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HISTORICAL FOUNDATIONS OF ROAD DEVELOPMENT, CONSTRUCTION OVERSIGHT, AND ANTI-CORRUPTION MEASURES

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Abstract:

The article analyzes the historical stages of road development, road construction in ancient states, systems of control and accountability, efforts to combat the embezzlement of state property in the Roman Empire, and mechanisms for overseeing road construction quality in Central Asian civilizations, particularly during the era of Amir Timur and the Timurids. It also highlights the development of road infrastructure in the territory of Uzbekistan, caravan routes, and the distinctive features of the control and investigation system during the Timurid period. The scientific analyses are interpreted in relation to historical sources, ancient legal codes, and modern road construction theories.

Keywords: automobile roads, history of road construction, Code of Hammurabi, Roman law, anti-corruption measures, Amir Temur, infrastructure, state control, financial discipline, European Renaissance, macadam method, geoeconomic development, Uzbekistan, transport policy, public–private partnership.

INTRODUCTION

Road networks are one of the areas of crucial importance for the economic stability, territorial integrity, and social infrastructure of every country. Especially for landlocked countries with limited access to seas and oceans, a modern road network serves as a vital factor in national development. The creation and maintenance of transport infrastructure is inextricably linked not only to economic processes but also to political and legal ones.

The history of road development shows that in every era, ensuring the quality of road construction and monitoring the targeted use of state funds has been a pressing issue. From ancient Rome to the Timurid state, there existed systems of accountability, control mechanisms, and anti-corruption measures for shortcomings in road construction, many of which are reflected in today's road construction standards.

In ancient civilizations - Babylon, Egypt, India, China, Greece, and Rome - road construction was one of the main priorities of state policy. In particular, one of the earliest legal codes in world history is the Code of Hammurabi.

The Code of Hammurabi (18th century BCE) is one of the oldest legal codes in the world. Although it does not contain separate chapters or specific rules on road construction, the laws provide several general clauses on construction works, infrastructure, public facilities, and liability for them. Many regulations directly related to road construction also establish responsibility for improper performance of professional duties that lead to property damage, death, or injury to people. Many rules directly related to road construction also establish liability for improper performance of professional duties that lead to property damage and death or injury to people.

Furthermore, Articles 229-233 of the law establish the builder's liability for damage caused to people or property as a result of a poorly constructed house collapsing, while Article 235 introduces provisions for the shipbuilder's liability for poor-quality ship construction.

The degree of responsibility for the culprits is determined differently. For example, if a house built by a builder collapses due to their fault, resulting in the death of a free person, they are punished according to the principle of talion. For the death of the homeowner, the builder himself is executed, and if the homeowner's son dies, the builder's son is executed. In other cases, it is stated that the builder or shipbuilder must fully compensate for the damage caused, including redoing the work at their own expense[1].

This norm indicates that the quality of construction was under state control, and the criminal liability of the guilty person was severe.

[1] https://ru.wikipedia.org/wiki/%D0%A5%D0%B0%D0%BC%D0%BC%D1%83%D1%80%D0%B0%D0%BF%D0%B8

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In Rome, roads were the primary means of the empire's political, military, and economic connectivity. At its peak, the empire had a road network of 250-300 thousand km, of which more than 90 thousand kilometers consisted of paved highways[2].

In Rome, there were permanent courts for investigating plunder. They considered the crimes of repetundae (plunder) and ambitus (bribery). A classic example is Cicero's trial against Verres in 70 BC. According to Cicero, Verres misappropriated state funds during his governorship of Sicily, stole works of art, and unjustly collected taxes, which was exposed through witness interrogations, documentary investigations, and speeches.

Roman engineers constructed roads based on a layered structure with a soil foundation, a lower stone layer, a stabilizing sand-gravel mixture, and surface paving stones. These technologies have gone down in history as the earliest form of modern road construction. Corruption in the construction sector was widespread in Rome, **peculatus** (embezzlement) and **ambitus** (bribery) were crimes subject to severe penalties.

The following system was in place:

- **quaestiones perpetuae** - special courts;
- **censors** - financial controllers;
- **Lex Calpurnia (149 BC)** - the first special law against embezzlement;
- **Lex Julia** - a law defining the procedure for investigating corrupt behavior of officials.

Cicero's speeches during Verres's trial demonstrate how he uncovered corruption in Rome's road construction and public works[3].

The regions of Central Asia - Khorezm, Bukhara, Samarkand, Fergana, Tashkent - have long been at the crossroads of international trade routes. A segment of the Great Silk Road passed through this area, and the region developed as an economic center.

An expedition led by S.P. Tolstov discovered the "Khorezmshah's Royal Road" dating back to the 10th-11th centuries. Caravanserais were situated every 25 km along the route - equivalent to a one-day journey. This indicates that road infrastructure in the Middle Ages was planned and systematic[4].

Amir Timur (1370-1405) placed strategic importance on transport infrastructure in establishing a centralized state system. Roads, bridges, caravanserais, and rabats were considered the primary unifying elements of the empire. According to Ibn Arabshah's historical accounts, Timur personally oversaw the quality of roads, organized special control groups consisting of divanbegis, judges, and mirshabs, and appointed secret observers[5].

During an inspection of the Samarkand-Tashkent road in 1404, Timur had poorly constructed road sections demolished and those responsible punished.

In "Tuzukoti Temur," justice, honesty, and corruption-free governance are defined as the foundation of state stability. **Accounting books** were kept for each construction project. For the theft of building materials, **severe punishment** was established. Rulers and master craftsmen were required to **take an oath.** Witnesses were interrogated, and property was confiscated. Sharafuddin Ali Yazdi describes an event from 1399: Brick theft on the Termez-Balkh road was exposed, and the perpetrators were harshly punished[6].

The systems implemented after Timur also strengthened control in road construction. According to the "Baburnama," funds for road construction were provided through sealed documents - **yarlyk** and **parvona**. Each expenditure was recorded in the divan's ledger, and if the quality was poor, the judge and muhtasib conducted a public investigation.

During the reign of Shahrukh (1405-1447), strict penalties for theft in road construction were introduced. It is known that the hands of craftsmen who stole materials were cut off, officials who took bribes were sold into slavery, the property of governors who embezzled funds was confiscated, and these measures served to ensure transparency in road construction[7].

During the Renaissance, new roads based on Roman methods were constructed in Europe, with road construction further advancing in the 18th century[8]. In Britain, George Wade (1725-1737) built 250 miles of roads and 40 bridges, employing Roman techniques[9]. Toll roads (turnpikes) emerged in 1656, with toll gates established by parliamentary act. By the 1750s, 150 trusts operated around London, and by 1825, 1,000 trusts managed 18,000 miles of roads[10]. John Metcalfe

[2] Polybius. Histories.
[3] Cicero. In Verrem
[4] Шарофуддин Али Яздий. Зафарнома
[5] Ибн Арабшоҳ. Ажойиб ал-мақдур фи ахбори Темур.
[6] Шарофуддин Али Яздий. Зафарнома. – Б. 528–529
[7] Зайниддин Васифий. Бадоеъ ул-вақоеъ. – Тошкент: Фан, 1961. – Жилд 1, Б. 187.
[8] https://en.m.wikisource.org/wiki/Encyclop%C3%A6dia_Britannica%2C_Ninth_Edition/Road?utm_source=chatgpt.com
[9] https://blog.historicenvironment.scot/2020/02/general-wades-roads/?utm_source=chatgpt.com
[10] https://en.wikipedia.org/wiki/Turnpike_trust?utm_source=chatgpt.com

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(1765) constructed 180 miles of road, utilizing stone layers and drainage[11]. Pierre-Marie-Jérôme Trésaguet (1775) established scientific road construction in France, featuring a large stone sub-base with a fine gravel surface[12]. Thomas Telford improved stone layering and drainage techniques, and constructed the London-Holyhead road (A5)[13]. John Loudon McAdam (early 19th century) developed the macadam method, using aggregates of gravel and stone[14].

Currently, road construction and management play a crucial role in addressing issues such as geoeconomic development, efficient use of public finances, establishment of sustainable anti-corruption mechanisms, and organization of modern transport logistics.

In global trends of state policy development, governments are focusing on sustainable development. For example, in the USA, the IIJA law allocated $350 billion for road modernization. Road construction reforms are continuing in Uzbekistan. In 2019, the Ministry of Transport was established, and PPP projects are being developed with the aim of decentralizing road construction. Practices are being implemented to attract the private sector, adapt to climate change, and apply disaster risk management. By 2025, the use of AI, sustainable materials, prefabrication, and solutions to workforce shortages are expected to be confirmed[15].

According to the World Bank report, Uzbekistan has the highest road density in Central Asia, with 41 km of roads per 100 km2 of area. The total length of the road network is 185,000 km, of which 42,700 km are public roads. Public roads are functionally divided into international roads (3,981 km), national roads (14,100 km), and regional roads (24,614 km). Approximately 95% of the network is paved, and less than 5% consists of gravel and dirt roads. The report states that common sources of financing include equity investments, bank loans, bond financing, Shariah-compliant financing, and the creation of an Infrastructure Fund[16]..

Historical experience demonstrates that transparency in road construction contributes to state stability, strict control ensures quality, stringent accountability reduces corruption, and public oversight enhances the effectiveness of government operations. However, the 2021-2025 strategy aims to modernize urban planning. In the post-independence period, numerous state programs for highway development have been formulated and are being implemented. Various government-level initiatives are underway to ensure that highways meet international standards, contributing to the economic development of society and the country.

It is no secret to anyone today that the 21st century in which we live is dominated by intellectual wealth. Any nation or state that fails to recognize this truth in time, and does not make the pursuit of intellectual wealth a core part of daily life, will inevitably be left behind in global development.

The development of highways and the processes of their historical formation are an integral part of human civilization. Historical experiences from ancient states to the Timurid era demonstrate the importance of oversight, accountability, financial discipline, and anti-corruption measures in road construction. Today, in the processes of road construction and infrastructure development in Uzbekistan, it is crucial to draw scientific and practical conclusions from these experiences.

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