

Akhmedov Tolqin

Fergana Polytechnic Institute, ahmedovtolqin55@gmail.com

Solijonov Foziljon Sodiqjon ugli

Fergana Polytechnic Institute, assistant

f.s.solijonov@ferpi.uz, (ORCID 0000-0003-4627-7905), Tel.

+998905897038

Abduraxmanov Ulug'bek Arabdjon o'g'li.

Fergana Polytechnic Institute, Senior teacher

[\(ORCID 0000-0001-9502-9380\)](mailto:u.abduraxmonov@ferpi.uz)

Azamjonov Asadbek Tursunali o'g'li,

Fergana Polytechnic Institute, assistant

a.azamjonov@ferpi.uz Tel. +998904059792

Ass. Xamitov Rasuljon Xasanjon o'g'li,

Farg'ona politexnika instituti, Assistent

[\(ORCID 0009-0002-8891-](mailto:rasuljon3245@gmail.com)

4722)+998916315404

Baxromov Mahmud Mamatxanovich

baxromovmahmud393@gmail.com, 91 206 47 37)

Farg'ona politexnika instituti

Annotatsiya; Maqolada O'rta osiyo Davlatlarida eramizdan avvalgi 6-8 asrdan boshlab, eramizning 16-asrining ikkinchi yarimigacha bo'lgan davrni o'z ichuga oladi va bu davrda bu xududlardagi tarixiy voqealar Davlatlarni oddiy xalqni xayoti kechirishi shaxarlardagi qurilishlar, Makedoniyalik Iskadarni O'rta Osiyoistilosiga buni oqibatida yerli madaniyatga Yunon madaniyatinikirib kelishi va ta'siri, mudofaa inshootlari arxitektura inshooatlarni qurilishi, rivojlanishi va tanazzuli xaqidagi ma'lumotlar berilgan.

Tayanch” so‘z va iboralar: Akant yaproqlari, Minoralar, Madrasalar, loy g‘isht, gum bazlar peshtoqlar. Dekorativ pardozlash, koshinkorlik; Tiyrandoz; qo‘rg‘onlar Ellini zm, grek- makedon Korinf, Arab Xalifaligi, Shaxriston, Koshinkorlik, Ganchkorlik, Me’ moriy obidalar, me’ moriy ansanbllar.

Eramizdan avvalgi VI-VIII asrlarda Baqtriya (uning bir qismi Surxondaryo viloyatini o‘z ichiga olgan). Sug‘d (qashqadaryo-zarafshon-sirdaryo xav zalari oralig‘i), Xorazmiya (Amudaryo va Sirdaryoning quyi oqimi), Parkana (Fargona vodiysi) - bular qadimgi O‘rta Osiyossivilizatsiyasining shakillangan viloyatlari bo‘lgan. Eramizgacha bo‘lgan 1-ming yillikda Baktriya, Sug‘d, Xorazm kabi haqiqiy shaharlar vujudga kela boshladi. Ular yarim doira minoralari va devor ichi yo‘llari, tiyrandoz, o‘qchilar uchun mo‘ljallangan ko‘pgina tuyniklari bo‘lgan to‘g‘ri burchak li yoki doira tarzidagi shakliga ega, kahla devorlari bilan mustahkamlangan (Qizil tepa, Bandixon, Talashgan-hammasi Surxondaryo viloyatida); bu shaharlarning ham masida qo‘rg‘on va alohida ma’muriy xukumat kompleksi, devor ortida esa xavfli har biy harakatlar kunlarida shahar aholisini boshipana va himoya bilan ta’minlash mum kin bo‘lgan. Qishloqlarda a’lovida qo‘rg‘onlar joylashgan. Eramizgacha bo‘lgan IV asrda Makedoniyalik Iskandar qo‘sishlari shunday shaharlarga duch kelgan va hujum bilan olgan. Ellenizmnning arxitekturadagi ta’siri baktriyada nisbatan yaqqolroq namo yon bo‘ladi – boshqa viloyatlarda esa unchalik ko‘zga tashlanmaydi. Elinizm roli - bu yerda Yunoncha – Ion va Korinor ustunlari (biroq tadrijiy ravishda tubdan qayta ish lash bilan) tadbiq qilishda, ustunlar optik bazalarining, akant yaproqlari, palgmintalar, cheti naqishlangan cheripitsa antefikslar singari unsurlarning qo‘llanishida aks etadi.

Qadimgi me’morchilik san’atining yuksak namunalaridan uch minorali Xorazm xo qonlarining saroyi ko‘pincha katta zallari va xonalari bilan ajralib turadi. Afrosiyob, Variksha (Buxoro mintaqasi), Panjikentdagi (Tojikiston erlarida) qazish ishlari turar joy qurilishlarining aralash-quralash ekanligini ko‘rsatadi. Uylarda 2-3 qavatli, ularni bezashda boy devoriy tasvir va tasviriy hamda naqshinkor usuldagagi yog‘och o‘yma korligi qo‘llanilgan, yashash

turmushga mo‘ljallangan qismi va qabulxona, mehmon xona qismi alohida ajralib turadi.

Arab xalifaligi bosib olgan erlarida o‘z madaniyatini singdira boshladi. Shu davrlar Markaziy Osiyo madaniyati va me’morchiligi ma’lum bir vaqtgacha tushkunlikka uchradi. IX-X asrlarda Samoniylar sulolasiga davrida feodal shaharda boshqa davlatlar bilan madaniy va savdo munosabatlari hunarmandchilik hamda me’morchi lik rivoj lana boshladi. Arab askarlari O‘rta Osiyo shaharlarini bosib olgandan so‘ng shahar markazidagi kalxa va uning old qismida istikomat qilishgan erli xalqlar shaharning arablar yo‘q erda joylashib o‘z kasb korlarini davom ettirish natijasida shaharning shu qismi tezlik bilan rivojlandi va SHahriston deb yuritila boshladi, hamma shaharning, hamda shaharning bu qismi ham kalha devorlari bilan o‘rala boshladi. Bu davrda shaharlar standart shahar rejasiga ega bo‘lmagan. SHahar rejasi shu arning sharoitiga qarab rivojlana boshlagan, shuning uchun Buxoro, Samarqand, Toshkent va boshqa Markaziy Osiyo shaharlarining rejasi bir-biriga o‘xshamaydi, shaharlarda saroy ma’ muriy binolar markaziy maydonlarda (Registon) bunyod etilgan. Shaharning marka ziy ko‘chalari shahar darvozalaridan bozorgacha kelgan. Ko‘chalar hunarmandlar joylashgan kasb nomi bilan yuritilgan. YAngi savdo binolari (timlar, toklar, chorsular) karvonsaroylar, omborxonalar paydo bo‘la boshladi. Shahar tashqarisiga rovtlarda boy va hukumdorlarning bog‘-rog‘ va saroylari joylashgan.

Markaziy Osiyoda Islom dinining qabul qildirilishi va uning yerli xalqlari uchun e’tiqodga aylanishi har bir shahar va qishloqlarda masjid va madrasalarning qurilishi rivojlantirdi. Katta va kichik shaharlarning o‘z jomiy masjidi bo‘lgan va u shaharning markaziy qismida minoralar qurilgan. Me’morchilikda turar joy binolarida sinchli konstruksiya ishlatiladi. Binodagi yog‘och elementlar-ustun, eshik, shiftlar, o‘ymakor lik yoki sir berish yo‘li bilan pardozlangan. Monumental me’morchilikda avval xom g‘ishtlardan keyinchalik kuydirilgan g‘ishtlardan katta-katta binolar qurila boshladi Binoda gumbaz, ravoq va peshtoqlar qo‘llanila boshlaydi. Buxorodagi Somoniylar maqbarasi kuydirilgan g‘ishtdan qurilgan birinchi binolardan biriga kirib, uning me’ moriy kompozitsiyasi qilib yechilgan.

XI asrda g‘isht ko‘pincha loy bilan terilgan XII asrga kelib esa ganch bilan terila boshlanganligi sababli binoni mustahkamligi ancha oshgan, bino konstruksiyalari mukammalashtirildi yoki yangi konstruktiv elementlar ishlatildi. Buxorodagi jamoa masjidining “Kalon” minorasi avvaliga ikki marotaba qulagandan so‘ng uchunchi marotaba 1127 yilda qayta tiklandi. Fundamentni 10 metr chuqurlikda joylashtirilishi natijasida minoraning zilzilaga chidamliligi oshdi. Devorlarning qalinligi 80-90 sm. ni tashkil qildi, burchaklarda, peshtob, ravoqlarda ya’ni gumbaz va ravoqlardan tushayotgan yukni ko‘tarayotgan devorlar monolit holda terilgan. Ravoq va gumbazlar o‘lchamlari kattalasha boshladи. XII-XIII asrlarda me’morchilikda koshinkorlik o‘z o‘rnini topa boshlaydi. Koshinkorlik me’morchilikda bino ko‘rinishini keskin ravishda go‘zallashtirib, atrof muhit bilan uyg‘unlashib namgarchilikka chidamli bo‘lganligi uchun binoni umrini o‘zaytirdi. Maqbaralar qurish yanada rivojlandi bu bilan ayrim hukumdar odamlar ulug‘langan. Bunga Samarcandagi Shoxi-Zinda maqbaralar ansamblи, Termiz shahridagi katta bo‘lmagan gumbazli kvadrat shaklidagi Xakim-Al-Termiziyy maqbarasi yoki Karmana shahridagi Sayid Baxrom maqbarasi misol bo‘la oladi. O‘zbekiston yeridagi o‘rta asr me’morchiligidan bir nechta alohida me’morchiligidan bir nechta alohida me’morchilik maktablari mavjud bo‘lgan: Muvoraunaxr, Farg‘ona va Xorazm. 1219-1224 yillari mug‘illar istilosida gullab yashnagan shahar va qishloqlar er bilan yakson qilindi. Markaziy Osiyoda 10 yillardan keyin yirik shaharlar sekin qayta “jonlana” boshladи, shuning uchun bu davrdagi me’moriy yodgorliklar bizgacha etib kelgan. Me’morchilikda katta monumental binolar qurishda yangidan-yangi katta qurilish masalalarini echish qurilish texnikasini rivojlanishiga olib keldi. Binolarning ostki qismi (fundamenti) er ostiga 4-5 m.gacha xarsang toshlardan qurila boshladи, bu toshlarni terishda namlikka chidamli qorishma bilan terilgan. Ravoq, gumbaz va pesh toqlar o‘lchami kattalasha bordi, Bibixonim madrasasini peshtoqining o‘lchami 19 m. Shahrisabzdagi oq saroyning gumbazi diametri 22 m. Samarcandagi Ulugbek Xona qoxining gumbazi Sharqda eng katta gumbazlar qatoriga kirgan edi. Me’morchilikda Temuriylar davrining ikkinchi yarmida qo‘sh gumbazlar ishlatish odat tusiga kirib qoladi. XV asrlarda me’morchilikda

dekorativ pardozlashda yangi pog‘onaga ko‘tari ladi. Pardoz terokat g‘ishtlari, poshinni silliqlangan g‘ishtlar bilan birga teriladi. Mar mar toshlariga o‘yma bezak berib, bino fasadlariga pardoz berish natijasida binoning go‘zalligi yanada oshdi. Binoning ichki qismida quyma bezaklar, marmar taxtalarga gul o‘yilib, ayrim hollarda tilla suvi yuritilgan bezaklar ham paydo bo‘ldi. XV asrni ng ikkinchi yarmida dekorativ pardozlashda yangi texnik pardozlash (kundal) paydo bo‘ldi, bu pardozlashda changli sopol yoki chinni rel’efli bezakka tilla suvi yuritiladi. Monumental me’morchilikda binolarning rejasi murakkablasha boshladi. Markaziy xonalarda katta gumbazlar o‘rnataladi va ularning balandligi ko‘tariladi. Temuriylar davridagi saroy va maqbaralar shular jumlasiga kiradi. Maqbaralardan Shahrisabz dagi Dor-us-Saodat maqbarasi, Samarqandagi Ishratxona maqbarasi markaziy gum baz ostida asosiy xona bo‘lib, uning tevaragida esa bir qancha yerda xonalar bo‘lgan. Go‘r-Amir maqbarasi yoki Shoxi Zinda maqbaralari bir qancha binolar bilan birligida ansambl ko‘rinishini tashkil etgan. Xovlili rejaviy echim masjid, madrasa, karvo nsaroy qasrlar kompozitsiyasi ko‘plab qo‘llanila boshladi. Binolar kompozitsiyasida bir asosiy o‘q bo‘yicha peshtoqlar, markaziy xona o‘zining gumbazi bilan joylashgan. XV asr me’morlari binoning tashqi ko‘rinishiga ulug‘vorlik berish uchun ko‘pgina pardoz ishlari ishlatila boshladi. Masalan: odamlarni nomozga chaqiruvchi minoralar binoda dekorativ rol o‘ynab va uning kompozitsion bo‘lagiga aylandi. Bezakli mino ralar bino yoki kompleksning chetki burchaklariga o‘rnatala boshladi. Markaziy Osi yo yer qimirlaydigan zonada joylashgani uchun bu minoralarni kallak qismi yer qimir laganda qulab tusha boshladi, shu tariqa gumbazlarga ham zarar etkazgan.

Amir Temur davrida peshtoqlarning ikki yonboshida minoralar o‘rnatala boshladi, keyinchalik bu minoralar yo‘qotildi va peshtoqqa proporsionallik berildi. XVI asrning ikkinchi yarmida me’morchilikda ko‘plab binolar qurildi. Banolar va inshootlarni qurishda muxandis echimlari yanada yuqori pog‘onaga ko‘tarildi. Buxorodagi savdo binolari “Tim”, “Toqa”, “Chorsu” bu me’moriy jihatdan ratsional bo‘lib va ularga bezak berilmasa ham salobati, ichki qulayligi bilan ajralib turadi. Zarafshondagi suv taqsimlovchi injenerlik inshootlarida ravoq

ishlatilganligi tufayli bu atrofdagi tabiat bilan uyg‘unlashib ketgan. Muxandislik echimlaridan gumbazga yorug‘lik tushishi uchun o‘rnatilgan qurilmalar bino ichini yoritishda va mikroiqlimni me’yorga keltirishga katta rol o‘ynagan. Bunday qurilmalar Mir Arab Abdulloxon madrasasi va boshqa binolarda ishlatilgan. 1652 yili Buxoroda Abdulazizzon madrasasi qurildi. Bu bino feodal tuzum davriga monumentalъ me’morchilik namunalarining oxirgilaridan bo‘lib, unda ilgarigi uslub bezak ishlatilgan, biror bir yangilik kiritilmagan. Markaziy Osiyoda XVIII asrga kelib me’morchilik faoliyati sezilarli darajada to‘xtab qoladi. XIX asr boshlarida siyosiy jihatdan mustahkamlanib Markaziy Osiyo erlarida uch xonlik-Buxoro, Xiva va Qo‘qon xonligi vujudga keladi. SHu davrdan boshlab monumentalъ va yalpi qurilishlar yangi pog‘onaga ko‘tariladi. Xivada so‘ngi feodal davrining namunaviy shahar qurilishida katta memorchilik ansambllarida saroy madrasa masjidlar quriladi. Me’morchilikdagi yangi tipdagi binolardan biri-Buxorodagi Chor-Minordir. U o‘zining ko‘rkam to‘rt minorasi va gumbazi bilan inshootlardan ajralib turadi. Xavadagi Tosh-Xovli, Qo‘qondagi Xudoyorxon o‘rdasi, Samarqanddaggi Amir saro ylari qurilish uslubiga ko‘ra o‘zi xos binolardir. Saroylarda turar joy binolaridagi o‘ymakorlik ustunlari, chang bezaklari sirlangan shiftlar, xonalar ichida o‘yma qilib ishlangan tokchalar ishlatilgan. Markaziy Osiyoda qurilgan binolar shu arning tabiatiga moslab qurilgan. Shuning uchun har bir mintaqaning turar-joy binolari hajmiy-rejaviy echimlari bir-biridan farq qilgan. Xiva uylarining markaziy o‘zagi xovli bo‘lib va unga ikki ayvon chiqib turadi ulardan biri baland va yozgi xonalardan iborat bo‘lgan old ayvon va uning qarshisida bir qavatlik qishki xona lardan iborat bo‘lgan ters ayvonlardan iborat. Buxoro turar joy binolari uning bir muncha turlari bilan farq qiladi. Ularning yer maydoni kichik bo‘lib, binolar ko‘pincha ikki qavatli ko‘cha tomonidan fasadi quruq devordan tashkil topadi, ichki tomoni qulay qilib qurilgan. Xovli ichidagi uylar qishgi va yozgi xonalarga bo‘lingan. Ikki qavatli binoning ikkala qavatida ham ayvonlar qilingan. Shunisi etiborga loyiq-ki, Buxoro uylarining intererida uymakorlik bilan bajarilgan tokchalar, ganj, uymakor panjaralar diqqatga sazovordir. Toshkent turar joy binolarini xovlilari katta bo‘lib uning atrofiga uylar qurishgan, uylar orasida bir ustunli

ayvon, yarim berk bolaxonalar qurishgan. Fargona vodiysi shahar uylari bog‘ bilan birgalik da qurilgan. Binoning ichki fasadi ko‘pincha bog‘ tomonga qaragan. Fargona turar joy binolarining “Qashqarcha” turdagি binosi sharqiy Xitoyning Qashqar viloyatidan o‘tgan. Bu uyning o‘rtа qismida tepa tomonidan yorug‘lik tushushi uchun vertikal derazalar qo‘yiladi, ya’ni shiypon tarzda ko‘tariladi, bunday uyda yorug‘lik mikroiq lim normal holatda bo‘ladi. Fargona vodiysida barcha uylarda ayvon bo‘lib, bu ayvon lar janub tomonga qaragan bo‘ladi. So‘ngi davrlarda turar joy me’morchiligida bino ning tashkiliy qismlari asoslangan ravishda qurilib qolmay, balki ularga dekorativ bezash san’atini ishlatischgan. Milliy amaliy san’at turar joy binolariga va mahalla masjidlariga, hammom va boshqa turdagи binolarga o‘tadi.

Adabiyotlar;

1. Yousupov U.T. Akhmedov T.O. “Development of polyfunctional additives based on second ariresources and technologies of portland cement production” “International Journal of America” 2021
2. Tolqin A. Ancient greek and ancient rome architecture and urban planning //The American Journal of Engineering and Technology. 2021. – T. 3. – №. 06. – C. 82 87.
3. Tolkin, A. Reconstruction of precipitation water for technical purposes in the building sciences, 2(12), 86-89. and development
4. T. Axmedov Gotika uslubining arxitekturadagi ahamiyati. Scientific progress,
- 5 Tolqin, A. (2021). Ancient greek and ancient rome architecture and urban planning. The American Journal of Engineering and Technology, 3(06), 82-87.
6. Obidovich, A. T. (2022). Architecture And Urban Planning In Uzbekistan.
7. Tolqin, A., & Mirzaakbarovna, M. S. (2023). ON THE REDUCTION OF MATERIAL CONSUMPTION AS A RESULT OF THE USE OF HIGH STRENGTH CONCRETE IN CENTRAL COMPRESSION REINFORCED CONCRETE COLUMNS. *Spectrum Journal of Innovation, Reforms and Development*, 22, 170-174.

8. Tolqin, A., & Mirzaakbarovna, M. S. (2023). STRENGTHENING OF FOUNDATIONS AND FOUNDATIONS. *Spectrum Journal of Innovation, Reforms and Development*, 22, 162-169.
9. M.Mamadaliyev "ANALYTICAL CALCULATION OF BENDING ELEMENTS WITH BASALT FIBER REINFORCEMENT AND GLASS COMPOSITE ROD UNDER SHORT-TERM DYNAMIC LOADING" (Spectrum Journal of Innovation, Reforms and Development Volume 21, Nov., 2023) <https://sjird.journalspark.org/index.php/sjird/article/view/855/821>
10. Dusmatov, A., Nabiiev, M., Baxromov, M., & Azamjonov, A. (2023). Influence of two-layer axisymmetric cylindrical shells on their physical and mechanical characteristics. In E3S Web of Conferences (Vol. 452, p. 06010). EDP Sciences.
11. Azamjonov Asadbek Tursunali o‘g’li,. "COMPUTER PROGRAMS FOR DESIGNING BUILDING STRUCTURES." Spectrum Journal of Innovation, Reforms and Development 21 (2023): 178-184.
12. Abdukarimov, B. A., Tillaboyeva F. Sh, and A. T. Azamjonov. "CALCULATION OF HYDRAULIC PROCESSES IN SOLAR WATER HEATER COLLECTOR HEAT PIPES." Экономика и социум 4-1 (107) (2023): 4-10.
13. Onorboyev Shavkat, and Azamjonov Asadbek Tursunali o‘g’li. "IMPACT OF THE CONSTRUCTION INDUSTRY ON ECOLOGY." Miasto Przyszłości 44 (2024): 394-399.
14. Сотвoldиев, Ф., & Азамжонов, А. (2023). Анализ солнечных водонагревателей. Тенденции и перспективы развития городов, 1(1), 320-323.
15. Davlyatov , S. M., & Solijonov , F. S. o‘g’li. (2023). O‘ZBEKISTONDA YETISHTIRILAYOTGAN MAHALLIY YOG‘OCH MATERIALLARINING XUSUSIYATLARI. *GOLDEN BRAIN*, 1(1), 263–265. Retrieved from <https://researchedu.org/index.php/goldenbrain/article/view/4568>
16. Абобакирова, З. А., Эркабоев, А. А. У., & Солижонов, Ф. С. У. (2022). ИССЛЕДОВАНИЕ СОСТОЯНИЯ ДЕФОРМАЦИИ ПРИ РАСТЯЖЕНИИ С

- ИСПОЛЬЗОВАНИЕМ СТЕКЛОВОЛОКОННОЙ АРМАТУРЫ В БАЛКАХ. *Talqin va tadqiqotlar ilmiy-uslubiy jurnali*, 4(4), 47-55.
17. Asrorovna, A. Z., Abdug‘ofurovich, U. S., & Sodiqjon o‘g‘li, S. F. (2022). ISSUES OF IMPROVING THE ECONOMY OF BUILDING MATERIAL-WOOD PRODUCTION. *Spectrum Journal of Innovation, Reforms and Development*, 8, 336-340.
18. Abdug‘Ofurovich, U. S., O‘G‘Li, S. F. S., & O‘G‘Li, E. A. A. (2022). KOMPOZIT ARMATURALI EGILUVCHI BETON ELEMENTLARNING KUCHLANIB-DEFORMATSIYALANGANLIK HOLATINI EKSPERIMENTAL TADQIQ ETISH. *Talqin va tadqiqotlar ilmiy-uslubiy jurnali*, 4(4), 41-46.
19. Abdukarimov B. A., Sh T. F., Azamjonov A. T. CALCULATION OF HYDRAULIC PROCESSES IN SOLAR WATER HEATER COLLECTOR HEAT PIPES //Экономика и социум. – 2023. – №. 4-1 (107). – C. 4-10.
20. Azamjonov Asadbek Tursunali o‘g‘li, Use of Solar Battery Batteries Research Parks Publishing LLC (2023) C. 76-83.
21. Obidovich A. T. Architecture And Urban Planning In Uzbekistan //Texas Journal of Engineering and Technology. – 2022. – T. 9. – C. 62-64.
22. Muxammadovich A. A. et al. IMPROVING SUPPORT FOR THE PROCESS OF THE THERMAL CONVECTION PROCESS BY INSTALLING REFLECTIVE PANELS IN EXISTING RADIATORS IN PLACES //CENTRAL ASIAN JOURNAL OF MATHEMATICAL THEORY AND COMPUTER SCIENCES. – 2022. – T. 3. – №. 12. – C. 179-183.
23. Obidovich A. T. et al. ROMAN STYLE QUALITY CHANGES IN EUROPEAN ARCHITECTURE IN X-XII CENTURIES //Spectrum Journal of Innovation, Reforms and Development. – 2022. – T. 10. – C. 121-126.
24. BEAMS, D. I. B. R. C. Spectrum Journal of Innovation, Reforms and Development Volume 22, December, 2023 ISSN (E): 2751-1731 Website: www. sjird. journalspark. org DEVELOPMENT OF COMPOSITE REINFORCEMENTS AND CONCRETE DEFORMATIONS IN BASALT REINFORCED CONCRETE BEAMS.

25. Солижонов, Ф., & Курбонов, К. (2023). Расчет бетонных конструкций с композитной арматурой методом предельных состояний. *Тенденции и перспективы развития городов*, 1(1), 481-485.
26. Sodiqjon o‘g‘li, S. F. (2023). BAZALT KOMPOZIT ARMATURALI BETON TO ‘SINLARNI NORMAL KESIMLAR BO ‘YICHA MUSTAHKAMLIGINI TADQIQ ETISH.: BAZALT KOMPOZIT ARMATURALI BETON TO ‘SINLARNI NORMAL KESIMLAR BO ‘YICHA MUSTAHKAMLIGINI TADQIQ ETISH.
27. Akramov Kh.A, Davlyatov Sh.M, Kimsanov B.I, Nazirov A.S “APPLICATION AND CLASSIFICATION OF COMPOSITE REINFORCEMENT IN CONSTRUCTION” Spectrum Journal of Innovation, Reforms and Development Volume 09, Nov., 2022 Page 95-100
28. Akramov Kh.A, Davlyatov Sh.M, Kimsanov B.I, Nazirov A.S “CONSTRUCTION FEATURES OF PERFORMING EXTERNAL REINFORCEMENT FROM COMPOSITE MATERIALS” Spectrum Journal of Innovation, Reforms and Development Volume 09, Nov., 2022 Page 110-115
29. Akramov Kh.A, Davlyatov Sh.M, Kimsanov B.I, Nazirov A.S “THE ROLE OF ROD STAYED-SHELL SYSTEMS IN STUDIES OF INNOVATIVE STRUCTURES IN CONSTRUCTION” Spectrum Journal of Innovation, Reforms and Development Volume 09, Nov., 2022 Page 116-123
30. Ravshanbek o‘g‘li, R. R. (2023). BAZALT FIBRALARI ORQALI BETON TARKIBNI OPTIMALLASHTIRISH. SO ‘NGI ILMIY TADQIQOTLAR NAZARIYASI, 6(7), 37-44.
31. Ravshanbek o‘g‘li, R. R., & Zuxriddinovna, M. S. (2023). TO ‘RT QAVATLI BINONI SEYSMIK KUCHLAR TA’SIRIGA LIRA 9.6 DASTUR YORDAMIDA HISOBBLASH.: TO ‘RT QAVATLI BINONI SEYSMIK KUCHLAR TA’SIRIGA LIRA 9.6 DASTUR YORDAMIDA HISOBBLASH.
32. Nabiiev, M., Salimov, O., Khotamov, A., Akhmedov, T., Nasriddinov, K., Abdurakhmanov, U., ... & Abobakirov, A. (2024). Effect of external air temperature on buildings and structures and monuments. In E3S Web of Conferences (Vol. 474, p. 03011). EDP Sciences.

33. Umarov, S. A. O. (2023). UCH QAVATLI BINONI SEYSMIK KUCHLAR TA'SIRIGA LIRA 9.6 DASTUR YORDAMIDA HISOBBLASH. GOLDEN BRAIN, 1(1), 224-230.
34. Ashurov, M., & Ravshanbek o'g'li, R. R. (2023). RESEARCH OF PHYSICAL AND MECHANICAL PROPERTIES OF BASALT FIBER CONCRETE. European Journal of Interdisciplinary Research and Development, 17, 12-18.
35. Numanovich, A. I., & Ravshanbek o'g'li, R. R. (2022). BASALT FIBER CONCRETE PROPERTIES AND APPLICATIONS. Spectrum Journal of Innovation, Reforms and Development, 9, 188-195.
36. Abobakirova, Z., Umarov, S., & Raximov, R. (2023). Enclosing structures of a porous structure with polymeric reagents. In E3S Web of Conferences (Vol. 452, p. 06027). EDP Sciences.
37. Dusmatov, A., Nabiiev, M., Baxromov, M., & Azamjonov, A. (2023). Influence of two-layer axisymmetric cylindrical shells on their physical and mechanical characteristics. In E3S Web of Conferences (Vol. 452, p. 06010). EDP Sciences.
38. . Бахромов, М. М. (2020). Исследование сил негативного трения оттаивающих грунтов в полевых условиях. Молодой ученый, (38), 24-34.
39. 2. Бахромов, М. М., Отакулов, Б. А., & Рахимов, Э. Х. У. (2019). Определение сил негативного трения при оттаивании околосвайного грунта. European science, (1 (43)), 22-25.
40. 3. Бахромов, М. М., & Раҳманов, У. Ж. (2020). Проблемы строительства на просадочных лессовых и слабых грунтах и их решение. Интернаука, (37-1), 5-7.
41. Бахромов, М., & Xасанов, Д. (2022). ТЎКМА ГРУНТЛАРДА ЗАМИН ВА ПОЙДЕВОРЛАР ҚУРИЛИШИ. Евразийский журнал академических исследований, 2(6), 353-360.
42. Бахромов, М. М., & Раҳмонов, У. Ж. (2019). Дефекты при проектировании и строительстве оснований и фундаментов. Проблемы современной науки и образования, (3 (136)), 76-79.

43. Бахромов, М. М., & Рахмонов, У. Ж. (2019). Закономерности воздействия сил негативного трения по боковой поверхности сваи. Проблемы современной науки и образования, (12-2 (145)), 62-65.
44. Бахромов, М. М., Рахмонов, У. Ж., & Отабоев, А. Б. У. (2019). Воздействие сил негативного трения на сваю при просадке грунтов. Проблемы современной науки и образования, (12-2 (145)), 24-35.
45. Бахромов, М. М. (2022). Механические характеристики грунта и погноз закономерности воздействия сил негативного трения по боковой поверхности сваи. PEDAGOGS jurnali, 10(3), 162-167.
46. Mamatkhanovich, B. M., & Malikov, S. S. (2022). Strength And Deformability Of Metal GlassPlastic Shells Taking Into Account Shear Rigidity. The Peerian Journal, 12, 79-86.
47. Dusmatov, A., Bakhramov, M., & Malikov, S. (2023). Interlaminar shifts of two-layer aggressive-resistant combined plates based on metal and fiberglass. In E3S Web of Conferences (Vol. 389, p. 01030). EDP Sciences.
48. Mamatkhanovich, B. M. (2022). CONSTRUCTION OF FOUNDATIONS IN GRUNTS WITH VARIABLE STRUCTURES. Spectrum Journal of Innovation, Reforms and Development, 10, 115-120.
49. Mamathanovich, B. M. (2023). CONSTRUCTION OF FOUNDATIONS ON DRY SOILS. Spectrum Journal of Innovation, Reforms and Development, 21, 294-297.
50. Mamatkhanovich, B. M. (2022). Construction of Grounds and Foundations on Bulk Soil. Miasto Przyszłości, 201-205.
51. Bakhromov, M. M., Rakmanov, U. J., & Otaboev, A. B. U. (2021). Problems of construction on insulated forest and weak soils and their solution. Asian Journal of Multidimensional Research, 10(10), 604-607.
52. Dusmatov, A., Nabiiev, M., Baxromov, M., & Azamjonov, A. (2023). Influence of two-layer axisymmetric cylindrical shells on their physical and mechanical characteristics. In E3S Web of Conferences (Vol. 452, p. 06010). EDP Sciences.

53. Дилшоджон оглы, З. Н. (2023). ПРИМЕНЕНИЕ КОМПОЗИТНЫХ МАТЕРИАЛОВ ДЛЯ УСИЛЕНИЯ ЖЕЛЕЗОБЕТОННЫХ КОНСТРУКЦИЙ. Журнал «Спектр» об инновациях, реформах и развитии, 22, 148-154.
54. Набиев, М. Н., Насридинов, Х. Ш., & Кодиров, Г. М. (2021). Влияние Водорасторимых Солей На Эксплуатационные Свойства Наружные Стен. *Ta'lim va rivojlanish tahlili onlayn ilmiy jurnalı*, 1(6), 44-47.
55. Shavkatovich, N. K. (2022). SYSTEMS OF ARTIFICIAL REGULATION OF THE AIR ENVIRONMENT OF APARTMENTS AND HOUSES. *Spectrum Journal of Innovation, Reforms and Development*, 9, 169-174.
56. Nabiiev, M., Salimov, O., Khotamov, A., Akhmedov, T., Nasriddinov, K., Abdurakhmanov, U., ... & Abobakirov, A. (2024). Effect of external air temperature on buildings and structures and monuments. In *E3S Web of Conferences* (Vol. 474, p. 03011). EDP Sciences.
57. Khasan, N. (2024). Calculation of Cast Reinforced Concrete Frames of Multi-Story Buildings Taking into Account Dry-Hot Climate Conditions. *Miasto Przyszłości*, 49, 1215-1219.
58. Shavkatovich, N. X. (2022). ESTABLISHMENT OF TEMPERATURE AND HUMIDITY IN APARTMENTS AND HOUSES WITH THE HELP OF ARTIFICIAL PHASE ARTIFICIAL REGULATORY SYSTEMS. *Spectrum Journal of Innovation, Reforms and Development*, 10, 107-114.
59. Қодиров, Ф. М., & Мирзабабаева, С. М. (2022). Бетон ва темирбетон конструкциялар бузилишининг турлари ва уларнинг олдини олиш. *INTERNATIONAL CONFERENCE ON LEARNING AND TEACHING*, 1(6), 91-95.
60. Mirzajonovich, Q. G., & ToychiboyQizi, J. X. (2021). The determination of condensation precipitation on the inner surfaces of the limitation during the action of aerosols. *Asian Journal of Multidimensional Research*, 10(10), 132-137.
61. Sagdiev, K. S., Yuvmitov, A. S., & Qodirov, G. M. (2020). Assessment Of Seismic Resistance Of Existing Preschool Educational Institutions And

Recommendations For Their Provision Seismic Safety. *The American Journal of Applied sciences*, 2(12), 90-99.

62. Mirzajonovich, Q. G., & Qizi, J. X. T. Y. (2021). Influence Of Hydrophobizing Additives On Thermal Properties Of Ceramzito Concrete In Agressive Environment. *The American Journal of Engineering and Technology*, 3(12), 26-33.
63. Mirzajonovich, Q. G., & Qizi, M. Z. A. (2021). Determination Of Condensation On The Inner Surface Of The Walls Of Canoe Buildings Under The Influence Of Aerosols. *The American Journal of Engineering and Technology*, 3(12), 14-19.
64. Қодиров, F. M., & Мирзабабаева, С. М. (2022). Бетон ва темирбетон конструкциялар бузилишининг турлари ва уларнинг олдини олиш. *INTERNATIONAL CONFERENCE ON LEARNING AND TEACHING*, 1(6), 91-95.
65. Ogli, A. U. A., Ogli, X. A. M., & Mirzajonovich, Q. G. (2020). Hazrati Imam Architecture The Complex Is A Holiday Of Our People. *The American Journal of Engineering and Technology*, 2(11), 46-49.
66. Gayradjonovich, G. S., Mirzajonovich, Q. G., Tursunalievich, S. B., & Ogli, X. A. M. (2021). Corrosion State Of Reinforced Concrete Structures. *The American Journal of Engineering and Technology*, 3(06), 88-91.
67. Momin, N., Mirzajonovich, Q. G., Tursunalievich, S. B., & Gayradjonovich, G. S. (2021). Reception of improving the microclimate in the houses of the fergana valley. *The American Journal of Engineering and Technology*, 3(06), 92-96.
68. Ogli, X. A. M., Ogli, A. U. A., & Mirzajonovich, Q. G. (2020). Ways Of Implementation Of Environmental Emergency Situations In Engineering Preparation Works In Cities. *The American Journal of Engineering and Technology*, 2(11), 108-112.
69. Мирзабабаева, С. М., & Қодиров, F. M. (2022). Биноларни ўровчи конструкцияларини тузлар таъсиридаги сорбцион хусусиятини

яхшилаш. *INTERNATIONAL CONFERENCE ON LEARNING AND TEACHING*, 1(6), 86-90.

70. Mirzajonovich, Q. G., Ogli, A. U. A., & Ogli, X. AM (2020). Influence Of Hydro Phobizing Additives On Thermophysical Properties And Long-Term Life Of Keramzit0betona In An Aggressive Medium. *The American Journal of Engineering and Technology*, 2(11), 101-107.
71. Кодиров, Г. М., Набиев, М. Н., & Умаров, Ш. А. (2021). Микроклимат В Помещениях Общественных Зданиях. *TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI*, 1(6), 36-39.
72. BINO TOM QISMIGA VERTALYOT QO'NISHI NATIJASIDA BINONING KONSTRUKSİYALARIDAGI O'ZGARİSHLARI" 2023/10/5, "SCIENTIFIC BASIS OF APPLICATION OF INNOVATION AND ENERGY-SAVING TECHNOLOGIES IN THE CONSTRUCTION OF ENGINEERING COMMUNICATIONS" Authors: D.G'. G'ulomov, A.R. G'ulomov
73. Xasanjon, X. R. (2024). Review and Analysis of the Operation of Monolithic Biaxial Ceilings With Void Generators in Dry and Hot Climates. *Miasto Przyszłości*, 49, 896-901.
74. Abduxodi o'g'li, A. A. (2024). TEMIRBETON KARKAS TIZIMLI XIZMAT KO 'RSATISH BINOSINI SEYSMIK KUCHLAR TA'SIRIGA HISOBBLASH VA ULARNI SOLISHTIRMA TAHLILI. *Miasto Przyszłości*, 49, 627-630.
75. Davlyatov, S., Jakhongirov, I., Abdurakhmonov, A., Solijonov, F., & Abobakirova, Z. (2024, November). Determination of the stress-strain state of models of steel cylindrical tanks using the "ANSYS" program. In E3S Web of Conferences (Vol. 508, p. 04002). EDP Sciences.
76. Abdukholiq, A., & Golibjon, A. (2023). CALCULATION OF REINFORCED CONCRETE SLAB STRUCTURE UNPROTECTED FROM SUNLIGHT IN NATURAL CLIMATE IN LIRA PK PROGRAM. *Spectrum Journal of Innovation, Reforms and Development*, 21, 245-250.

77. Goncharova, N., Abobakirova, Z., Davlyatov, S., Umarov, S., & Mirzababayeva, S. (2023, September). Capillary permeability of concrete in aggressive dry hot climate. In E3S Web of Conferences (Vol. 452, p. 06021).
78. Y Karimov, I Musaev, S Mirzababayeva, Z Abobakirova, S Umarov, Land use and land cover change dynamics of Uzbekistan: a review, E3S Web of Conferences 421, 03007
79. Akramov, X., Davlyatov, S., Umarov, S., & Abobakirova, Z. (2023). Method of experimental research of concrete beams with fiberglass reinforcement for bending. In E3S Web of Conferences (Vol. 365, p. 02021). EDP Sciences.
80. Mirzababayeva, S., Abobakirova, Z., Umarov, S. Crack resistance of bent concrete structures with fiberglass reinforcement, E3S Web of Conferences, 2023, 452, 06023.
81. Strength and uniformity of composite reinforced columns, Akramov, K., Davlyatov, S., Kimsanov, B.E3S Web of Conferences, 2023, 452, 06012.
82. Comparison of current and expired norms for the development of methods for checking and monitoring the seismic resistance of buildings. Shodiljon Umarov, Khusnitdin Akramov, Zebuniso Abobakirova and Saxiba Mirzababayeva, E3S Web Conf., 474 (2024) 01020, DOI: <https://doi.org/10.1051/e3sconf/202447401020>.
83. Abdulkhaev, Z., Madraximov, M., Abdujalilova, S., Mirzababayeva, S., Otakulov, B., Sattorov, A., & Umirzakov, Z. (2023, September). Flow trajectory analysis and velocity coefficients for fluid dynamics in tubes and holes. In E3S Web of Conferences (Vol. 452, p. 02010).
84. Goncharova N. I., Abobakirova Z. A., Mukhamedzanov A. R. Capillary permeability of concrete in salt media in dry hot climate //AIP Conference Proceedings. – AIP Publishing LLC, 2020. – T. 2281. – №. 1. – C. 020028.
85. Comparability of estimates of the impact of gunpowder and gas-dynamic explosions on the stability of buildings and structures, Tojiev, R., Yunusaliev, E., Abdullaev, I., E3S Web of Conferences, 2021, 264, 02044
86. The Significant Technical Mantle of AI in the Field of Secular Engineering: An Innovative Design Akhmedov, J., Jurayev, U., Kosimova, S., Tursunov,

Q.,Kosimov, L.2024 4th International Conference on Advance Computing and Innovative Technologies in Engineering, ICACITE 2024, 2024, страницы 601–606.

87. Aerodynamic study of the characteristics of the nest one skyscraper under wind load Akhmedov, J., Madaliev, M., Yunusova, M., Kurbonova, N., Fayziyev, A. E3S Web of Conferences, 2023, 452, 06018.
88. Methodology for checking the seismic strength of buildings based on existing norms Abobakirova, Z., Umarov, S., Davlyatov, S., Nasriddinov, H., Mahmudov, A. BIO Web of Conferences, 2024, 105, 05014.
89. Improving the thermal properties of lightweight concrete exterior walls Goncharova, N., Ababakirova, Z., Davlyatov, S., Umarov, S., Mirzababayeva, S. E3S Web of Conferences, 2024, 508, 05002.
90. Operation of reinforced concrete beams along an inclined section under conditions of one-sided heating, Umarov, S., Mirzababayeva, S., Ababakirova, Z., Goncharova, N., Davlyatov, S. E3S Web of Conferences, 2024, 508, 05001.
91. Mirzaakbarovna, M. S. (2023). INTEGRATION IS THE BASIS OF QUALIFIED PERSONNEL TRAINING. *Journal of Innovation in Education and Social Research*, 1(4), 233-239.
92. Mirzababaeva, S. (2023). OPERATIONAL RELIABILITY OF RECONSTRUCTED BUILDINGS-STRUCTURES. *Spectrum Journal of Innovation, Reforms and Development*, 21, 235-239.
93. Mirzababaeva, S. M. (2021). The influence of elevated and high temperatures on the deformability of concrete. *Anal. Educ. Dev*, 1(6), 40-43.v
94. Mirzababayeva, S. M. (2023). DETERMINATION OF STRENGTH CHARACTERISTICS OF HEAT-RESISTANT CONCRETE ON ALUMINA CEMENT. *Web of Scholars: Multidimensional Research Journal*, 2(11), 34-38.
95. Asrorovna, A. Z., & Abdug‘ofurovich, U. S. (2023). ISSUES OF RATIONAL USE OF WASTE IN THE PRODUCTION OF BUILDING MATERIALS. *Spectrum Journal of Innovation, Reforms and Development*, 22, 94-100.

96. Abdug‘ofurovich, U. S. (2023). INVESTIGATION OF CROSSBARS WITH REINFORCED CONCRETE AND COMPOSITE REINFORCEMENT. *Spectrum Journal of Innovation, Reforms and Development*, 22, 77-84.
97. Abdug‘ofurovich, U. S., & Asrorovna, A. Z. (2023). THE ROLE OF BINDERS AND FILLERS IN THE STUDY OF CONCRETE PROPERTIES. *Spectrum Journal of Innovation, Reforms and Development*, 22, 101-109.
98. Madraximov, M., Abdulkhaev, Z., Ibrokhimov, A., & Mirababaeva, S. (2024, June). Numerical simulation of laminar symmetric flow of viscous fluids. In *AIP Conference Proceedings* (Vol. 3119, No. 1). AIP Publishing.
99. UMAROV, S. A. (2021). STRENGTHENING AND DEFORMATION OF GLASS COMPOSITE ARMATURES MANUFACTURED IN UZBEKISTAN. *THEORETICAL & APPLIED SCIENCE Учредители: Теоретическая и прикладная наука*, (11), 829-835.
100. Mirzaakbarovna, M. S. (2023). FACADE STUDY METHODS. *Journal of Innovation in Education and Social Research*, 1(4), 240-246