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Saving Buildings by Relocation

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Summary

The solution of saving special buildings from demolition have been applied on a relatively large scale in Romania by their remplacement.
The paper synthetizes the national experience in conceiving and technology of realizing the displacement of the buildings, consisting, mainly in:
-the decision of remplacing a construction and the preparation works;
-the establishing of motions in space which are to be made;
-the estimation of financial and technical resource consumption.
In conclusion the advantages of the saving solution of the buildings by remplacement using translation, are presented.

Keywords: building, saving, systematization, remplacement, translation, technology, equipment

1. The Decision of Remplacing a Construction

Whitin the systematization of the urban zones, throughout the years, there have been met serious difficulties in preserving some constructions,valuable by their architectural style and historical significance or even by their good condition in which they were preserved.
The solution of saving these special constructions from the demolation, by remplacement using the translation, represents a qualitative leap in the construction activity. By this procedure, in comparison with a new construction , the buildings are preserved in the conditions of a substantial economy of materials and human resources, in a reduced execution time and without evacuation during the translation period.

2. Technology of Translation

The translation technology imposes the preservation of the equilibrium conditions and respectively, of the construction displacement within admitted limits. These requirements are solvable by making a plane girder network loaded perpendicularly on their plan, called "bearing

frame". It is a new construction element , made from reinforced concrete, realized in the zone where the construction is cut from the fondation. The weight of the construction is taken over by the bearing frame which distributes it to the supports imposed by the technology, e.g. rigid supports on the presses respectively, elastic supports on bogies.
From the experience of the over 25 works of translation performed after 1982 in Romania there can be established five types of motions which a construction can execute in space:
-the lift as well as descent of the construction, which are made with hydraulic presses;
-the displacement of the construction on a horizontal plane and respectively in slope, which are realized according to the technology designed with electric cable hoists (for pulling) and / or with hydraulic appliances (for pushing);
-the rotation of the construction; it is performed by the application of a horizontal force at the end of a beam of the supporting system.
The saving by translation of a large number of constructions also led to the establishment and check of the tools,equipments, of measuring and control devices as well as of the admitted tolerances for an entirely safe execution of this technology.

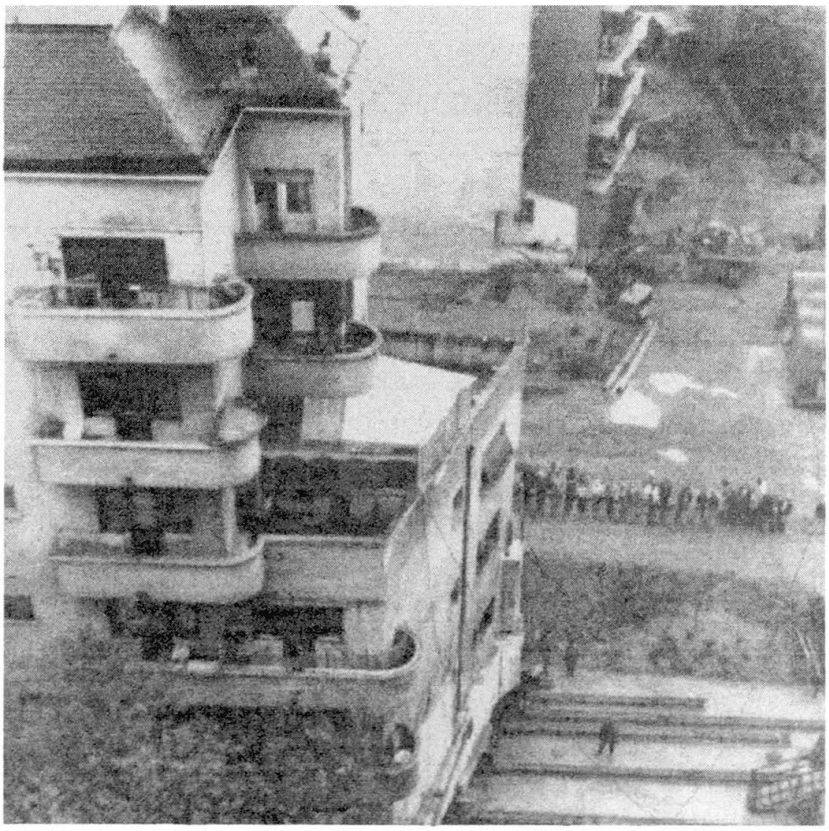

Fig.1 Translation of building from Aurel Vlaicu Street, Bucharest

The remplaced constructions were churches, dwelling and social-administrative buildings, hospitals, memorial houses etc. Fig. 1 presents the displacement of a seven story block of flats in Aurel Vlaicu Street, Bucharest , on a built surface of 2245 m^2 and a structural weight of 5100 tones. The considerably height building was 14.4 m displaced at a speed of 1.9 m/h by means of 52 bogies pulled by two electrical cable hoists.

For the constructions saved in Romania using the translation there has been established a cost indicator between 29 and 47 % from the value of a new equivalent building. The basic materials used were the cement and structural steel and they represented about 25...30 % from the quantities of these materials used at a new construction.
The execution of some translation works is also accessible in the future to other construction companies not only in our country but also abroad, in the conditions of using a specialized team and well equiped for this kind of works. The translation procedure for saving the buildings may avoid the evacuation of inhabitants or the intrerruption of their activities during the translation works and it also preserves entirely the construction in economical conditions.