KONSTRUKTSIYALARNI KUCHAYTIRISHNI TANLASHGA TA'SIR QILADIGAN OMILLAR

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Аннотация. *В этой статье даются рекомендации по повышению качества строительства и достижению экономической эффективности. Последовательная реализация важных приоритетных задач, программ и проектов по развитию инфраструктурных объектов в нашей стране привела к научным исследованиям, направленным на развитие современного строительства в городах и районах, в том числе в сельской местности. Анализ результатов большое внимание уделяется развитию национально-инновационной системы производства строительных материалов, объектов и сооружений, обеспечению требуемых темпов роста современного строительства, развитию строительной отрасли. В этой статье даны соответствующие рекомендации по проблемам и решениям, с которыми сталкиваются материалы, используемые для армирования каменных и железобетонных конструкций.*

Ключевые слова: *Арматура, композит, деформация, конус, хомуты, панели, кирпичные стены, углеродные волокна, вытеснение, расслаивание, колонны, перемычки.*

Abstract*. This article provides instructions on how to improve the quality of construction and achieve economic efficiency. The consistent implementation of important priorities, programs and projects for the development of infrastructure facilities in our country has been carried out scientific research aimed at the development of modern construction in cities and districts, including rural areas. Analysis of the results in the development of a national-innovative system in the production of building materials, objects and structures, ensuring the required growth rates of modern construction and the development of the construction industry is paid great attention. This article provides relevant instructions on the problems and solutions faced by the materials used in the reinforcement of stone and reinforced concrete structures.*

Keywords: *Fittings, Composite, deformation, cone, clamps, panels, brick walls, carbon fibers, expulation, delamination, columns, lintels.*

Annotatsiya. *Ushbu maqolada qurilish sifatini oshirish va iqtisodiy samaradorlikka erishish bo'yicha ko‘rsatmalar berilgan. Yurtimizdamizda infratuzilma ob'ektlarini rivojlantirish bo'yicha muhim ustuvor vazifalar, dastur va loyihalarni izchil amalga oshirish shahar va tumanlarda, shu jumladan qishloq joylarda zamonaviy qurilishni rivojlantirishga qaratilgan ilmiy izlanishlar olib borilgan. Natijalarni tahlil qilish qurilish materiallari, ob'ektlari va inshootlarini ishlab chiqarishda milliy-innovatsion tizimni rivojlantirish, zamonaviy qurilishning talab qilinadigan o'sish sur'atlarini ta'minlash va qurilish sanoatini rivojlantirishga katta e'tibor qaratilmoqda. Ushbu maqolada tosh va temir-beton konstruktsiyalarni mustahkamlashda ishlatiladigan materiallar duch keladigan muammolar va yechimlar bo'yicha tegishli ko'rsatmalar berilgan.*

Kalit so’zlar*: Armatura, kompozit, deformatsiya, konus, qisqichlar, panellar, g'isht devorlari, uglerod tolalari, chiqarish, delaminatsiya, ustunlar, lintellar.*

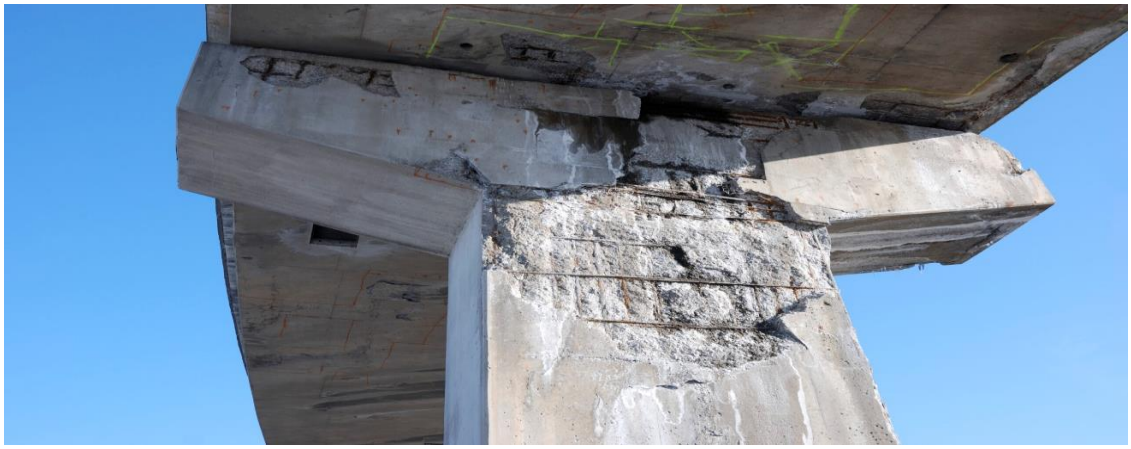
Tuzilmalarni mustahkamlash bo‘yicha zarur chora-tadbirlar to‘g’risida qaror qabul qilish uchun buzilishlarning turlari va xarakteri, shuningdek kutilayotgan oqibatlar to‘g’risida ma’lumot talab qilinadi. Qurilish elementlarining shikastlanishining sabablari ortiqcha yuklar, yukni qo‘llash tizimining buzilishi, geometriyadagi o‘zgarishlar, material sifati va boshqalar bo‘lishi mumkin.

Xavfsizlikning buzilishi, texnologik (funktsional) yaroqlilik nuqtai nazaridan, yuk ko‘tarish qobiliyatining tugashi, barqarorlikni yo‘qotishi, haddan tashqari deformatsiyalarning paydo bo‘lishi, favqulodda vaziyatlar va boshqalar mumkin.Xarakterli zararlar bu holatlarning belgilari bo‘lishi mumkin. . Yuk ko‘tarish qobiliyatining tugashi ma’lum bir kuchlanish-deformatsiya holatiga mos keladigan yoriqlar, kesimning geometriyasining pasayishi, materialning mustahkamligining pasayishi va alohida qismlarning parchalanishi, shuningdek mexanik shikastlanishlar bilan tasdiqlanadi.

Elementlarning barqarorligini yo‘qotishning dalili: rulonlar, tekislikdan tashqarida, bo‘limning deplanatsiyasi, haddan tashqari egilish - elementlarning siqilishi uchun xarakterli belgilar.

Tosh va temir-beton konstruktsiyalarga kelsak, qayta tiklash va yuk ko‘tarish qobiliyatini oshirish turli xil konstruktiv materiallardan foydalangan holda kesmani (qisqich, kengaytma) oshirish orqali erishiladi; oldindan kuchlanishli elementlardan foydalanish; qo‘shimcha tayanchlarni joriy etish.

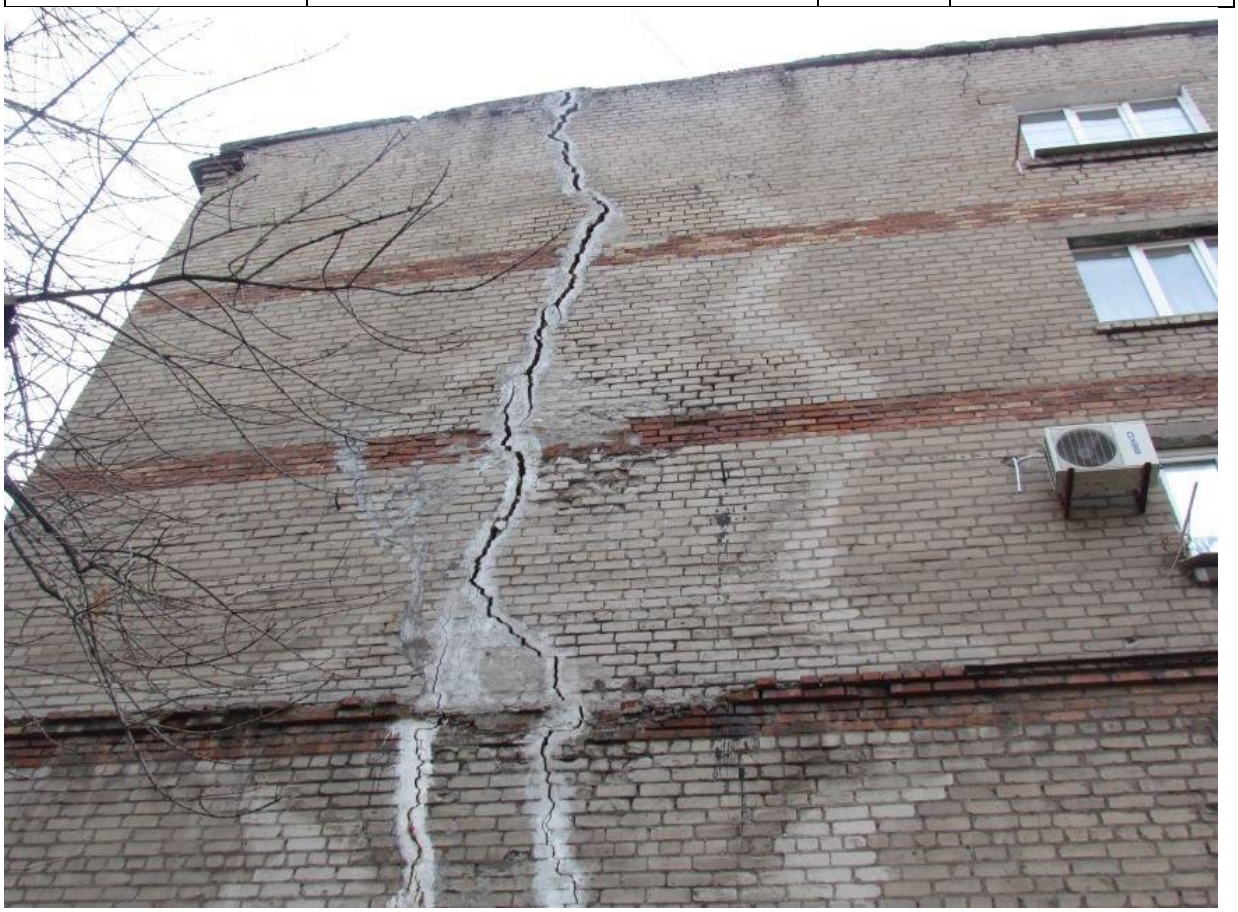
Qattiqlikning oshishi kamar va iplarni tartibga solish, shuningdek, bo‘limlarni ko‘paytirish, shu jumladan qattiq mustahkamlashdan foydalanish orqali erishiladi.



1-rasm. Ko‘prik ustunini muqobil muzdan tushirishdan beton yuzani yo‘qolishi

Usul	Qisqacha xarakterli	Yuk kotarish pasayishi	Kuchaytirish effekti
1.Bo‘limni ko‘paytirish	Klipslar, ko‘ylaklar, qoplamalar, kengaytmalar qurilmasi	21—40	Yuk ko‘tarish qobiliyatini 20-50% ga oshirish va qattiqlikni oshirish
2. kuchlanishni o‘zgarish holativa konstruksiyaviy sxemasi	Sprengels qurilmasi, tarang sprengels, kirish qo‘shimcha havolalar	40—60	Yuk ko‘tarish qobiliyatini oshirish va tiklash.
3. To‘liq yoki qisman tushirishning tushirish inshootlari	qo‘shimcha tuzilmalarni o‘rnatish yangisiga asoslanadigan yoki mavjud qo‘llab-quvvatlaydi	40—60	Kuchaytirgichni o‘chirish elementlar to‘liq yoki qisman
4. Tashuvchini tushirish yukni kamaytiradigan tuzilmalar	Xonalarda funksional o‘zgarishlar, yanada samarali issiqlik va ovoz izolyatsiya materiallari bilan almashtirish	60	Kerakli yuk ko‘tarish qobiliyatini ta’minlash
5. Xavfsizlik chegaralarini aniqlash	Tuzilmalarni qayta hisoblash modellar bo‘yicha haqiqiy ishlarni hisobga olgan holda	30—40	Yuk ko‘tarish qobiliyatini 10-15 % ga oshirish

	yangilangan hisoblash sxemalariga muvofiq		
6. Yangisini qurish chuqurligi etarli bo‘lmagan tuzilmal	mavjud bo‘lgan yangi elementlarni mustahkamlash orqali yangi qo‘llab-quvvatlash	21—40	Kerakli qo‘llab-quvvatlash shartlarini ta’minlash



2-rasm. Devorning butun balandligi bo‘ylab poydevorning buzilishi natijasida yuzaga kelgan yoriq. Cheklangan xizmat ko‘rsatish holati.

Tosh konstruktsiyalari holatining o‘zgarishiga ta’sir qiluvchi ikkita kattalashtirilgan omillar guruhi ushbu tuzilmalarning ishlashini tiklash usullarini oldindan belgilaydi:

binolarning konstruktiv elementlarining asosini o‘zgartirish natijasida yuzaga kelgan buzilishlar;

strukturaning ma’lum bir tuzilishiga to‘g’ridan-to‘g’ri kuch, korroziya yoki boshqa ta’sirlardan tuzilmalar materialida sodir bo‘lgan deformatsiya o‘zgarishlari.

Bunday holda, buzilgan poydevorni mustahkamlash bilan binoning ish holatini tiklash mumkin. Keyinchalik, dübeller, qavslar, langarlar bilan mahkamlash, yuqori kamar yoki iplar bilan mustahkamlash maqsadga muvofiqdir. Devor elementlari yoki ustunlarning ko‘taruvchanligi etarli bo‘lmaganda, mustahkamlash ko‘pincha turli xil kliplar qurilmasi tomonidan amalga oshiriladi. Shunday qilib, birinchi navbatda, tezda muhim bo‘lganlarga aylanishi mumkin bo‘lgan quvvat shikastlanishini tan olish kerak. Struktura xavfsizlikning chegaralangan darajasiga yetganda, unda qaytarib bo‘lmaydigan o‘zgarishlar kuzatiladi: yoriqlar, siqilgan elementlarning burishishi, plastik deformatsiyalar, korroziya shikastlanishi va boshqalar. Konstruksiyalardagi tanqidiy tabiatning buzilishi avariyaga olib kelishi mumkin. Tuzilmalarning holatini o‘z vaqtida baholash ularning ishlashining ishonchliligini ta’minlab, o‘z vaqtida ta’mirlashga imkon beradi. Ishlayotgan inshootlarning ishonchliligini taxminiy baholash uchun og’ish yoki buzilishlarni aniqlash, ularni namunali analog bilan aniqlash talab qilinadi. Tuzilmalarda aniqlangan og’ishlar darajasiga ko‘ra, alohida elementlarning ahamiyatini hisobga olgan holda binoning nisbiy ishonchliligi o‘rnatiladi. Bino yoki inshootga etkazilgan zararni umumiy baholash quyidagi formula bo‘yicha tavsiya etiladi.

$$\varepsilon = \frac{\alpha_1 .\varepsilon_1 \ + \alpha_2 .\varepsilon_2 \ + \cdots + \alpha_i .\varepsilon_i}{\alpha_1 \ + \alpha_2 . + \cdots + \alpha_i .}$$

ε_(1), ε_(2), ε_(i)– ayrim turdagi tuzilmalarga etkazilgan zararning maksimal miqdori;

α_(1),α_(2 ·) α_(i·)– ayrim turdagi tuzilmalarning ahamiyati koeffitsientlari.

Zarar miqdorini baholashda ularning eng katta qiymati hisobga olinadi, chunki bino yoki inshootdagi avariya odatda bitta tuzilishda muhim nuqson mavjudligi sababli sodir bo‘ladi. Tuzilmalarning ahamiyati yoki ahamiyati koeffitsientlari alohida tuzilmalarni yo‘q qilish oqibatlari yoki ularning yuklanish darajasi tahlili bilan belgilanadi. Bundan tashqari, buzilishning mumkin bo‘lgan tabiatini (plastik yoki mo‘rt) hisobga olish kerak. Ekspluatatsiya bosqichi bino va inshoot hayotining asosiy davrini egallaydi va shuning uchun bu davrdagi

buzilishlar va nosozliklar ishonchlilikka katta ta’sir ko‘rsatadi. Operatsion buzilishlariga quyidagilar kiradi:

- ortiqcha yuk;
- operatsion rejimdagi buzilishlar va nosozliklar;
- tuzilmalarning holatini nazorat qilishning etishmasligi va yo‘qligi;
- zarar bilan ishlashni davom ettirish;
- kechiktirilgan ta’mirlash;
- qarish materiallari;
- texnologik jarayonning buzilishi;
- ekologik vaziyatning yomonlashishi tufayli korroziya.

Konstruksiyani hisoblash va kuchaytirishning asosiy qoidalari.

- Qurilish elementlarini tiklash yoki mustahkamlashni loyihalash quyidagi ma’lumotlar asosida amalga oshirilishi kerak:
- shikastlangan inshootlarni texnik ko‘rikdan o‘tkazish va yuk ko‘tarish qobiliyatini buzish darajasini aniqlash;
- kuchaytirishni amalga oshirish uchun zarur materiallarning mavjudligi;
- ishlarni bajarish uchun texnologik sharoitlar(mexanizmlar, uskunalar va maydonlar) mavjudligi;
- bino joylashgan hudud sharoitlarining iqlim va geologik ma’lumotlari;

qayta tiklash yoki kuchaytirishning texnik—iqtisodiy asoslari.

- Zararning to‘rt darajasi ko‘rib chiqiladi:
- zaif, yuk ko‘tarish qobiliyatini pasaytirmaydi;
- yuk ko‘tarish qobiliyati 25% gacha pasayganda o‘rtacha;
- kuchli, yuk ko‘tarish qobiliyati 50% gacha kamayadi;
- to‘liq, strukturaning to‘liq buzilishiga olib keladi.

Zaif shikastlanishlar bilan tuzilmalarni tiklash ohak, beton va polimer materiallardan foydalangan holda yoriqlar va chiplarni yopish orqali amalga oshiriladi. O‘rtacha va og’ir shikastlanishlar bilan ularni tiklash kuchaytirish va ba’zan almashtirish orqali amalga oshiriladi. Temir-beton konstruktsiyalarni

tekshirishda shikastlanishning tabiati, ankraj zonasida betonning parchalanishi, ankrajning holati, armaturaning yorilishi, tozalanishi yoki nobud bo‘lishi yoki yo‘qligi, strukturaning egiluvchanligi tabiati, betonning eksfoliatsiyasi mavjudligi, uning yo‘q qilinishi qayd etiladi. Temir-beton konstruktsiyalarning kuch ta’siridan shikastlanish darajasini baholash, asosan, konstruktsiyalarning cho‘zilgan va siqilgan zonalarida yoriqlar mavjudligi va o‘lchamlari bilan amalga oshiriladi.

Shunday qilib, hisob—kitobga muvofiq to‘liq yuk ostida normalar tomonidan ruxsat etilgan 0,3-0,4 mm gacha bo‘lgan yoriqlarning ochilishi elementlarning normal ishlashini ko‘rsatadi. 0,4 mm dan yuqori yoriqlarning ochilishi strukturaning haddan tashqari yuklanishini ko‘rsatadi. Yoriqlarni santimetr bilan o‘lchanadigan kattalikka ochish, strukturaning yoki uning elementlarining sezilarli darajada yo‘q qilinishi, armaturaning yorilishi yoki uning ankrajining buzilishi mavjudligini anglatadi. Bu faqat kuch yoriqlarini anglatadi.

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