JOURNAL OF TRANSPORT

ISSUE 4, 2025 vol. 2
E-ISSN: 2181-2438
ISSN: 3060-5164

SLIB.UZ
Scientific library of Uzbekistan

RESEARCH, INNOVATION, RESULTS

TOSHKENT DAVLAT TRANSPORT UNIVERSITETI

Tashkent state transport university

JOURNAL OF TRANSPORT

RESEARCH, INNOVATION, RESULTS

E-ISSN: 2181-2438

ISSN: 3060-5164

VOLUME 2, ISSUE 4

DECEMBER, 2025

jot.tstu.uz

TASHKENT STATE TRANSPORT UNIVERSITY

JOURNAL OF TRANSPORT

SCIENTIFIC-TECHNICAL AND SCIENTIFIC INNOVATION JOURNAL

VOLUME 2, ISSUE 4 DECEMBER, 2025

The **"Journal of Transport"** established by Tashkent State Transport University (TSTU), is a prestigious scientific-technical and innovation-focused publication aimed at disseminating cutting-edge research and applied studies in the field of transport and related disciplines. Located at Temiryo'lchilar Street, 1, office 465, Tashkent, Uzbekistan (100167), the journal operates as a dynamic platform for both national and international academic and professional communities. Submissions and inquiries can be directed to the editorial office via email at jot@tstu.uz.

The Journal of Transport showcases groundbreaking scientific and applied research conducted by transport-oriented universities, higher educational institutions, research centers, and institutes both within the Republic of Uzbekistan and globally. Recognized for its academic rigor, the journal is included in the prestigious list of scientific publications endorsed by the decree of the Presidium of the Higher Attestation Commission No. 353/3 dated April 6, 2024. This inclusion signifies its role as a vital repository for publishing primary scientific findings from doctoral dissertations, including Doctor of Philosophy (PhD) and Doctor of Science (DSc) candidates in the technical and economic sciences.

Published quarterly, the journal provides a broad spectrum of high-quality research articles across diverse areas, including but not limited to:

- Economics of Transport
- Transport Process Organization and Logistics
- Rolling Stock and Train Traction
- Research, Design, and Construction of Railways, Highways, and Airfields, including Technology
- Technosphere Safety
- Power Supply, Electric Rolling Stock, Automation and Telemechanics, Radio Engineering and Communications
- Technological Machinery and Equipment
- Geodesy and Geoinformatics
- Automotive Service
- Air Traffic Control and Aircraft Maintenance
- Traffic Organizatsion
- Railway and Road Operations

The journal benefits from its official recognition under Certificate No. 1150 issued by the Information and Mass Communications Agency, functioning under the Administration of the President of the Republic of Uzbekistan. With its E-ISSN 2181-2438, ISSN 3060-5164 the publication upholds international standards of quality and accessibility.

Articles are published in Uzbek, Russian, and English, ensuring a wide-reaching audience and fostering cross-cultural academic exchange. As a beacon of academic excellence, the "Journal of Transport" continues to serve as a vital conduit for knowledge dissemination, collaboration, and innovation in the transport sector and related fields.

The influence of hot dry climate on volumetric deformations of concrete

N. Hojiev[1][a]
[1]Namangan State Technical University, Namangan, Uzbekistan

Abstract: This article studies the effect of dry hot climate conditions on the strength, modulus of deformation, creep deformations of concrete, and determines the coefficients of temperature deformation of concrete from samples made of the same composition. Therefore, the strength of concrete under temperature influence is not sufficient. If a destructive process occurs in concrete due to dehydration in dry hot climate conditions, then due to freezing of concrete, its strength and deformability also undergo serious changes. As a result, it is necessary to take into account changes in temperature and relative humidity during the preparation of reinforced concrete structures and their operation.

Keywords: hot climate conditions, concrete and reinforced concrete, temperature effects on concrete, monolithic concrete, plastic shrinkage deformation

Betonning hajmiy deformatsiyalariga quruq issiq iqlimning ta’siri

Hojiyev N.[1][a]
[1]Namangan davlat texnika universiteti, Namangan, O‘zbekiston

Annotatsiya: Ushbu maqolada quruq issiq iqlim sharoitini betonning mustahkamligi, deformatsiya moduli, kirishish sirpanish deformatsiyalariga ta’sirini o‘rganish hamda bir xil tarkibdan tayyorlangan namunalardan betonning temperaturaviy deformatsiya koeffitsientlarini aniqlanadi. Shuning uchun betonning temparaturaviy ta’sirida mustahkamligi etarlich bo‘lmaydi. Quruq issiq iqlim sharoitida betondagi suvsizlanish sababli destrtruktiv jarayon vujudga kelsa, betonning muzlashi tufayli ham uning mustahkamligi va deformatsiyalanuvchanligida jiddiy o‘zgarishlar bo‘ladi. Natijada temperatura va nisbiy namlik ta’siridagi o‘zgarishlarni, temir-beton konstruktsiyalarni tayyorlash va ularni ekspluatatsiya qilish davri uchun ham hisobga olish zarur hisoblanadi.

Kalit so‘zlar: quruq va issiq iqlim sharoitlari, beton va temir-beton, betonning harorat ta’sirlari, monolit beton, plastik qisqarish deformatsiyasi, harorat

1. Kirish

Bugungi kunda yig‘ma temir-beton buyumlarni ishlab chidarishda atrof-muhit muhofazasini, suv va mineral resurslardan unumli foydalanishni hisobga olish, ishlab chidarish chiqinqilaridan va ikqilamchi mahsulotlardan keng foydalanish zarur. Keyingi yillarda betonga turlicha kimyoviy qo‘shimchalar qo‘shish yuli bilan ularning mustahkamligini oshirish, tsement sarfini kamaytirish ustida tadqiqotlar olib borilmoqda. Bu esa temir beton kontruksiyalarga e’tibor berish muhim vazifa bo‘lib xizmat qiladi. Quruq issiq iqlim sharoitini betonning xossalariga ta’siri Quruq issiq iqlim sharoitida ekspluatatsiya qilinadigan temir-beton konstruktsiyalarning mustahkamlik va deformativ harakteristikalari normal temperatura va normal nisbiy namlik sharoitidan farq qiladi. Quruq issiq iqlim sharoitida betonning mustahkamligi kamayadi, salqiligi va darzlarning ochilishi eni ortadi. Ushbu omillarni hisobga olinmasligi temir-beton konstruktsiyalarning sifatiga va uzod muddatga chidamliligiga ta’sir qiladi. Buning natijasida meyoriy hujjatlarga talab yuqori ekanligini korsaradi. Bunday meyoriy hujjatlarga misol qilib qurilish me’yor va doidalari (QMQ 2.03.01.96) da bevosita quyosh radiatsiyasidan himoya qilinmagan temir-beton konstruktsiyalarni hisoblashda temperatura-klimatik ta’sirlarni hisobga olish lozimligi ko‘rsatilgan(94). Quruq-issiq iqlim sharoitida beton qotganda bir-biriga qarama-qarshi konstruktiv jarayonlar ko‘proq ro‘y bersa tsementning gidratatsiyasi chuqurroq va zichroq bo‘ladi, qotishning fizik-kimyoviy jarayonlari intensivlashadi, betonning mustahkamligi ortishi tezlashadi va natijada beton issiq iqlimga chidamliroq bo‘ladi. betonni parvarishlash amalga oshirilmasa beton suvsizlana boshlaydi. Parvarishlanmagan yoki noto‘g‘ri parvarishlangan beton quruq xavoda birinchi sutkadayoq qotishi uchun zarur bo‘lgan suvning 50-70% ini yuqotadi. Bu o‘z nabatida betonni qotishiga salbiy ta’sir etish mumkinligini ko‘rsatadi.

2. Tadqiqot metodologiyasi

Betondagi suvning bug‘lanishi plastik deformatsiya natijasidagi kirishishiga olib keladi. Plastik deformatsiyalar natijasidagi kirishish beton hali qotmasdan turib boshlanadi va u darzlar hosil bo‘lishiga olib kelishi mumkin. Agar parvarishlash 20-30 minutdan ortiq vaktga kechiksa plastik kirishish deformatsiyalari boshlanadi. quruq issiq iqlim sharoitida parvarishlash vaqti kamida 6-7 soat bo‘lishi kerak. Undan keyingi parvarishlash plastik deformatsiyalar

[a] https://orcid.org/0000-0002-3676-901X

rivojlanshiga unchalik ta'sir ko'rsatmaydi lekin beton strukturasining shakllanishiga va 50-70% mustahkamlik olishi uchun zarur. Parvarishlashning boshlang'ich qismida beton bilan suvning birlashishiga yul qo'yilmaydi. Beton nam o'tkazmaydigan material bilan yaxshilab o'rab 8-10 sutka davomida qurishiga yul qo'ymay ushlab turiladi.

Tadqiqotlar quyidagi maqsadlar asosida tashkil qilinadi:

1. Quruq issiq iqlim sharoitini betonning mustahkamligi, deformatsiya moduli, kirishish sirpanish deformatsiyalariga ta'sirini o'rganish hamda bir xil tarkibdan tayyorlangan namunalardan betonning temperaturaviy deformatsiya koeffitsientlarini aniqlash;
2. Yuklama qo'yilmagan plitadagi beton va armaturaning beton va armaturaning deformatsiyalariga quruq issiq iqlim ta'sirini o'rganish;
3. Tajriba o'tkazilayotgan plitaning kesimlarida yilning turli;
4. Fasllari va va sutkaning turli vaqtlarida temperaturaning taqsimlanishini aniqlash;
5. Quruq issiq iqlim sharoitida armaturadagi oldindan zuri Qishdagi kuchlanishlar yuqotilishini aniqlash;
6. Plitalarning tayyorlangan fasli sinov o'tkazilayotgan sharoiti va tik va qiya darzlarni aniqlash;
7. Tomyopma plitalardagi salqiliklarning o'zgarish harakterini tayyorlangan mavsumi va yuklamaning uzoq muddatliligiga qarab o'rganish;

Quruq issiq iqlimning plitaning mustahkamligiga ta'sirini va buzilish harakterni va bo'lilishdagi eguvchi momentlarning aniqlashdan iborat bo'lishi kerak.

3. Natijalar

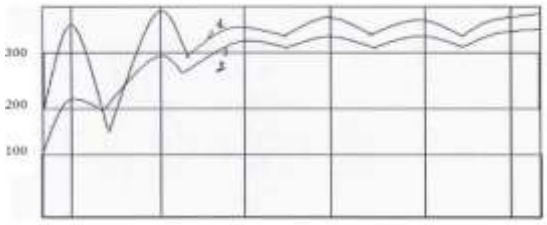
Ushbu tadqiqoqtlar natijasi shuni ko'rsatdiki Monolit beton va temir-beton konstruktsiyalar uchun plastik kirishish deformatsiyasi aniqlandi. Aniqlashish davrida quyidagi jadvaldan ma'lumotlar olindi.

1-jadval

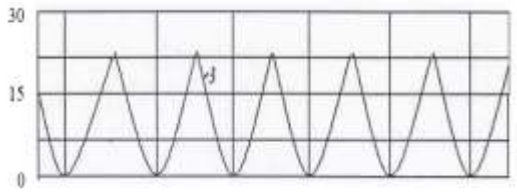
Yoz oylaridagi havoning nisbiy namligi W, %	Plastik xajmiy kichrayish deformatsiyasining qiymati $\varepsilon sp \cdot 10^{-6}$	
	$h_{red} \leq 10$	$h_{red} \succ 10$
20 va undan ham 40 60 va undan ortiq	350|200 250| 150 150|-	250| 150 150|50 -

Quruq issiq iqlim sharoitida nam holatdagi kirishish amplitudasi bir tsilga teng bo'lgan egri chiziqli bo'ladi (1-rasmni a va b ko'rinishida tasvirlangan).

a)



b)



1-rasmda. Betonning nam holatdagi kirishish deformatsiyasi

Ushbu rasmdagi sonlar quyidagilarni bildiradi.

1. ko'ndalang kesim 70 x 70 mm o'lchamdagi prizmaning deformatsiyasi ko'rsatilgan.
2. ko'ndalang kesimi 200x200 mm prizmaning deformatsiyasi ko'rsatilgan.
3. Temperatura tasvirlangan.

Yilning issiq faslida kirishish deformatsiyalari o'sib boradi, sovuq va namlik yuqori bo'lgan paytlarda esa o'sishi kamayib asta-sekin ko'pchish deformatsiyasiga aylanadi. Beton kesimining o'lchamlarning kirishish deformatsiyasiga ta'siri konstruktsiya ekspluatatsiyasining dastlabki davrlarida katta rol o'ynadi.

Kirishish deformatsiyasining miqdori quyidagi formula bilan aniqlanadi:

$$\varepsilon_{cs} = \varepsilon_{cs} \frac{\Delta\tau}{\Delta\tau}$$

bu yerda: $\Delta\tau$ -betonni parvarishlash muddati tugagan vaqtdan boshlab ekspluatatsiya davrigacha bo'lgan vaqt hisoblanadi;

a_{cs} -kirishish deformatsiyasining o'sish tezligi.

Beton kirishishi deformatsiyasining chegaraviy qiymati tayyorlangan va ekspluatatsiya qilinadigan muddat va havoning bir oylik o'rtacha namligidan kelib chikib betonning kirishi deformatsiyasini aniqlash imkonini beradi.

4. Xulosa

1. Quruq issiq iqlim sharoitida temir-beton elementlar notekis qiziydi. Temperaturalar tebranishi kavo temperaturasining tebraninsh va quyosh radiatsiyasining intensivligi tufayli temir betondan konstruktsiyalarning temperatura maydoni uzluksiz o'zgarib turadi va nostatsionardir.
2. Istalgan paytda kesimdagi temperaturalar taksimlanishi nochiziqlidir. Muxandislik hisoblari kesimning balandligi bo'ylab chiziqli qonuniyat bo'yicha qabul qilish mumkin. Keramzit beton sirtidagi temperaturani eng issiq va eng sovuq oylar uchun chiziqli qonuniya bo'yicha qabul qilish tavsiya qilinadi.
3. Quyosh tomonga qaratilgan keramzitbeton sirtidagi temperatura kavo temperaturasidan 10-12°C ko'proq, soya tomondagi sirtidagi temperatura esa havo temperaturasidan ko'pi bilan 6°C ko'proqdir.

Foydalangan adabiyotlar / References

[1] Шоджалилов Ш. Напряженное состояние изгибаемых элементов из керамзитобетона при действии длительной нагрузки в условиях сухого

жаркого климата. «Архиттектура и строительство Ўзбекистана», № 2 1987г. С. 4-8.

[2] Щербаков Е.Н., Мамажанов Р.К. Влияние некоторых факторов на развитие во времени усадки тяжелого бетона. Сб.научных трудов ЦНИИСК, вып. (Проблемы ползучести и усадки бетона.)-ЦНИИСК, 1974.-С. 145-146.

[3] Щербаков Е.Н., Мамажанов Р.К. Рекомендации по определению числовых параметров деформаций ползучести и усадки бетона при проектировании железобетонных конструкций для районов с сухим жарким климатом.-ЦНИИСК Минстроя.-М., 1983.

[4] Юсупов З.Ю. Работа железобетонных конструкций при малоцикловых нагруженгиях в условиях климата средней Азии. Изд. «ФАН» Ўзбекистан, 1988г 132с.

Mualliflar to‘g‘risida ma’lumot/ Information about the authors

Hojiyev Nosirjon / Nosirjon Hojiev
Namangan davlat texnika universiteti “Bino va inshootlar qurilishi kafedrasi” dotsenti
E-mail: nosirxodjiev2@gmail.com
Tel.:+9989893-400-81-00
https://orcid.org/0000-0002-3676-901X

CONTENT / MUNDARIJA