

Technology and organization of construction

MODERN LARGE-SIZE ENCLOSING STRUCTURES

O.E. BARTENEVA, T.S. MATSIEVICH, S.G. BUGAKOVA, I.A. VOYTENOK

The article presents the classification of wall panels for the prefabricated construction of buildings for various purposes, technical and economic characteristics, disadvantages and advantages are considered., a comparative analysis of panels among themselves is made.

Keywords: panel construction, wall panels, technical characteristics, SIP-panels, CLT-panels, sandwich-panels.

References

1. Borovskih O.N. Razvitie panelnogo domostroeniya kak put povisheniya aktivizatsii stroitel'nogo rinka // Rossiiskoe predprinimatel'stvo. 2016. № 20. S. 2811–2818.
2. Matveev A.V., Ovchinnikov A.A. Razrabotka energoefektivnykh krupnopanelnykh ograzhdayushchikh konstruktsii // Nauchno-tehnicheskii i proizvodstvennyi zhurnal «Zhilishchnoe stroitel'stvo». 2014. №10. S. 19-23.
3. Stroitel'stvo domov po finskoi tehnologii. Finskie sbornie karkasnye doma [Elektronnii resurs]. URL: <https://idea-bath.ru/design/stroitel'stvo-domov-po-finskoi-tehnologiiifinskie-sbornye-karkasnye.html>.
4. Problemy stroitel'stva maloetazhnykh zhilykh kompleksov s primeneniem energosberegayushchikh tehnologii v srednei polose Rossii. [Elektronnii resurs]. URL: http://www.rusnauka.com/15_DNI_2008/Tecnic/32935.doc.htm.
5. Paneli dlya sten. [Elektronnii resurs]. URL: <https://stroimdomik.org/stroitel'stvo/steny/iz-panelej/vidy-s-p#i-5>.
6. Paneli nesemnnoi opalubki. [Elektronnii resurs]. URL: <https://opalubkainfo.ru/sandwich-panel-scip>.

ANALYSIS OF THE PRINCIPLES FOR FORMING CAMPS IN THE NORTHERN TERRITORIES OF RUSSIA: A LOOK TO THE PAST AND THE FUTURE

A.A. TSENTKOVSKAYA, E.A. POLYAKOVA, L.P. SALOGUB, T.V. MAKAROVA

The key concepts of shift camps, the basic principles of their formation in the northern territories of Russia are considered. The main periods of development of mobile camps during the USSR, subjective state and the prospects for their development in the future are highlighted.

Keywords: shift camp, mobile building, block container, residential module, adaptation, Far North.

References

1. Organization of construction on a rotational basis / L. P. Salogub, O. A. Sotnikova, T. V. Bogatova, R. N. Kuznetsov. - Voronezh: "New Look", 2018. - 155 p. – (Construction in special conditions). – ISBN 978-5-93737-157-7. – EDN CVKWYB.
2. Decree of the State Committee on Labor and Social Affairs "Basic provisions on the rotational method of organizing work" (N 794 / 33-82 of December 31, 1987) (as amended by the resolutions of the USSR State Committee for Labor, the Secretariat of the All-Union Central Council of Trade Unions, the USSR Ministry of Health N 165 / 9-36 of 03/29/88, N 185/10-7 dated 04/05/88, N 324/16-35 dated 05/26/88, N 407/20-22 dated 07/11/88, N 614/28-70 dated 11/29/88, N 146 /9-8 dated 05/03/89, N200/11-4 dated 06/20/89, N 259/15-86 dated 08/01/89, N 328/20-48 dated 09/28/89, N 19/2-37 dated 11.01. 90, N 27 / 2-71 of 17.01.90) (as amended by decisions of the Supreme Court of the Russian Federation of 17.12.1999 N GKPI 99-924, of 04.07.2002 N GKPI 2002-398, of 19.02.2003 N GKPI 2003 -29). [Electronic resource] // SPS "Consultant Plus".

3. Peregodova, D. A. Retrospective analysis of rotational town-planning objects in the conditions of the Far North / D. A. Peregodova // Architectural research. - 2018. - No. 4 (16). - S. 103-112. – EDN SMZWNJ.
4. Zatyayeva, E.K. Principles of formation of the adaptive environment of a shift camp in an extreme climate / E.K. Zatyayeva // Prospects of science. - 2020. - No. 5 (128). - S. 67-69. – EDN GANNUE.
5. Activities of state organizations for the industrial development of Siberia in the XX - early XXI centuries. Collection of scientific papers. Issue. 1. Novosibirsk: Siberian Scientific Publishing House, 2009. - 266 p.
6. Tokarev, A. E. Features of the design of rotational camps of the XXI century. Caisson domes / A. E. Tokarev // The Northern Sea Route, water and land transport corridors as the basis for the development of Siberia and the Arctic in the XXI century: Collection of reports of the XX International Scientific and Practical Conference, Tyumen, March 23, 2018. Volume 1. - Tyumen: Tyumen Industrial University, 2018. - S. 236-246. – EDN XOBUDJ.
7. <https://ardexpert.ru/article/6227>
8. Adaptation to work on a rotational basis in the extreme conditions of the Far North: textbook. allowance / N.N. Simonov; Northern (Arctic) Federal University. M.V. Lomonosov. - Arkhangelsk: ID NArFU, 2014. -170 p.
9. Aleshkevich E.S. Implementation of political decisions in the development of the Far North: to the history of the development of the shift method. Far North: features of labor and human socialization. - Biography, rotational work and socialization of a person in a northern industrial city: materials of a scientific and practical conference (December 4-6, 2008): - Novy Urengoy, 2009. P. 77-84.

Environmental safety of construction and urban economy

ENERGY-SAVING GLAZING: BASIC PRINCIPLES OF APPLICATION

T.V. MAKAROVA, T.S. MATSIEVICH, S.G. BUGAKOVA, O.E. BARTENEVA

The article presents options for energy saving of building resources due to translucent window structures. The types of glazing that allow to reduce the energy consumption of the room both in the cold period of time and in the hot period are given. Answers to frequently asked questions regarding energy-efficient glazing are given

Keywords: energy saving, energy efficiency, energy-efficient translucent structures, energy-saving glazing, I-glass, Kglass, IM-glass

References

1. SP 50.13330.2012. Thermal protection of buildings. Updated version of SNiP 23-02- 2003./Gosstroy of Russia. – M.:FSUE CPP, 2005. – 140s.
2. Semenova E.E., Bogai V.A. Research of energy-saving technologies in the design of translucent structures of public buildings on the example of low-emission glasses //Collection of scientific papers on the results of the international scientific and practical conference. - Novosibirsk. – 2018. – No. 5. – pp. 73-74.
3. Glasses with low-emission coating / [Electronic resource] // stroyguru.com : [website]. — URL: <https://stroyguru.com/okna/stekla-s-nizkoemissionnym-pokrytiem/> (date of reference: 10/21/2022).
4. Golovanova L.A., Eroshenko A.S. Features of energy-efficient translucent enclosing structures [Text - electronic] // Electronic scientific publication Scientific notes of TOGU. 2014. Volume 5. No. 4. URL: https://pnu.edu.ru/media/ejournal/articles-2014/TGU_5_155.pdf
5. Energy-saving windows: the principle of operation and features of choice / [Electronic resource] // dveri-salon.ru : [website]. — URL: <https://dveri-salon.ru/vidyokon/energoberegayushchie-okna.html> (accessed: 10/22/2022).
6. Turbina K.V. Analysis of the use of energy-efficient building structures in the design of public buildings/ K. V. Turbina, E.E. Semenova // Scientific Journal. Engineering systems and structures. – 2021. – N1(43) – C.30–35.

Urban planning, planning of rural settlements

STUDY OF THE PRINCIPLES OF FORMING THE RECREATIONAL ENVIRONMENT ON THE EXAMPLE OF THE CITY OF VORONEZH

K.S. KOTOVA, A.P. BONDAREVA

The principles of forming a recreational environment are considered, a landscape and urban planning analysis of the territory of the city of Voronezh is carried out to select a recreational zone.

Keywords: recreational environment, improvement, comfortable environment, environmental indicators, anthropogenic load.

References

1. Vasilenko N.A. Sistemnye principy formirovaniya landshaftno-rekreacionnoj sredy krrpnogo goroda: avtoreferat dis. ... kandidata arhitektury: 18.00.01 / Vasilenko N.A.; [Mesto zashchity: Mosk.arhitekturn. in-t]. -Moskva, 2009. - 26 c
2. Zadvoryanskaya T.I. landshaftno-gradostroitel'naya organizaciya rekreacionnyh zon v structure pribrezhnyh territorij krupnyh gorodov: na primere Voronezha: avtoreferat dis. ... kandidata arhitektury: 18.00.04 / Zadvoryanskaya T.I.; [Mesto zashchity: S.- Peterb. gos. arhitektur. -stroit. unt]. –Sankt-Peterburg, 2009. - 22 c.
3. Vendina O.I. Socialno-geograficheskie factory formirovaniya rekreacionnoj sredy: ... avtoreferat dis. ... kandidata geograficheskikh nauk: 11.00.02. -Moskva, 1992. - 24 c.: il.
4. Vinogradova A.A. Antropogennaya nagruzka na ekosistemy Kostomukshskogo prirodnogo zapovednika: Atmocfernyj kanal [Elektronnyj resurs] / A.A. Vinogradova, Yu.A. Ivanova. - Moskva: Fizmatlit, 2013. - 81, [1] s.: il., tabl.; 22 sm.
5. Alekseenko E.V. Ekologicheskaya ustojchivost kulturnyh landshaftov promyshlennogo goroda: na primere parkov g.Omska: avtoreferat dis kandidata biologicheskikh nauk: 03.00.16/ Om. gos. ped. un-t. – Omsk, 2006. – 18 s.
6. Skryabin P.V. Principy I metody gradostroitel'nogo formirovaniya rekreacionnoj sredy na primere Gornogo Altaya: dissertaciya ... kandidata arhitektury: 05.23.22 / Skryabin P. V; [Mesto zashchity: S.- Peterb.gos.arhitektur. - stroit. un-t]. –Sankt-Peterburg, 2013. - 130 c. + Pril. (39 s.: il.).
7. Postanovlenie glavy gorodskogo okruga gorod Voronezh ot 15.12.2015 № 920 O sohranenii, razvitii i blagoustrojstve zelenyh zon obshchego polzovaniya g. Voronezh.

UNIVERSITIES CAMPUS: TYPES AND FUNCTIONAL ZONING

P.A. GROBOVENKO, E.E. PROKSHITS, YA.A. ZOLOTUKHINA

The article deals with campuses of various town-planning affiliation. Examples of universities related to a specific type of location in an urban environment are given. The necessary functional zoning of the campus is being considered.

Keywords: university campus, campus, location, functional zoning, comfortable life

References

1. Sedova YU.A. Sovremennyj kampus universiteta [Tekst] // «SIMVOL NAUKI». – 2016. – №12-3. – S. 194-195.
2. Kashko O.L. Kampusy universitetov [Tekst] // Evrazijskij Soyuz Uchenyh (ESU). – 2016. – №4 (25). – S. 80-81.
3. Rasporyazhenie "O kriteriyah otbora proektov po sozdaniyu sovremennyh universitetskikh kampusov mirovogo urovnya" ot 23.06.2021 № 194-r // Rossijskaya gazeta
4. CSR, VEB.RF, Universitet "20.35" "Universitetskie kampusy i gorod: kooperaciya radi konkurentosposobnosti" // Avgust 2021

Lifecycle management construction objects

ON HEAT TRANSFER IN THE REACTOR CORE WITH BALL FUEL RODS

N.YU. AVDEEVA, K.V. CHEBANYUK, V.V. SHITOV, M.I. TSELYARITSKAYA

This article discusses the derivation of the heat transfer equation in a nuclear reactor with ball fuel rods, the core of which is modeled by a porous backfill with internal heat sources. An analytical solution of this equation in the simplest formulation is obtained.

Keywords: core, nuclear reactor, porous filling, temperature field, quasi-homogeneous medium

References

1. Petuhov B. S., Genin L. G., Kovalyov S. A. Teploobmen v yadernyh energeticheskikh ustanovkakh. - M.: Energoatomizdat, 1988. - 472 s.
2. P.V. Moskaev Matematicheskoe modelirovanie poristyh struktur / P.V. Moskaev, V.V. SHitov – M.: Fizmatlit, 2007. – 120 s.
3. Isachenko V.P. Teploperedacha / V.P. Isachenko, V.A. Osipova, A.S. Sukomel. – M.: Energoizdat, 1981. – 416 s.
4. Elsner N., Kohler K. Beitrag zur Theorie der Schwitzkuhlungs-poroser Wände. Teil II// Wissenschaftliche Zeitschrift der Hochschule für Verkehrswesen Dresden. 1961/62. H.1 № 9. S. 93- 103.

COMPARISON OF INNOVATIVE TECHNOLOGIES FOR IMPROVING ENERGY EFFICIENCY AND THERMAL COMFORT IN A TROPICAL CLIMATE

S.G. BUGAKOVA, E.D. KAZAKOVA, A.A. SAFONOVA, T.S.MATSIEVICH

Nowadays, technological progress has provided greater comfort of living, including by reducing energy consumption. In addition, it is extremely important to discuss and resolve energy efficiency issues in order to reduce the rate of resource depletion. It is worth noting that energy efficiency also directly affects the thermal comfort of people in the building. In this article, examples of green construction of buildings built in a tropical region are considered, since uniform climatic conditions allow the use of similar methods in design, construction, and design.

Keywords: energy efficiency, thermal comfort, passive house, green building

References

1. ArchDaily. (2013). S11 House/ ArchiCentre.
2. McDonald, A. (2015). How Malaysia's S11 house brings modern style to Petaling Jaya. <https://www.habitusliving.com/architecture/how-malaysias-s11-house-brings-modern-style-topetaling-jaya>
3. Hidayatuljamilah Ramli N. Re-adaptation of Malay house thermal comfort design elements into modern building elements–Case study of Selangor traditional Malay house & low energy building in malaysia //Iranian (Iranica) Journal of Energy & Environment. – 2012. – T. 3. – №. 5.
4. Song Y. Three Main drivers of sustainable design: A new architectural vernacular for China //Architectural Design. – 2018. – T. 88. – №. 6. – C. 74-79.
5. As I., Basu P. (ed.). The Routledge Companion to Artificial Intelligence in Architecture. – Routledge, Taylor & Francis Group, 2021.
6. Skorokhodova A.A. Improving the energy efficiency of buildings and structures/A.A. Skorokhodova, E.E. Semenova // The Future of Science -2020 : Collection of scientific articles of the 8th International Youth Scientific Conference, in 5 volumes, Kursk, April 21-22, 2020 / Responsible editor Gorokhov A.A.. – Kursk: Southwest State University, 2020. – pp. 127-130. – EDN XXJYGB.

7. Semenova E.E., Ways to improve the energy efficiency of civil buildings / E. E. Semenova, M. G. Samsonova, D. E. Netseplyaev, V. Yu. Companets // Scientific Journal. Engineering systems and structures. – 2019. – № 3(36). – Pp. 20-24. – EDN NHZEMX.
8. Turbina K.V. Analysis of the use of energy-efficient building structures / K.V. Turbina, E.E. Semenova // Scientific Journal. Engineering systems and structures. – 2021. – № 1(43). – Pp. 30-35. – EDN IIOMQQ.