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KUCHLI ZILZILALAR TA'SIRIDA KO'PRIKLARNI SHIKASTLANISHI VA ZILZILALAR TA'SIRINING SABABLARI

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Annotatsiya

Ushbu maqolada kuchli zilzilalar ta'sirida ko'priklarning shikastlanishi va zilzilalar ta'sirining sabablari haqida ma'lumotlar berilgan va tahlil natijalari keltirilgan.

Annotation

This paper provides information and analysis results on the causes of damage to bridges caused by strong earthquakes and the effects of earthquakes.

Kalit so'zlar

Armatura, siqilish, cho'zilish, oddiy armatura, oldindan zo'riqtirilmagan armatura, darzlar, hisobiy kesim, eguvchi moment, ko'ndalang kuch, bo'ylama kuch

Keywords

reinforcement, compression, elongation, simple reinforcement, non-prestressed reinforcement, cracks, calculated section, bending moment, transverse force, longitudinal force

Seysmik mintaqalarda joylashgan bino va inshootlarga zilzilalar paytida qo'shimcha omillar ta'sir qiladi. Bu esa seysmik kuchlarni keltirib chiqaradi va inshootlarning ishlash sharoitlarini o'zgartiradi. Seysmik kuchlarni paydo bo'lishi orqali yo'llar, ko'priklar va boshqa transport infratuzilmalari evakuatsiya qilish, zararni tekshirish, yordam va qutqarishda sun'iy inshootlar juda muhim ob'ekt hisoblanadi. Mazkur muhim sun'iy inshootlarni seysmik qarshilik nazariyasi uchun halokatli zilzilalar oqibatlarini o'rganish, ularning seysmik chidamliligini baholash, yuk ko'taruvchi inshootlarning zaif tugunlarini aniqlash, konstruktiv antiseysmik chora-tadbirlarni qo'llash uchun dunyodagi oxirgi zilzilalarni o'rganib chiqishni talab qiladi. Va yana shuni inobatga olish kerakki, savodli muhandislik yechimlarni qabul qilish uchun, zilzilalar vaqtida ko'priklardagi shikastlanishlarni tahlil qilinishi kerak.

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1-rasm. *Zilzila ta'sirida ko'prik oraliq qurilmasi shikastlanishi*

Talafotli zilzilalar oqibatini o'rganish zilzilabardoshlik nazariyasiga tegishli bo'lgan seysmik ta'sirga oid ma'lumotlarni asosiy manbalaridan biri bo'lib xizmat qiladi. Savodli muhandislik yechimlarni qabul qilish uchun, zilzilalar vaqtida ko'priklardagi shikastlanishlarni tahlil qilinishi kerak. Ushbu tahlil natijasida yuk ko'taruvchi konstruksiyalardagi zaif tugunlarini aniqlash, konstruktiv antiseysmik choralarni belgilash hamda nazariy hisobiy tasavvurlarni aniqlab olish imkoniyatlari paydo bo'ladi. Zilzilabardosh qurilishida to'plangan tajribadan kelib chiqib, ko'priklarning hisobiy modellari qabul qilinadi.

Transport inshootlarining seysmik shikastlanishlari haqidagi ko'plab ma'lumotlarni tahliliga ko'ra ko'prik inshootlari orasida eng ko'p uchraydigan to'sinli ko'priklardagi shikastlanishlarni uch guruhga ajratish mumkin:

- ✓ nisbatan kam shikastlangan oraliq qurilmalarni surilishi yoki tayanchlaridan qulashi;
- ✓ ko'prikni to'liq yoki qisman qulashiga olib keladigan tayanch va tayanch qurilmalarni buzilishi yoki kuchli shikastlanishi;
- ✓ eng ko'p uchraydigan shikastlanishlardan bo'lgan ko'priklar tayanchlarini siljishi va cho'kishi.

Zilzilalarga qarshi choralarni ishlab chiqishda inshootlarning ayrim turlariga xos bo'lgan va juda ko'p kuzatiladigan bir xildagi shikastlanishlar katta qiziqish uyg'otadi. Aksariyat hollarda poydevorlarni shikastlanishi, hamda oraliq qurilmalarni butunlay yoki qisman qulashini keltirib chiqaruvchi tosh va beton tayanchlarni buzilishi o'ziga xos shikastlanishlardan hisoblanadi. Ko'prik tayanchlarining katta miqdorda cho'kishi va siljishiga ko'pincha zilzila vaqtida daryo o'zanida gruntlarni surilishi sabab bo'ladi.

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2-rasm. *Zilzila ta'sirida tayanchlarning shikastlanishi*

Tayanchlarning ko‘prikka ko‘ndalang yo‘nalishda tayanchlar kengligi katta bo‘lgani bois oraliq qurilmalarni bu yo‘nalish bo‘yicha qulashi kamroq kuzatiladi. Oraliq qurilmalarni ko‘prik o‘qiga ko‘ndalang yo‘nalishda tushib ketganda, odatda ular ag„darilib tushadi. Bu ayniqsa ko‘prik fermalariga xosdir. Ko‘priklar shikastlanishlarini tahlili shuni ko‘rsatadiki, oraliq qurilmalar qulashi 9 balldan ziyod zilzilalar natijasida sodir bo‘ladi. Seysmik shikastlanishlarning eng muhim sabablariga quyidagilar kiradi:

1. Zamin gruntlari tebranishi natijasida kelib chiqadigan inshootlar tebranma harakatlaridan hosil bo‘luvchi gorizontal seysmik kuchlar.

2. Gruntning seysmik tebranishlarini vertikal tashkil etuvchisi tomonidan yuzaga keltiriladigan vertikal seysmik kuchlar.

3. Tirkov devorlar va tayanchlarga gruntning seysmik gorizontal bosimini inshootlardagi qo‘shimcha keltirib chiqaruvchi seysmik kuchlanishlar.

4. Ko‘priklarni oraliq tayanchlariga suvning seysmik (gidrodinamik) bosimi;

5. Zilzila vaqtida ayrim gruntlarning yuk ko‘tarish qobiliyatini pasayishi.

6. Zilzila jarayonida gruntlarda qoldiq deformatsiyalarni rivojlanishi.

7. Zilzilalar jarayonida tektonik hodisalar'.

8. Inshootlarning uzunligining.

9. Oraliq qurilmalarning o‘zaro va tayanchlarga bo‘lgan ta‟sirining nochiziqli xususiyatga egaligi.

Jahon tajribasi shuni ko‘rsatadiki, ko‘priklarning zilzilabardoshligi sohasida bugungi kungacha ko‘plab muammoli masalalar hal etilmagan. Mavjud me’yoriy

xujjatlarda ko‘priklarni seysmik kuchaytirishni hisoblash usullari ularning zilzilabardoshligini, chidamliligini va ishonchliligini to‘liq ta’minlamaydi.

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