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STRENGTHENING OF FOUNDATION BY BUILDING-UP WITH RIGID REINFORCING

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This article treats methods of strengthening of strip foundations by increasing the base of foundation. Structural concepts providing joint work of elements of existing foundations and concrete building-up are analyzed. It's shown that reinforcement of gripper-arm interface by rolled profiles allows more stringent and more reliable interfacing of new and old elements of foundation. Construction diagrams of installation of metal-rolling profiles in reinforced foundation are shown. Technology of strengthening of foundation by building-up with the use of rigid rebars is described.

When reconstruction of buildings and constructions takes place there is often necessity to strengthen the foundations. Mostly this problem should be solved when superstructure of additional floors, increasing the span between the supporting structures, changing of scheme of support of overlapping elements etc. Strengthening of the foundations is also made during the stabilization of ground foundation deformations of a building that is in an emergency condition.

As it is shown by building practice, works of foundations strengthening are labor-consuming and quite expensive. Cost of foundations strengthening works can compose more than half of cost of all works during buildings reconstruction. In many instances, reconstruction, connected to strengthening of the foundation, becomes economically impractical.

Working-out of new structural concepts of the foundation strengthening that satisfy requirements of manufacturability, security, minimal consumption of materials and labor intensity will allow to reduce considerably the cost of such works and to make projects of reconstruction of buildings more attractive for investors.

The most widespread method of strengthening of strip foundations is increasing the base of foundation by building-up the reinforced concrete mantle both from one side, and from the other side of reinforced foundation. At present, there are some methods of broadening the strip foundation base by building-up protrusions: with the use of anchors (fig.1,a); with the installation of reinforced construction under the base of existing foundation (fig. 1, *b*); with the use of perforating anchors (fig. 1, *c*); with a simultaneous injection of foundation (fig. 1, *d*).

Joint work of reinforcement elements with existing foundation in abovementioned methods is provided by:

- arrangement of concrete dowels, projections in recesses of existing foundation or supporting structures of building;
- arrangement of anchors embedded into body of existing foundation;
- arrangement of perforating armature;
- welding of armature of elements of broadening with bared fittings of reinforced foundation;
- with the use of special support elements: struts, unloading metal or reinforced concrete beams.

In this work the method of strengthening of strip foundations by building-up with use of rigid reinforcement. As rigid armature can be used rolled profiles in the form of channel sections, T-beams or I-beams, installed into drilled by diamond crowns holes. Scheme of strengthening is shown on fig. 2

In proposed method, metal-rolling profile will allow creation of rigid connection between existing foundation and construction of reinforcement that cannot be provided fully with the use of anchors. Besides, there is no need in installation of longitudinal dowels or metal beams over the entire length of reinforced foundation, thus, the step of installation of rigid reinforcing element is determined by the condition of providing the strength of concrete extrusion of the existing foundation.

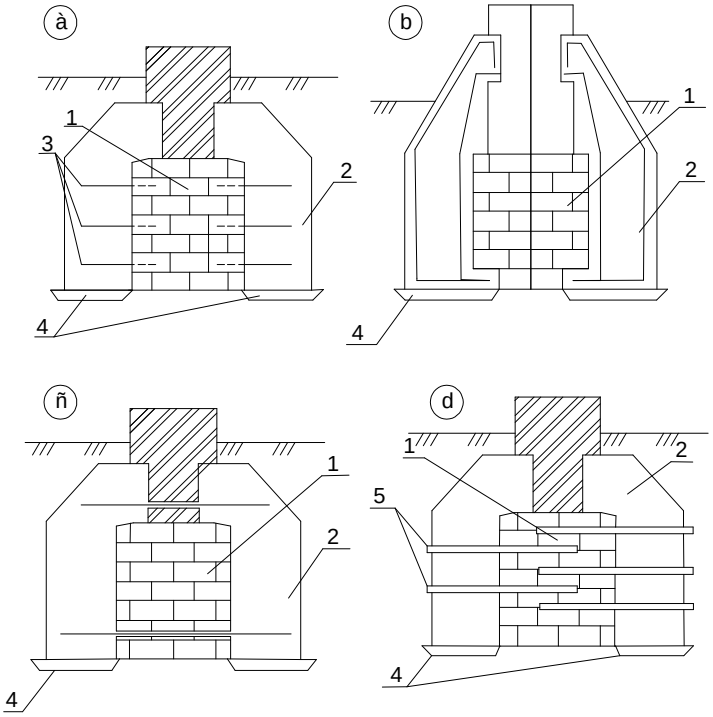

Fig. 1. Broadening the base of strip foundation by building-up the protrusions:
a – with the use of anchors; *b* – with the installation of reinforced construction under the base of existing foundation; *c* – with the use of perforating anchors; *d* – with a simultaneous injection of foundation;
1 – existing foundation; 2 – building-up the protrusions; 3 – anchors; 4 – preparation; 5 – injection tubes

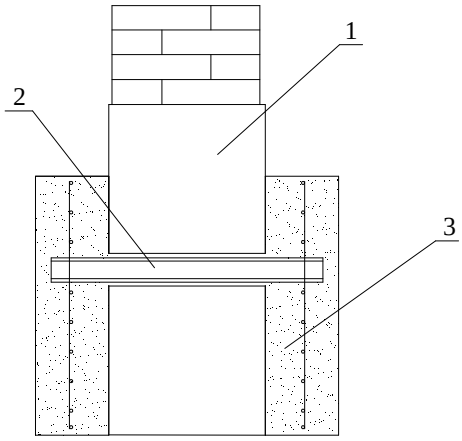

Fig. 2. Structural scheme of installation of metal-rolling profiles in reinforced foundation:
1 – reinforced foundation; 2 – transverse metal beams installed into holes punched in a wall of foundation;
3 – tides of concrete; 4 – concrete preparation

The method in question is less labour-consuming and safer in comparison with currently used methods of strengthening of strip foundations because there is no need to weaken the foundation during the installation of reinforced construction under the base of existing foundation.

Structural scheme of installation of metal-rolling profiles into reinforced foundation should correspond to equal load transfer from overlying constructions to the foundation. It can be reached upon the condition of installation of closely-spaced rigid armature but it's impossible to affect the integrity of reinforced foundation because it can cause the loss of supporting capacity of the foundation as well as deformation of overlying supporting structures.

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REVALORIZATION OF INDUSTRY TERRITORIES OF SUBURB RURAL SETTLEMENTS AS A COURSE OF IMPROVEMENT OF ENVIRONMENT OF HUMAN VITAL FUNCTION

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Modern condition of productive territories of suburb rural settlements was observed, stages were defined, preconditions and courses of renovation, trick of transformation of productive territory and re-profiling it into living was mentioned on a real example.

The influence of economic crisis is sharply marked on productive territories both metropolises and suburban territories which are zones of common interests of territorial communities of city and village. The best part of subjects of business drop in production, consequently productive territories went into liquidation completely or partly. It concerns the most part of rural settlements – the emplacements of former departments of farm business, so-called "brigade villages". These processes gain the intricate character both negative and positive. It is known from the analysis of project documentation and in-place tests of development of suburb rural settlements (SRS) that buffer breaks between residential areas and productive objects not always conform to the normative, but often absent at all. Lockup of such manufacture certainly is a positive occurrence for improvement of living environment not only rural population but urban population too. The problem of using white lands and their rational functional organization appears.

Studies by Biryuk S., Gabrel M., Donenko V., Zinchenko A., Korol Y., Mazur T., Silogayeva V., Semenova V., Shtompel N., Scherbyna L., Shtoda O. [1 – 5, 7] and other authors are dedicated to the problems of renovation of productive territories. The most part of these studies purpose researching the problems of industrial zones of cities, searching the ways of revalorization of industrial giants' territories of important industrial centers, cities and megapolises etc. Some approaches to the problems of reconstruction of productive territories principally farming of central village [6, 7] and reorganization of social infrastructure of village were outlined in the last researching conducted on the rural territories (Stepanyuk A., Ogonyok V.).

The purpose of the article is the analysis of modern state of productive territories of suburb rural settlements, finding of territories that can be subject of revalorization, foundation of renovation's courses.

The transition to postindustrial period which characterizes with stopping of extensive development of the factory-farm complex, polyfunctionalization of town-building space, alteration of socioeconomic orienting points of society, transition to the type of economy with predominance of service and high technology industry, with searching of directions of rising of efficiency using of existent industrial projects or redevelopment of those plants which went into liquidation [1] are taking place on the modern development stage. Functional transformation of productive territories comes through some stages in its development.

Owners of existent productive objects which greatly cut or completely went out of their business are giving in a lease to other subjects of entrepreneurial activity isolated playgrounds, buildings, building elements inside of which different of outset activity is implementing, on the starting. Owners of such objects have an intention to vest interest to use realty and siting with the aim of optimization of activity with the development of production. Partial transformation happens on the level of inner transition of building and facilities as the result of redemption of leased objects. Existence of few objects of production results to individualization all of them into detached object and accordingly disintegration of continuous territory on isolated areas. The functional transformation of productive object (fig. 1) happens as the result of such processes.

Renovation of these objects occur expedient in the case if productive objects were disposed with big normative sanitary break (from 300 metres: hog farms, fowl-farm, calf house, market-milk diary etc.), and direct in the residential area of settlement. The word "renovation" is understandable in the meaning of updating, adaptive using of building, facilities, and complexes under change of functional destination. Wasteland and nonfunctional productive territories help to save farming land at that and the process of transformation get features of self-organization, i.e. outlet from the orderless system (chaos) to the order.