

LOGISTICS ISSUES IN THE PROCESS OF TRANSPORTATION OF CONSTRUCTION CARGO

Ne'matov Husniddin Alijon oglu

Student of Namangan State Technical University

husniddin2206@gmail.com

tel. nomer 95-001-71-06

ORCID <https://orcid.org/0009-0003-2330-2327>

Annotation: Transportation of construction cargo is one of the important stages of the construction process. This topic covers the methods of delivering construction materials (cement, brick, sand, gravel, reinforced concrete structures and other cargo) to the construction site, vehicles and the effective organization of the transportation process. It also discusses compliance with safety rules during cargo transportation, proper planning of logistics processes and methods for reducing transportation costs. The main goal of the topic is to analyze ways to effectively, quickly and safely carry out the process of transporting construction cargo.

Keywords: Cement, wood materials, palletizing, semi-liquid cargo, bulk cargo, trailers and platforms.

INTRODUCTION The construction industry is one of the important sectors of the economy of any country. Various construction materials and equipment are widely used in the construction of modern buildings, structures, roads and other infrastructure facilities. The timely and safe delivery of these materials and equipment to the construction site is one of the important stages of the construction process. The process of transporting construction loads requires taking into account not only logistical issues, but also the characteristics, weight, volume and transportation conditions of the loads. Construction materials, such as cement, bricks, reinforced concrete structures, sand, gravel and other loads, are transported using various means of transport. This involves road transport,

railway and, in some cases, water. Proper transportation of construction loads increases the efficiency of the construction process, reduces loss or damage to materials and helps to complete construction work within the specified time. Therefore, the proper organization of the process of transporting construction loads and the use of modern transport technologies are of great importance. This work examines the main types of transportation of construction cargo, means of transport, loading and unloading processes, and issues of their effective organization. Covered materials such as cement, gypsum, or building mixtures are often transported packed on pallets. To prevent bags from scattering under the influence of vibration, they are secured with straps. Since such materials are very sensitive to moisture, it is necessary to use closed transport or wrap the cargo with a special film. Building wall materials such as bricks, blocks, aerated concrete are usually transported on pallets.

Review of literature on the topic. Today, "transport and logistics is the most profitable issue for resupply. Because when going to sea, more exports are needed for cargo transportation." - said the President of the Republic of Uzbekistan Sh.M. Mirziyoyev. The republic's transport consists of high-level production in improving and producing export products, modern highways, taking into account the geographical location of the republic.

Improving road transport vehicles in accordance with previous construction standards, improving modern highways, improving traffic comfort and safety. Improving construction work on the construction and repair of highways, which provided a threefold increase in the volume of road construction and repair work to be carried out at the next stage.

The main part. Before transportation, their rows are laid out flat, and it is strictly forbidden to stack them too high, as they may collapse during road vibrations. In addition, reinforcing brick loads with poles on the sides increases transportation safety. Heavy iron products are fixed with reinforcement, pipes and angle irons with chains or strong cables. Due to the length of this type of cargo, there is a risk that it will move not only forward,

but also backward. Therefore, special barriers are installed that limit the movement of the cargo.

Wooden materials, namely boards, beams and plywood, can protrude beyond the machine along their length. In such cases, the protruding part is indicated by a red flag or special reflective signs. This provides visibility to other drivers at night or in cloudy weather. Fragile or breakable materials, such as glass, glass products, ceramics and tiles, are transported with great care. They are placed in a special metal or wooden frame in a vertical position, with a shock-absorbing material placed between each glass. Such cargo is the category most susceptible to damage during transportation, so special monitoring, gentle turning, and low speed are recommended. One of the important stages of transporting construction materials is the loading and unloading process. Special equipment such as a crane, manipulator or forklift is used to load heavy blocks, reinforcement bundles or equipment. While the equipment is operating, people should not stand under the load, and no one should approach it while the load is suspended. This process can cause accidents ranging from minor injuries to serious ones. Compliance with safety rules is the top priority during transportation. The load should be placed flat on the transport, and the center of gravity of the vehicle should not be disturbed. Exceeding the maximum permissible load increases the braking distance and reduces the stability of the vehicle. After driving 20–30 kilometers during the movement, the tightness of the load is re-checked, especially on uneven roads. The qualifications of the carrier are also of great importance. The driver must know the characteristics of the load, not brake sharply, choose low speed when turning, and take into account weather conditions. Driving with a load on rural roads, in muddy or icy areas requires special precautions. In addition, it is mandatory to comply with the legal and technical standards established for the transportation of construction materials. If the load exceeds the standard height or length of the vehicle, warning signs, reflective lights and special signaling devices are used. It is also mandatory to ensure that sand, gravel or other materials do not spill onto the road, as such spilled materials can cause accidents for other drivers.

The transportation of structures and various materials used in construction processes requires specific technical and organizational requirements. Because most of the products delivered for construction are large, heavy, fragile or require special precautions. Therefore, the process of transporting structures is not only a process of loading and transporting the load to the destination, but also a process closely related to the safety of the load, the technical durability of the vehicle and the responsible management of the driver. Structures widely used in construction include metal frames, reinforcement bars, prefabricated reinforced concrete slabs, columns, beams, trusses, wooden frames, trays, pipes, as well as large elements such as window frames, door blocks. Since each structure has its own shape, weight and degree of fragility, the requirements for their transportation are also determined differently. For example, reinforced concrete slabs, beams and columns are transported only in special flatbed trucks or semi-trailers due to their weight.

Analysis and Results. When transporting such loads, it is necessary to install supports so that their center of gravity is evenly distributed and they do not tilt to the sides. Reinforced concrete elements transported over long distances are protected with rubber or wooden pads, since road vibrations can damage the corners of the concrete. Metal structures, especially long reinforcement bars, metal pipes and truss elements, are distinguished by their length. The main danger when transporting them is shifting and the weight shifting to one side. Therefore, metal structures are tightened at least at several points with chains, cables or special strong belts. If the load protrudes beyond the length of the vehicle, the protruding part must be marked with a red flag or bright reflective signs. Although wooden structures such as boards, beams, and trays are relatively light when transported, there is a high probability of shifting to one side under the influence of vibrations. For this reason, wooden materials are usually placed flat on top of each other and secured with several layers of straps from above. Since the risk of falling with such loads is high, the driver must be extremely careful when turning and braking. Fragile materials such as glass, door blocks, plastic profiles are most susceptible to damage during transportation. Since the construction industry consists of large-scale, multi-stage processes, the timely delivery of materials and structures used in it, without compromising

their quality, is of great importance. In modern construction, cargo transportation is not limited to ordinary vehicles, but advanced technologies that accelerate loading and unloading, protect materials from damage and increase the safety of the work process - containerization, packaging, palletizing, modular assembly - are widely used. These methods make the transportation process much more efficient, increase labor productivity, reduce costs and ensure the uninterrupted delivery of materials to the construction site. Containerization is one of the most convenient, safe and economically beneficial systems for transporting construction cargo. Standard metal containers protect cargo from external damage, vibration, moisture or dust during transportation. For example, dry mixes, ready-made bricks for construction, ceramic tiles or sanitary equipment are placed in the container in the same order, and there is almost no chance of their breakage or loss during transportation. The biggest advantage of containerization is that there is no need to reload the cargo between transports, meaning that a container can be moved in its entirety between rail, road, or sea transport. This significantly reduces the cost of labor, time and transportation costs. Packaging of construction cargo is also one of the modern methods widely used in practice. In the packaging method, materials of the same type, such as lumber, reinforcement, metal profiles, bricks or gas blocks, are collected in a single package in the form of a bundle or bundle. Each package is fastened with a special plastic or steel strap. This method simplifies the process of loading and unloading the load, since instead of working with individual pieces, one large package is used. In addition, packaging reduces the likelihood of cargo shifting during transportation, distributes the weight evenly and allows for efficient use of the vehicle.

Cement is one of the main construction materials, which is a powdery substance that absorbs moisture very quickly. The method of transportation is extremely important for maintaining the quality of cement. Coated cement (50 kg or 25 kg bags) is loaded onto cement pallets in this method and wrapped with stretch film. Closed vehicles are selected for transportation. The layers are placed at equal heights to prevent the bags from crushing each other. Special bags of cement in big-bag bags weighing 500–1000 kg are lifted by forklift. This method is widely used in mass construction.

Conclusion and Recommendations. Concrete is one of the most important construction materials, and maintaining its quality is a very complex process. The concrete mixture hardens over time during transportation, so special equipment is required. Two main means are used to transport concrete: A concrete mixer truck (mixer machine) - this machine constantly mixes the concrete mixture. The rotation of the drum ensures that the mixture does not harden. The quality preservation time of concrete usually does not exceed 90 minutes, and since water loss is accelerated in hot weather, the mixture is transported over shorter distances. We can include asphalt mixture, bitumen-mastic, gypsum mixtures, clay mixtures, and lime mixtures in semi-liquid cargoes. Asphalt mixture is transported at high temperatures and can cool quickly, and therefore special dump trucks are used to retain heat. Gypsum and lime semi-liquid mixtures are transported over short distances in special bunker vehicles. The success of the construction process directly depends on the timely, safe and quality delivery of materials. Building materials have a wide classification according to their properties, and each of them requires a separate vehicle. Therefore, special equipment and devices are used to transport construction loads. These techniques facilitate the loading and unloading process, save time, increase labor productivity and ensure safety. Below is detailed information about the main special vehicles intended for the construction industry, their functions and scope of application.

References

1. Matkarimov K.J., Mahmudov B.J., Norqulov A.A. Avtomobillarda ishlatiladigan ashyolar. Toshkent, "Talqin" nashryoti 2012 – 304 b
2. A.A.Maxmudov., H.A.Ne'matov "PEDAGOGS" , "The procedure for drawing up legal grounds and documents for tyuning" page 220-222
3. A.A.Maxmudov "Iqtisodiy salohiyatni oshirishda transportlogistika tizimining o'rni" Muhandislik va Iqtisodiyot jurnali 2024yil, noyabr. № 4son.
4. A.A.Maxmudov., H.A.Ne'matov "Avtotyuning tushunchasi, turlari va tasnifi" Muhandislik va Iqtisodiyot jurnali 2025yil, aprel. № 4son. 581-585 b
5. A.A.Maxmudov., H.A.Ne'matov Journal of Effective Learning and Sustainable "Tyuning uchun huquqiy asoslar va hujjatlarni rasmiylashtirish tartibi"

Innovation Vol.3 №2 (2025). February 306-311 page

6. A.A.Maxmudov., H.A.Ne'matov "Universal journal of technology and innovation",
"Yuk tashishning asosiy elementlari" page 69-71

7. Maxmudov A. A. & Ne'matov H. A. (2025). AVTOMOBIL DVIGATEL TYUNINGI.
Development Of Science, 11(1), pp. 95-100

8. Maxmudov A. A. & Ne'matov H. A. (2025). "Basic elements of cargo transportation" "
SCIENTIFIC REVIEW OF THE PROBLEMS AND PROSPECTS OF MODERN
SCIENCE AND EDUCATION" page 34-37

9. Maxmudov A. A. & Ne'matov H. A. (2025) "Concert, types and classification of
avtotuning", " GALAXY" page 123-130