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URBAN UPGRADING THROUGH THE UNIFICATION OF BUILDING BLOCKS

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Abstract. The continuing degradation of urban areas lying within the boundaries of the urban master plan forms the motive of a proposal for the ‘unification of building blocks’. The most visible problem is that of city traffic congestion, naturally resulting in air pollution. The ‘unification of building blocks’ is based on the hierarchical classification of the urban road network into two basic categories: a free network where parking is prohibited and vehicles move unencumbered; a controlled road network. The spatial assignment of category (a) roads, results in a spatial unification of existing building blocks. The object of research has been the urban tissue of the city of Serres. We proceeded to an indicative local intervention in three building blocks with a building coefficient (BC) of 3.00 and characterised by various uses. Inputs to the analysis included the street layout plan, the BCs, non-built lots, arcades, open spaces and their relationship with built spaces, the problem of city traffic and available parking spaces, land uses, and unlicensed building construction. Proposed interventions include: 1) the unification, reshaping and management of open spaces within the boundaries of building blocks; 2) connections with spaces intended for public use; 3) participatory processes for the citizens of the Municipality of Serres; 4) category (b) roads management, with the assistance of modern digital technologies. Social well-being must be expressed as a vector of many variables (e.g. technical, economical, legislative, social, environmental, organisational, managerial) with the corresponding criteria and weights. The maximisation of this social well-being constitutes a difficult task of the process of social alternatives selection.

Keywords: non-built areas of buildings, unification of building blocks, ‘megablock’, parking areas, urban upgrading.

AIMS AND BACKGROUND

The motivation of the present proposal is the high building coefficients (BC) of the urban centers assigned by old approved urban plans combined with constant

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increases in automobile traffic with obvious adverse results in terms of degradation of urban life quality. Traffic problems are of course the most prominent element, air pollution being its most common and easily perceived consequence. Several years ago, the authors of the present article attempted for the first time to address it with work conducted within the framework of the City of Serres. The only legislative possibility offered was the application of article 12 of the 1985 General Building Code (GBC) as it is applied since June 13, 2000 'Allotment of open spaces to public use'.

This attempt failed for the following reasons:

1. Non-issuance of the required Presidential Decrees on issues related to the assembly convocation of owners, the invitation of members, the related decision-taking and publication, the method of deciding on the total number of votes and their distribution to owners, the manner of application of the assembly's decisions, the assignment of a special manager, the provision of incentives which may include subventions coming from the Special Fund for the Application of Regulatory and City Planning Plans (SFARCPP) for the implementation of related projects or the undertaking by this Fund of the total or partial repayment of interest accrued on loans taken by the special manager for these projects, as well as any related detail (paragraph 3 of the Article).

2. Inability to reach the necessary consensus on the side of the citizens, which can not amount to less than 65% of total.

3. Local Government Authorities did not take the initiative for the elaboration of the required specialised studies. These authorities, circumscribing the issue, opted for the imposition of arrangements of a disarticulated and fragmentary nature, without any regard or estimate for the concomitant distortions.

The aims of the present paper are:

1. To specify the proposed procedure in order to succeed in the attempt to unify both the open spaces of building blocks¹ and the building blocks themselves into larger sized 'megablocks'.

2. To assist in the necessary steps for the proposal of the required Presidential Decrees in order to arrive at plausible results.

EXPERIMENTAL

The objective of the study was a pilot application in three building blocks, situated in the center of the city of Serres, with a building coefficient of 3.00 (the highest allowed in the city), with a variety of land uses, a commercial center, office and housing buildings, with intense traffic – and especially parking – problems. In all three of these building blocks the building coefficient has been exhausted by at least 80%.

Proposed procedure:

1. Classification of the street network in two basic levels of vehicle service, following the elaboration of a traffic circulation study by the city².

a) Street traffic network with parking prohibition. In this network traffic speed increases substantially compared to present levels, due to the fact that vehicle stops and parking is not allowed, something that results in additional lanes given to circulation. Entry to the controlled network is not allowed unless it is intended for parking and only if there are parking spaces available. This results in less intersections with other traffic bearing streets and less traffic lights required.

b) Controlled street traffic network where, through the utilisation of modern electronic technologies, the entry of vehicles is prohibited unless they have secured a parking space. In these streets characterised as 'mild circulation' streets, there is only a limited number of low speed moving vehicles. Through the classification of the street network, building block entities are created, which are delimited by the street network described in paragraph (a) and include a street network as described in paragraph (b). We call these building block entities 'megablocks'. This traffic study must be approved by the issuance of a Presidential Decree.

2. Recording and land registration of at least one 'megablock', regarded as the smallest intervention unit. Scale to be used is that used in the amendments of Street Layout Plans, 1 : 500. A land registry table is drawn, including the following for each separate Building Block: the number of the plot as recorded in the land survey diagram, the plot's surface today, the current coverage and buildings, the building coefficient realised in the plot, the number of the Building Permit, the maximum allowed building volume and the volume remaining to be built (we attach a sample of table for the unification of open spaces) (Table 1). Copies of the building permits kept at the competent city planning office will be delivered to the study elaborator and controls will be executed to determine whether there are any arbitrary (not legal) construction on the open spaces of the buildings. In cases that such constructions exist, the standing procedure for their demolition will be followed.

Table 1. A sample of table for the unification of open spaces in building block 197 in the city of Serres

| Property Ser.No | Building block | Plot surface (m ²) | Present status | | | Build. permit ser.No (ser. No/year) | Building coefficient allowed | Remain. to be built (m ²) | Surface area of | Surface area of |
|--------------------|-------------------|--------------------------------------|-------------------------------|-------------------------------------|-------------------------|---|------------------------------------|---|--|--|
| | | | coverage (m ²) | built space (m ²) | building coefficient | | | | open space incl. in unification (m ²) | open space not incl. in unification (m ²) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

3. Elaboration of the study which will include arrangements for the open spaces of building blocks, with vehicle parking spaces, with particular and specific definition of every space, or recreation spaces with children playgrounds, parks, green areas, or a combination of parking and recreation spaces, the allotment to be decided according to the uses and needs of the 'megablock'. Limits between unified open space and built space will be shown by a blue coloured line³. The design of access ways for the connection of these spaces to the existing streets (use of open spaces at the margins of the plots, existing arcades, underground automobile parking areas, expropriation procedure)⁴. Communication of the inhabitants of the 'megablock' will be conducted also via apartment building entrances that must provide access to the open spaces. Finally, paragraph 2 in the Table will be completed, showing the surface with which each building plot participates in the unified space, as well as the surface left out of this participation either due to the existence of basement light shafts and stairways or in the case such space is deemed inappropriate due to its dimensions, etc. Also, parking spaces on the streets will be positioned along street gutters or at angles, according to the breadth of the street pavement.

RESULTS AND DISCUSSION

1. Advancement of procedures by the city, in accordance with standing legal prescriptions related to the definition of spaces as parking areas, playgrounds, green areas. The final stage of this process is the approval of the study by the Region's Secretary General.

2. Implementation by the City's Technical Department with (SFARCPP) subsidy or with the undertaking by this Fund of the total of a portion of interest payments due on related city loans.

3. Management of parking spaces by the city or a Municipal Company. Parking spaces are separated into three categories:

- Spaces with an one year lease, with a permanent and exclusive use of the space.
- Free parking spaces intended for people who live or work in the 'megablock' who will be provided with a special tag for their vehicles.
- Spaces for controlled, limited duration (hourly) parking for all citizens.

4. Presidential degrees

➤ Institution of the term 'megablock', alternative uses and interventions in the internal streets of the 'megablock' for the creation of parking spaces and the set up of electronic surveillance, institution of a 30 km/h speed limit on internal 'megablock' streets, imposition of fines and penalties to limited entry of parking offenders.

- Approval of the Open Spaces Unification Table, tying up of areas

outside the blue lines, securing of ownership status as it stood before implementation, procedure for the issuance of a building permit after the designation of areas as belonging to 'megablocks'.

- Definition of (SFARCPP) Fund program financing percentages, and undertaking of the totality of interest payments for the attached loans.

AN EXAMPLE OF A 'MEGABLOCK' IN THE CITY OF SERRES

In the example presented here, three building blocks (BB) have been used for the creation of a 'megablock' in the center of the city (Fig. 1). These belong to Sector I

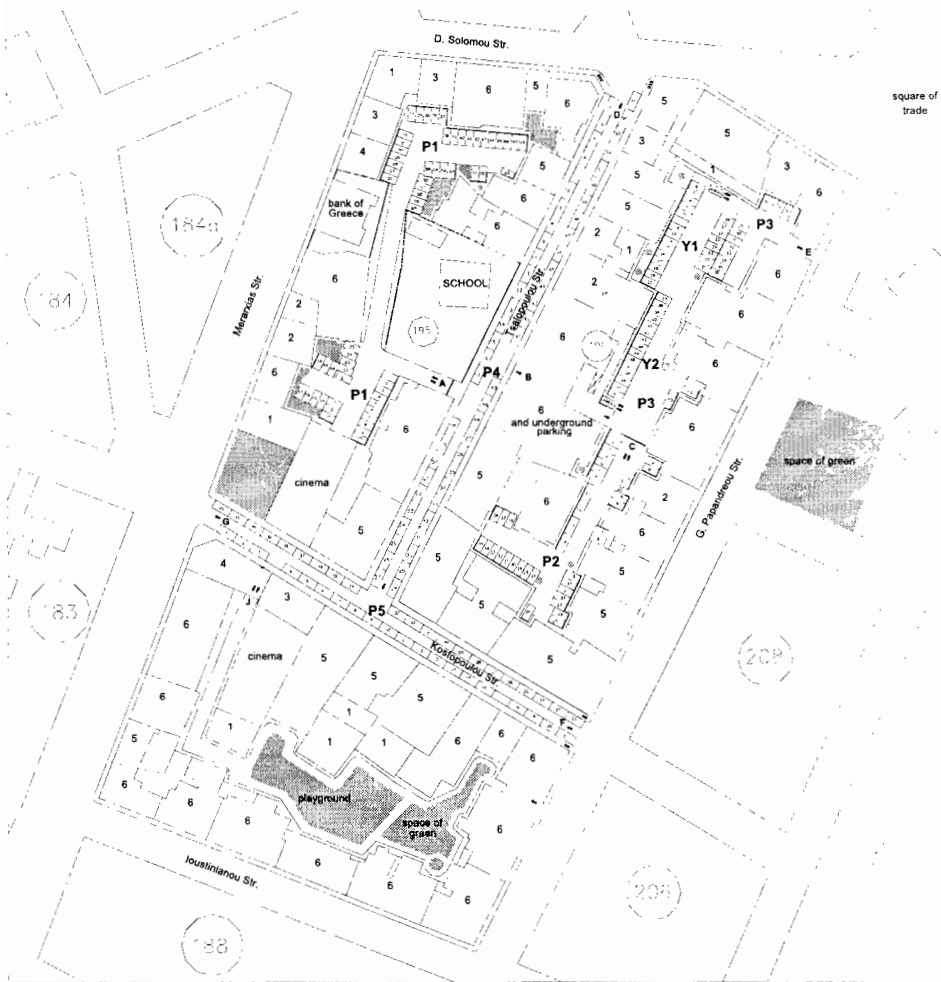


Fig. 1. An example of a megablock in the city of Serres

and have a building coefficient of 3.00. Their uses vary. BB 195 is dominated by offices, while it also includes an elementary school, the Serres branch of the Bank of Greece, a movie theater (100% coverage) and housing areas. BB 197 is dominated by housing buildings, followed by office uses. All ground floors of all three blocks are taken up by commercial stores.

Currently, there is time-controlled parking of vehicles on all the streets of the area and related automobile parking capacity reaches 163 (35 spots on Merarchias street, 18 – on G. Papandreou street, 53 – on Kostopoulou street and 57 – on Tsalopoulou street).

With the proposed modification, total available parking spaces will rise to 358, meaning an addition of 195 parking spaces. In two of the building blocks, the area accrued by the unification of open spaces is designated to become parking space due to the domination of professional and business uses there (offices, commercial stores).

Areas P1 and P2 are designated as leased parking spaces on a yearly basis. Entry to this area is done by the use of a remote control at position A with bars and B – C correspondingly with entry through the existing underground parking, while automobiles bearing the special tag always enter the internal network through position D since their parking places can not be taken by other vehicles. Capacity stands at 60 vehicles for area P1 and 37 vehicles – for area P2.

Area P3 is designated for hourly parking. Vehicles enter through position D – B at the green traffic light provided that there are unoccupied spaces, through position D. Capacity stands at 53 vehicles. Two additional underground parking areas, Y1 and Y2, are shown with dotted lines. These parking stations are automated 3-story metal automated stations with vehicle elevators. Capacity of underground stations stands at 72 vehicles for Y1 and 39 – for Y2 (Ref. 5).

Areas P4 and P5 are intended for use by permanent residents of the 'megablock', who will have access to the interior of the 'megablock' through positions D and F when there are parking places available and the traffic light is orange. Otherwise, entry will be prohibited. Capacity stands at 55 vehicles for P4 and 42 vehicles – for P5.

Traffic lights will be adjusted so that they can simultaneously indicate a green light for the entry of vehicles to park on an hourly basis and an orange light for the vehicle of permanent residents. With a red light, no vehicles should attempt to enter the interior of the 'megablocks'.

Exit from the 'megablock' is conducted through position G for areas P1, P4 and P5 and through position F for areas P2, P3, Y1 and Y2.

In the case of building block 197 where housing is the predominant use, the unified space is used for recreation purposes with the creation of a playground and green area. Access is achieved through apartment building entrances and through position J following the expropriation of a ground floor commercial

store. Entry J is required in order to allow access to the area by the city garbage collection and gardening vehicles. It can also be used, however, in emergency cases, e.g. by Fire Department vehicles. The plans provide for a playground with a surface of over 600 m² and 300 m² of greenery. Finally, a pedestrian and bicycle way is foreseen to run around these spaces.

All unified spaces will be provided with the city lighting to ensure the safe circulation of pedestrians and the security of vehicles. All constructions are to be placed at a distance of at least 1 m from the buildings, with provision for street gutters and sidewalks. Fire fighting outlets are also foreseen for installation. Also, the collection and disposal of litter can be made from the interior of building blocks.

Through an appropriate electronic array, traffic lights will be linked to all parking spaces (with the exception of parking spaces in areas P1 and P2). These parking spaces will be equipped with light sensitive sensors detecting whether the parking space is occupied by a vehicle or not. When all spaces in areas P3, Y1 and Y2 are occupied, the green light will go off on all traffic light indicators, while when all spaces in areas P4 and P5 are occupied, the orange light of the traffic indicators will go off. When there is no unoccupied parking space in the two above cases, this will be indicated by a red light at the light indicator.

CONCLUSIONS

Through the adoption of the 'megablock' concept and the related arrangements we achieve:

- An increase of available parking spaces by at least 100%.
- A reduction of air pollution in the city by (a) limiting vehicle traffic inside the 'megablocks' and (b) facilitating vehicle traffic in the now less loaded streets of the city. Both events lead to a significant reduction of vehicle exhaust emissions.
- A reduction of the levels of noise generated by vehicle traffic.
- The creation of safe recreation spaces primarily intended for small children, since there is no direct contact of such spaces with the city streets.

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