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Design and construction of intra-block automobile communication lines that provide traffic safety

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Abstract

The article presents: main requirements to designing and construction of intra-block automobile communication lines corresponding to the main criterion of providing convenient living environment and safety, including safety of road traffic; classification of expenses envisaged in the budget of investment and construction project in advance and the sources of financing for these purposes; criteria, which these communication lines shall comply with; ways of solving a problem of optimizing a load on the expenses of investment and construction project taking into account fulfilling all mentioned criteria, including provision of road traffic safety.

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Key words: intra-block automobile communication lines; traffic safety; investment and construction project; expenses for designing and construction; sources of financing; criteria.

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1. Introduction

The designing and construction of the intra-block automobile communication lines providing safety of road traffic is an important element of the investment projects for construction and operation of a multi-functional residential compound. It is commonly known that the intra-block transportation network shall be envisaged for three main types of transportation vehicles: cars, trucks for servicing the residential neighbourhood and community, automobile transport of special purpose and household services, sometimes fixed-route taxi-vans. The main condition in the course of designing transportation network of the residential neighbourhood is the adherence to safety for life and activity of the community, keeping supposedly the highest levels of comfort (protection against noise, dust, gas). Therefore, it is required to take into account the probable traffic intensity, which depends on the quantity of inhabitants of the residential neighbourhood being serviced, capacity of facilities of cultural and social services, level of automobilization and many other factors [Maloyan (2004), Safronov (2007)]. However, the given authors have not given consideration to many factors as well as the influence thereof on the economical indices of the investment and construction projects from the system positions. The purpose of this article is as follows: systematization of these factors; determination of system approach and projects management based on the analysis of legislative and regulatory enactments as well as theoretical provisions, requirements to designing and construction of the intra-block automobile communication lines ensuring the road-traffic safety, the influence thereof on the economical indices of the investment and construction project of the intra-block housing development.

2. Main text

Normally, the intra-block driveways are designed in order to preclude the transit travel and high traffic speed. In that context they use the loop driveways and other technological techniques. The designing, construction and upkeep of the intra-block transportation communication lines are specified by many legislative enactments of federal, regional, local and departmental character, when the main of them are as follows [Federal Agency on Technical Regulating and Metrology (1993), Federation Council (2001), Government of Saint Petersburg (2014), Ministry of Regional Development (2011), Federation Council (2007), Federation Council (1995), Federation Council (2008), Federation Council (2003)]. In this case it should be noted that by no means all the listed documents interpret the basic notions related to the intra-block automobile communication lines in the same manner due to which even legal controversies occur not infrequently between the owners of these communication lines and the state authorities responsible for traffic safety (State Traffic Safety Inspectorate) as well as individuals, participants of road-traffic events.

According to the requirements fire access roads of certain width shall be provided to every building inside the block from one side in case of low number of storeys in a building, and at both sides in case of high number of storeys in a building. Besides, the driveways shall be planned so that to provide the mechanized mop-up operations by machines and mechanisms, which are available in the services presently. Naturally, the enclosures of playgrounds, schools, leisure sites, etc as well as passing places shall be provided.

The intra-block automobile communication lines in a multi-functional residential compound make the indispensable part of the surrounding infrastructure, since it is conditional upon the required quality to the present-day concept of the convenient residential environment. However, in many Russian cities, including Saint-Petersburg, they apparently do not correspond to new conditions, new level of automobilization, requirements of providing safety of people any more. At that, the safety will be broadly defined including road safety as one of the elements.

The problem of providing parking and stationing of motor-vehicle transport inside the block [Ignatiev (2012)] has acquired specific relevancy in the recent years. It has been considered earlier that it is necessary to have 25 car-places for 1,000 inhabitants for temporary keeping of motor vehicles and motorcycles of individual owners. But this requirement is adequate to the level of automobilization of 80s of the past century, when 44.5 motor vehicles fall to 1,000 inhabitants all in all in Russia. This number increased up to 317 motor-vehicles by 2014 and it is continuously increasing at a fast pace. Therefore, the courtyards and even the sidewalks are overcrowded with motor vehicles in big cities. This is the reason why the passage for fire and cleaning vehicles is frequently encumbered or even

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