

# DETERMINATION OF THE COST OF CAPITAL CONSTRUCTION OBJECTS WITH THE USE OF INDICATORS OF THE ENLARGED STANDARDIZED PRICES FOR CONSTRUCTION

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**Abstract:** Indicators of consolidated construction price standards (hereinafter referred to as the CPS) they are intended for planning (justifying) investments (capital investments) in capital construction projects. In order to reliably determine the planned cost of road construction, it is necessary to take into account additional factors of construction implementation, including correction factors, deflator indices and VAT. Thus, the system of planning (justification) of investments necessary for reliable determination of the planned cost of highways is fully formed.

**Keywords:** Indicators of consolidated construction price standards (CPS); investment planning; determination of the planned cost of construction of a highway; development of additional indicators of consolidated CPS.

Received: 25/04/2020

Accepted: 15/07/2020

Published online: 31/05/2021

## 1. INTRODUCTION

In accordance with paragraph 33.1 of article 1 of the Town Planning Code of the Russian Federation (hereinafter referred to as the Code) the aggregate standard price of construction (hereinafter referred to as the SPC) is an indicator of the need in funds necessary for creation of a unit capacity of construction products, which is designed for planning (substantiating) investments (capital investments) in capital construction objects.

The purpose, scope and cases of application of SPC may be established by the legislation of the Russian Federation, regulatory legal acts of the Government of the Russian Federation, regulatory acts of the federal executive body which is responsible for elaboration and implementation of the state policy and regulatory legal regulation in the sphere of standardization and pricing in design and construction.

According to part 11 of Article 8.3 of the Code the SPC is approved by the federal body of executive power which carries out functions in the formulation and implementation of state policy and regulatory and legal regulation in the sphere of construction, architecture, urban development, in accordance with the procedure established by it.

Application of SPC indicators is recommended to carry out taking into account the functional

purpose of the facility planned for construction, as well as its structural and power characteristics in accordance with the documents entered in the federal register of estimated standards, including the Methodology for the development and application of integrated construction price standards, as well as the procedure for their approval, approved by the order of the Russian Ministry of Construction dated May 29, 2019 № 314/pr (registered with the Russian Ministry of Justice on December 30, 2019 № 57064) (hereinafter - Methodology).

## **2. MAIN CONTENTS**

### **2.1. IMPROVEMENT OF THE SYSTEM OF PRICING AND ESTIMATED REGULATION IN RUSSIA**

As part of improving the pricing system and the estimated rationing in the construction industry of the Russian Federation Ministry of Construction of Russia has organized the development of 6,155 indicators SPC (including the updating - 5,505 indicators SPC), as well as the development of 8,406 factors that take into account the regional and climatic conditions of construction, seismicity, zoning, etc.

The SPC indicators are grouped into 21 collections of SPC: "Residential buildings", "Administrative buildings", "Educational facilities", "Healthcare facilities", "Sports buildings and facilities", "Cultural facilities", "Railways", "Highways", "Bridges and overpasses", "Metro facilities", "External communication networks", "External electrical networks", "Outdoor Heating Networks", "Outdoor Water Supply and Sewerage Networks", "Outdoor Gas Supply Networks", "Small Architectural Forms", "Landscaping", "Civil Aviation Facilities", "Buildings and Structures of Urban Infrastructure", "Marine and River Transport Facilities", "Energy Facilities".

The updated collections of SPC were approved by Orders of the Ministry of Construction of Russia from December 19, 2019 № 825/pr, from December 25, 2019 № 868/pr, from December 30

2019 № 903/pr - 921/pr and entered into force on January 1, 2020.

Currently, SPC indicators are updated as of January 1, 2021 and are being prepared for approval.

Clause 97 of the Methodology states that the SPC figures shall be applied with the use of adjustment coefficients specified in the technical parts of the relevant SPC collections.

The planned cost of road construction is determined on the basis of the SPC indicators given in Compendium No. 8. Highways, approved by the order of the Ministry of Construction of Russia dated December 30, 2019 № 919/pr (NTS 81-02-08-2020) (hereinafter - the Compendium), Section 2 of SPC Compendium, as well as the provisions of the Methodology.

The indicators of the Compendium are developed on the basis of resource models based on the design documentation for the representative objects, which has a positive expert opinion and is developed in accordance with the construction and fire safety norms, sanitary and epidemiological rules and other mandatory requirements established by the Russian Federation legislation in force at the time of the SPC development.

All technical solutions contained in the design documents used for the formation of the SPC indicator comply with the requirements of the regulatory design documents effective at the time

of development.

Clause 39 of the technical part of the Compendium establishes that the application of SPC indicators to determine the amount of funds required for road construction in the territories of the Russian Federation subjects is carried out using correction factors given in the technical part, according to the formula:

$$C = [(SPCi * M * K_{per.} * K_{per/zon.} * K_{reg.}) + Z_r] * Y_{pres.} + VAT, \text{ where:}$$

C - the planned cost of road construction;

SPCi - the chosen index of the SPC with functional object purpose and its power characteristics, for the basic region in level of prices as of 01.01.2020, defined if necessary taking into account the correcting coefficients given in the technical part of the Compendium;

M - the power of the object of capital construction planned for construction;

K<sub>per.</sub> - the coefficient of transfer from the prices of the base region to the price level of the Russian Federation subjects (parts of the Russian Federation subjects territory) taking into account the costs of capital construction facility construction located in the regional centers of the Russian Federation subjects (hereinafter - price zone 1), information about the value of which is given in Table 9 of the technical part of the Compendium;

K<sub>per/zone</sub> - the coefficient calculated when performing calculations with the use of SPC values for the territories of the Russian Federation Subjects, which are stipulated by the regulatory legal acts of the supreme state authority of the Russian Federation Subject as independent price zones for the purpose of determination of the current cost of construction resources, for the type of the capital construction facility as a ratio of the value of the index of changes in the estimated cost of construction and installation works calculated for such price zone and published by the Ministry of Construction of Russia to the value of the index of changes in the estimated cost of construction and installation works calculated for the 1st price zone of the corresponding subject of the Russian Federation and published by the Ministry of Construction of Russia;

K<sub>reg.</sub> - the coefficient taking into account the regional and climatic conditions of construction in the subject of the Russian Federation (part of the territory of the subject of the Russian Federation) in relation to the base region, the information about the value of which is given in Tables 10 and 11 of the technical part of the Compendium;

Z<sub>r</sub> - additional costs, not included in the figures of the SPC, determined by separate calculations;

Y<sub>pr</sub> is the deflator index determined for the branch "Investments in fixed capital (capital investments)" published by the Ministry of Economic Development of the Russian Federation for the forecast of the social and economic development of the Russian Federation;

VAT - value added tax.

## **2.2. RELIABLE DETERMINATION OF THE COST OF ROAD CONSTRUCTION REQUIRES CONSIDERATION OF ADDITIONAL FACTORS**

The estimated cost of road construction does not take into account additional costs that may occur during the construction of the facility (for example, work on the preparation of the construction area, construction of external engineering networks, landscaping, etc.), the share of

which may be up to 25% of the cost of construction of the facility.

These costs are included in the calculation of the cost of road construction with the use of SPC additionally. When calculating, SPC indicators of the corresponding collections (landscaping, external networks, etc.) are used.

In the absence of the required SPC indicators, calculations of additional expenses are performed with the use of information on the estimated cost of facilities similar in purpose, design capacity, natural and other conditions of the territory where construction is planned to be carried out, confirmed by the bodies and organizations authorized to carry out state expert reviews, or with the use of estimated standards, information on which is entered in the federal register of estimated standards.

Thus, only consideration of all the additional factors of construction and the joint application of the above coefficients, deflator indices and VAT will allow to determine reliably the planned cost of road construction, taking into account the regional specifics of construction in a particular territory.

For instance, clause 9 of the technical part of the Compendium sets forth that in case structural, technological, volumetric and planning solutions of the capital construction facility for which the cash flow required for creation of the unit capacity, construction products intended for planning (justification) of investments (capital investments) and other cases of application of SPC values stipulated by the Russian law differ from the solutions envisaged for the respective indicators in Section 2 of the Compendium and such differences cannot be taken into account by applying correction factors included in the Compendium, it is allowed to use data on the cost of objects similar in purpose, design capacity, natural and other conditions of the territory where construction is planned to be carried out, or the calculation method using the estimated standards, information on which are included in the federal register of estimated standards.

Pursuant to clause 8 of the Methodology, where there are no relevant SPC indicators in the Compilations of SPC which are necessary for determination of the planned cost of road construction, the SPC indicators can be developed by institutions subordinated to the federal executive authorities, by individuals or legal entities.

According to clause 106 of the Methodology, in order to expand the range of SPC indicators federal executive bodies of the Russian Federation, executive bodies of the Russian Federation, state corporations, legal entities established by the Russian Federation, or legal entities where the Russian Federation has more than 50 percent of the authorized (share) capital, prepare and submit the following proposals to the Russian Construction Ministry with the following documents attached:

- (a) An explanatory note containing a rationale for expanding the list of SPC indicators;
- 6) supporting documents.

These documents shall be submitted on paper as well as on electronic media in an open format that allows for automated verification of documents, their preservation on technical means and allows for search and copying of any fragment of text by means of an appropriate review program (in \*.doc, \*.docx, \*.xls, \*.xlsx, \*.rtf, \*.pdf formats). rtf, \*.pdf - for documents with text content, \*.dwg, \*.dwx, \*.jpeg, \*.pdf - for documents with graphical content, in \*.xml formats

posted on the official website of the Russian Ministry of Construction, \*.arps, \*.arp - for the estimate documentation) with the inventories of applications formed for each type of information medium with simultaneous confirmation of the compliance of the electronic version of documents with the paper one.

When calculating SPC indicators for determining the planned cost of road construction, the estimated documentation developed as part of the project documentation, which has the maximum overlap of the characteristics of the facility for the construction of which the project documentation was developed, and the characteristics of the facility for which the SPC indicator is developed, in terms of functional purpose and (or) in terms of design and volume planning solutions (representative facility), in respect of which there is a positive correlation between the estimated cost of the project documentation and the project documentation is used.

Besides, point 26 of the Methodology states that during development of SPC indicators it is reasonable to use cost effective design documentation that is reused and recognized as such in accordance with the Russian Federation Government decree №1159 of November 12, 2016 "On the criteria of economic effectiveness of design documentation".

### **III. CONCLUSIONS**

Systematized information on cost-effective reuse design documentation is given in the register of cost-effective design documentation posted on the official website of the Ministry of Construction of Russia, which contains a significant amount of design documentation on the objects demanded in the subjects of the Russian Federation.

In view of the above, the system of planning (justification) of investments required to reliably determine the planned cost of construction, including roads, has now been formed.

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