# Contents and abstracts

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## CONTENTS AND ABSTRACTS

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Abstract – *The topic of urban transformations in built areas is today of great interest. The undertaken actions can mean corrections applied to the built environment by adapting it to the context, but can also lead to major changes and generate traumas. The article intends to study some undertaking having took place in the Banat – Crişana area in the 18th and 19th centuries and to underline the most important processes having occurred: planning and merging several villages in one single settlement and gradual and spontaneous densification of the existing ground plots systems. The undertaken research is conducted in two layers: the historical documentation and the study of maps. Some case studies are presenting the phenomenon: Deici (merging several villages), Lalaşinţ (the complete restructure of a medieval settlement), Cenad (partial restructuring of the medieval settlement and colonization) Sânpetru German and Frumuşeni (colonization and densification of new settlements).The conclusion of the study is that in all cases the actions were accurately timed. Even if the restructuring was complete, time was accorded to the population to adapt. The densifications respected the neighborhood and public dominion remains intangible. These actions can be taken as references for contemporary processes.*



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2. Assistant professor, "Politehnica" University of Timisoara.

Abstract – *Many of historic districts of cities all around the former Eastern Block are congested by vehicle traffic because of their severely outdated road infrastructure and urban strategies. Faced with the rapid economic growth of the last decade and the ever increasing number of cars flooding the streets, authorities are faced with the complicated challenge of solving this problem with long term solutions. The paper presents the case study of Timisoara's main historic district, and gives a specific solution to its traffic problems.*



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Abstract – *According to the 2002 census 80% of the country's population lives in 2% of the total residential buildings. Having been constructed in different periods the neighborhoods are influenced by the spatial and political ideologies of that time.*

*To improve the life quality in those areas it is necessary to establish strategies of addressing problems for each period individually.*

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Abstract – *Romania was in 2008, when this study began, one of the countries with the fastest growing number of cars in Europe and, with a growth of 30 % per year, the country with the biggest increase in construction activities. Both these fields are big carbon dioxide producers. On the other hand one can speak about the lack of a coherent policy, both in the field of urban development and land use and in the field of public transport in and around the cities. Around the main cities of Romania, important surfaces of land originally destined to agriculture where divided in plots and sold for the construction of new family houses. This kind of development revive the problems of the "villes dortoirs" of the '60-ties and '70-ties. The paper presents a critical overview of the situation of the new districts around the city of Timisoara, but also of the relation to the villages around the city. The economic crisis does not offer conditions for improvement.*



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Abstract – *Singular housing neighborhood in Timisoara were realized through the addition of rural settlements to a central pole "Cetate" in compliance with the 1750 urban development plan, a process that continues to the present day. Although the villages added initially had a public square, facilities and a strong community this is no longer the case for the new additions.*
*Built according to the American sprawl principles the new developments use land irrationally and waste the local administrative budgets on road and water distribution infrastructure. An efficient means to stopping this process is the creation of a densification and identity intensification building typology for neighborhoods with a density below 16 units/ha.*



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Abstract – *The most enduring problem of Timisoara's urban planning in the last two hundred years is the difficult connection between the city and the surrounding areas.*
*Several solutions have been devised during the last century, underlying the principle "Gate to the City Core".*
*Three proposals by contemporary architects address the problem using two different approaches "stadtreparatur" and "physical planning". Comparative analysis establishes the pros and cons.*



1. Lecturer Phd., "Politehnica" University of Timisoara – Romania. e-mail: and_gaiv@adslexpress.ro

Abstract – *The City Business Centre ensemble is a development in construction, with several phases, right near the historic centre of Timisoara. It is an example of densification that replaces the industrial ensemble and regenerates the 700 Square area by providing 1,4 hectares for both the public space and institutions. The strategy is that of an ensemble at the scale of its environment, an urban tissue with public spaces (galleries and atriums) offering a nice atmosphere and with buildings that try for a sustainable and modern architecture. The project is part of a more ample strategy of reorganization and modernization of the entire area – The urban landscape project for Timisoara 700 – The Gate toward the Centre.*



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Abstract – *Sustainability of the urban planning, by comparing the old historic city-plans and overlapping them with today satellite view of the city used In this paper the experimental studies on*

*Timisoara and the old bastioned fortress, using 3D restorations and detailed means of constructions are presented. All the theoretical work has been performed by the author having as a basis the various studies of Military Architecture Theory. In the first part of the article are described the various plans of the city before the year 1716 (habsburg siege) and the siege. The second part is dedicated to the new city, the ideal planning of the Austrian citadel with its three belts of city walls fortifications. In the final part the conclusion and our days studies-according with the current situation of the fortress are presented.*



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Abstract – *When the world filled with merchandise and services of all kinds – from non-stop petrol stations to super/hypermarkets and luxury boutiques - covering the hole sorts of possible consumers and more than that, the cities themselves get out in the light as products of merchandise in a fervent competition on the world market trying to sell themselves as ideal structures to accommodate interconnected activities and social interaction, in a very good quality of urban public space and a "top model" up-to-date image: "the dream city", "the ideal city". The prestige and the power of the cities reside in a magnetic attraction of these image to the passing-by human being as individual or as masses, visitor, traveler, business-man, artist, resident, celebrity or simply citizen, companies, organizations, brands. Every city is re-inventing a new body-shape shouting: "look at me, I'm the city of all your desires!"*



1. Assistant professor, "Politehnica" University of Timisoara.

Abstract – *The world is undergoing the largest wave of urban growth in history. In 2008, for the first time in history, more than half of the world's population will be living in towns and cities. By 2030 this number will swell to almost 5 billion, with urban growth concentrated in Africa and Asia. While mega-cities have captured much public attention, most of the new growth will occur in smaller towns and cities, which have fewer resources to respond to the magnitude of the change.*



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Abstract – *The present paper deals with the networks and the plane equipartitions. We focus our attention on the regular, semi-regular and irregular equipartitions and on the various modalities through which they are transforming one into another. They help us to achieve interesting mosaics; the pavement mosaic and the parietal mosaic- for the decoration of the walls and the vaulted coating surfaces, and to find some new volumetric shapes through their spatiality.*



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Abstract – *In recent years, steel framed houses have become a choice for house construction in many European countries, including Romania. The aim of this case study is a comparative life cycle analysis*

*between cold-formed steel framing house and an identical masonry one. The study is based on an existing single-family house, built in 2005 in Ploiesti, Romania. The structural skeleton is made of light-gauge C shaped profiles sheeted with OSB plates. In order to complete the environmental impact comparison the same house has been designed with masonry structural walls, according with Romanian traditional house.*



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Abstract – *This paper emphasizes some aspects that should be considered in regard to the environmental impact of the energy in buildings. First, the authors tackle with the energy trilemma that includes energy, economy growth and sustainable development showing the importance of energy in the building process. In the second part are shown the results of a life-cycle comparison for the energy impact for two similar houses built in different systems: metallic structure and masonry respectively.*



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Abstract – *The verification of existing structures especially bridges is in present one of the main problems of the structural engineers. The majority of existing railway bridges that have been built at the turn of the last century is riveted structures. Today many of these structures have already achieved a considerably age; therefore the establishment of the remaining fatigue safety of these structures is one of the most important tasks of contemporary society. Many of these bridges are still in operation after damages, several phases of repair and strengthening. The problem of these structures is the assessment of the present safety for modern traffic loads and the remaining service life. Along with the classical method of damage accumulation, a new approach based on the fracture mechanics principles is proposed. The paper presents the Romanian Methodology in this field with some case studies. These examples include technical aspects regarding the verification of 30 bridges (from this total number 22 are plate steel girder bridges, 6 are steel truss structures and 2 are conceived in the filler beams deck solution) situated on the main line from Bucharest to Brasov, the most difficult section of the Romanian Corridor IV. The majority of bridges are 60 or more years old. Some of them are maintained the others will be replaced or renewed.*



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Abstract – *Three European corridors cross Romania's territory: IV, VII and IX. Of a special interest for many European countries is the Pan-European Corridor IV. The railway line between Câmpina and Predeal, situated on Corridor IV, was built gradually beginning with 1879. This section includes 41 bridges. The rehabilitation decisions and solutions for these structures were different: in some cases replacement of the superstructure of existing bridges keeping the infrastructure which was only repaired or strengthened; in other cases repairing of existing structures by replacing some parts, whereas other structures needed only repairing. The technical solutions are diverse and, practically, different for each structure. The paper also presents different aspects of rehabilitation of the bridges.*



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Abstract – *The worldwide climate changes in the last years, as well as the growth of potential terrorist threat, increased the need of bridge structures, having an adequate bearing capacity, easy and fast to erect and low cost at the same time. The paper presents glass fiber reinforced polymers (GFRP) as a solution for emergency bridges, taking into consideration the advantages of this relatively new material and presenting two proposals for future provisory structures.*

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Abstract – *The "Iron Gates I" Hydropower Plant from the Danube was build 1968 - 1969 and is the most important one from Romania. The study evaluates the behavior of the steel structure that covers the hydroelectric power station and assures the functionality of two heavy bridge cranes with 400 t capacity each. The structure has 28.7m span, 31.80m height and 180m length. The present paper summarizes the technical evolution and safety assessment of the structure of Machines Hall according to the ageing effects and the change of loading and design codes requirements. For this purpose, advanced numerical verifications, using ABAQUS code were performed in order to check the strength, local and global stability of the main structural members (i.e. columns, runway beams, and reticular 3D truss roof). Nominal and 2mm reduction in thickness cross-section walls, due to the corrosion action have been considered. Based on the results of analysis and technical inspection of structure, an upgrade solution was proposed.*



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Abstract – *The Performance Based Evaluation and Retrofitting Design of masonry buildings is presented. General principles, the acceptance criteria associated to different performance level and intervention strategies, together with analysis and evaluation procedures are review. It is underline the multi-decisional character of choosing retrofitting techniques and is proposed a decisional matrix in order to select the most appropriate solution.*



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Abstract – *The Performance Based Evaluation and Retrofitting Design of masonry buildings by use of metallic based techniques are addressed in present paper. An innovative intervention technique for retrofitting masonry walls using metallic sheathing is proposed and evaluate in terms of strength, ductility and performance criteria. A typical XX century building has been evaluated and consolidated applying a strengthening solution based on metallic sheathing. On this purpose, a Performance Based seismic Evaluation procedure was applied using an equivalent FE model. This model, experimentally and numerically calibrated to simulate the behavior of masonry shear walls strengthened with metal sheathing is applied by ABAQUS code, in order to establish the acceptance criteria, performance levels and building performance.*



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Abstract – *Into the comparative study is presented a traditional residential house designed according to Ro-manian building code and a passive house. The amount of materials used and the initial cost of both houses will be calculated and then compared. Although the initial cost of the passive house is expected to be higher than that of the traditional one, the aim of the study is to compare the initial cost and the life-cycle cost in both cases.*



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Abstract – *In this work the authors present the comparative analysis of the Life Cycle Costs for a building with the function of Emergency Hospital in taking the decision of investment or not for the rehabilitation of the hospital. At the moment of decision the costs of rehabilitation were very high according to the inventory value of the building. By using such method it could be choused even from design stage the most advantage option from the point of view of initial costs as of the ulterior costs.*



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Abstract – *The sustainable buildings are efficient buildings from the point of view of maintenance and operation costs, and of which value increases in time, through positive impact on the natural and social environment. Sustainable buildings can be achieved by expanding construction engineering at nanometric level. The limits of construction engineering at nanometric level may be extended only by the production of new advanced materials, and by using them, especially at the glass surfaces, for more resistant envelopes at different external actions which may increase considerably the durability period of a building and may increase the energetic efficiency through a high level thermal insulation. It is important for the construction field to have as many information as possible regarding such inventions. The paper is related to the subject of COST C25 action WG2, with one the main objective application of new materials and new technology.*