honorary member
2002-2009	Eurogeographics Management Board, member and president 2004-2007
Since 2005	Cambridge Conference Advisory Board, member

Conferences & statement (in past 2 y):

Vienna, Austria	ICA Symposium on Cartography for Central and Eastern Europe, 16.-17.2.2009. (coauthor, theme: New Topographic Map of Croatia: A Tool for Education and Networking)
Washington, USA	FIG & WB Conference on Land Governance in support of the MDGS: Responding to new challenges, 9.-10.03.2009. - participant
Eilat, Israel	FIG Working week 2009, 3.-8.05.2009. – (co author, theme: Croatian SDI: a Tool for Accelerated Development of the Geo-Conscious Society)
Ohrid, Macedonia	2nd Regional Conference on Cadastre and Land Administration, 25.-27.5.2009. – participant & panelist
Zagreb, Croatia	1 st CROPOS Conference, 8.-9.6.2009. (author, theme: Efficient usage of technology and knowledge development – precondition for modern geodesy)
Rotterdam, The Netherlands	GSDI 11, 15.–19.06.2009. – (author, theme: Process of Transition and SDI: Interaction, effects and the role of the NMCA)
Southampton, UK	Cambridge Conference – The exchange 2009, 12.-15.07.2009. (author, theme: Challenges of economic turbulences and how mapping can help to solve it - Transitional world)
Varaždin, Croatia	1 st Croatian NIPP & Inspire Day and 5 th Conference “Cartography and Geoinformation 16.-17. 11. 2009. - participant
Zagreb, Croatia	4 th Croatian Congress on Cadastre, 15.-17. 02. February 2010 (author, theme: Present status of State Geodetic Administration)
Sydney, Australia	FIG Congress 2010, Facing the Challenges Building the Capacity 11-16.4.2010 (coauthor, themes: South-East regional SDI cooperation – SEE Inspiration; The Role of National Mapping and Cadastre Agencies in Establishment of NSDI: Croatian Example: The implementation of new official geodetic datum and map projections in the Republic of Croatia; Official Spatial Data as the Basis for Management in Agriculture)
Bečići, Montenegro	3 rd Regional Conference on Cadastre 9 – 11. 6. 2010 – (author, theme: Regional projects in Land Administration)
Krakow, Poland	4 th Inspire Conference 7. 2010 – (coauthor, theme: Regional Cooperation on SDI: Inspiration - SDI in Western Balkans)

Opatija, Croatia International GISData User Conference, 23 -24. 9. 2010. – (author, theme: Spatially enabled Government – where are and what are limitations in SDI implementation)

Opatija, Croatia 3rd Symposia of Croatian Licensed Surveyors, 23. -24. 10. 2010. – (author, theme: Spatial information – surveying profession – economic recovery – what to do and what are the perspectives)

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