Sanguine lives brightly, so he paints walls of his home in fresh and bright colors: yellow, orange, cream, red, amber, terracotta. The house of a sanguine is full of joy and energy. There are noisy children, animals and guests, the music plays. His apartment is full of air and light.

Sanguine does not like large furniture and excess things. But we cannot say about one stylistic preference. Maybe, one sanguine prefers the romantic style, and the other - an extreme. His house is full of air, light and color. The sanguine person has lot of glass and mirrors that visually expand the space.

In short, a sanguine tends to create bright and welcoming atmosphere in his house.

Fig. 4. Interior for a sanguine

Thus, knowledge about temperament is widely used in many fields of human activity, especially in the design. It is clear that unlike people need a completely different decor. Interior is a reflection of the individual owner. That is why psychologists and designers recommend paying special attention to the psychological type of the owner, especially his temperament.

Creating a specific interior in his apartment or house, an architect try to find the point of intersection of the two worlds: the world of interiors with their laws, canons, history, and the world of his own mental and taste preferences. Therefore, experts say that the search for "his style" interior is simple and complex at the same time: decor elements should be in harmony with the inner world of a man.

REFERENCES

1. «The four temperaments» by rev. Conrad Hock, rev Nicholas M. Willwers S.A.C. – The Patholic Fathers – 213 p. – 2012.
2. «Environmental psychology for design» by DakKopec – 170 p. – 2010.
3. http://ru.wikipedia.org/wiki/
4. http://www.globbo.biz/interior-design-with-your-personality.html.
5. http://www.builderstown.co.uk/
6. http://www.bubblews.com/news/
7. http://rusadvice.org/construction/design2/
8. http://www.interiordesign.net/
9. http://goodlinez.ru/repair_apartments/176.

UDC 624.012.454

STRENGTH AND DEFORMABILITY OF COMPRESSED CONCRETE ELEMENTS WITH MECHANICAL CONNECTIONS OF REINFORCING BARS

ALIAKSEI KOZEL, JURIJ POPKOV
Polotsk State University, Belarus

In this research work experimental data of the mechanical properties of armature of mechanical connections are presented. They ate featured by device simplicity, minimal cost as well as the necessary strength.

Results of research obtained from testing connections in full-scale samples - reinforced columns.

Due to the increasing part of monolithic construction of buildings and structures, as well as the development of high-rise construction in Belarus questions of docking rebar very relevant and in time. Consideration of this issue suggests that the mechanical butt splice fittings for the last 10 years have found their place in the monolithic construction in our country and the CIS.Industry documents that establish requirements for splicing rebar developed for introduction of mechanical connections in the design and construction of buildings of nuclear power plants. Constructions were used on most built objects [1].

Currently, there are multiple options for the mechanical coupling connections rebar, built on different principles of force transmission between the docked bars. The main requirements for methods of joining fittings for their implementation:

- guaranteed reliability of mechanical connection;
- minimum cost of connecting element;
- minimum cost to operate the equipment when performing a connection;
- minimum time to perform a connection.

Evident that to achieve simultaneous full implementation of all conditions cannot be [2].

Field of application of mechanical connections expands and gets new horizons in the practice of monolithic construction.

The purpose of this research work is to determine the influence of mechanical butt- joint of armature of a new construction on strength and deformability of compressed concrete elements.

As prototypes were made 8 samples of reinforced concrete rectangular columns size 200x200x2000 mm (fig. 1(a)), manufactured of heavy concrete with strength of 33.5 MPa and 45.8 MPa.

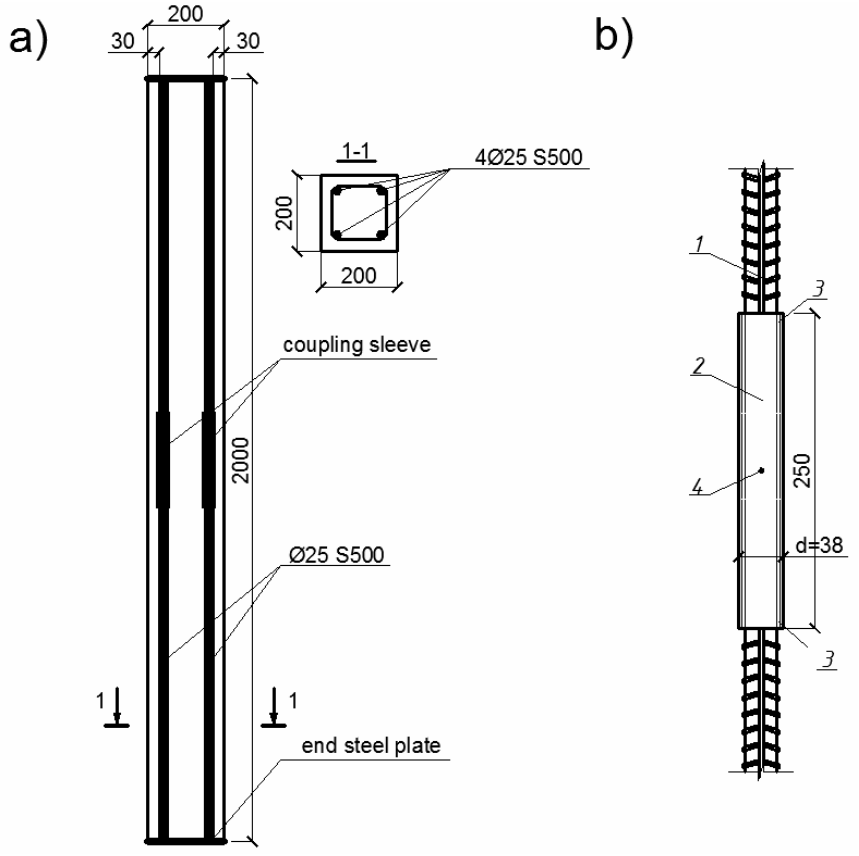

Fig. 1 a) Scheme of longitudinal reinforcement samples columns; b) construction coupler connection reinforcement bars:

1 – docked rebars ∅ 25 S500; 2 – coupling of d = 38mm pipe with wall thickness of 4mm; 3 – resin composition; filler – silica sand; 4 – 3mm diameter hole

Samples were reinforced with working longitudinal reinforcement in the form of four rods of 25 mm diameter grade S500 (At 500C), one type of connection ends of the rods shown on fig. 2(b). Columns were

tested for central compression. For variable factor of experimental study was taken location of data joints in test samples 3 types of location couplings were used for columns:

- four connections at one level;
- four off set connections;
- two connections.

The cross reinforcement of columns performed curved clamps envelopes working longitudinal reinforcement. Connection of longitudinal reinforcement and binding wire clamps performed. At the ends of the columns used headroom with end plates welded to the longitudinal reinforcement.

This type of device is characterized by simplicity and minimal cost of production [3, 4]. Selection of the binder material in the joint part in the form of the polymeric composition based on epoxy resins due to the possibility to obtain high-strength quick-material for a day. Connection length in the initial combination is taken to be 250 mm (10 diameters abutting rods) based on tests tensile samples of compounds with different length sleeves. With a length of pipe – clutch 10 ∅25 tests showed stable values gap in median plane of the compound in efforts relevant interim resistance steel pipe.

All the experimental part of the work carried out with this type of mechanical coupling. We used rebar diameter 25mm, smelting 10103 A500SP made by TU 14-1-5497-2004, of RUE "Belarusian Steel Works." In terms of tensile tests on the average yield strength of 551 MPa steel, tensile strength 687 MPa, which corresponds to the requirements of the fixture class S500 (A500). Couplings used for the manufacture of welded steel pipes produced by JSC Moscow Pipe Plant "Philetus" made according to GOST 8734-75 , an outer diameter of 38mm and a wall thickness of 4mm . On the inner surface of the tube were cut depth protrusions 1 – 1.5 mm, to improve adhesion. According to the results of tensile tests on the mean values of yield strength steel clutch 360MPa, tensile strength 504. Strain diagram was constructed for the main steel rods and steel sleeve (fig. 2).

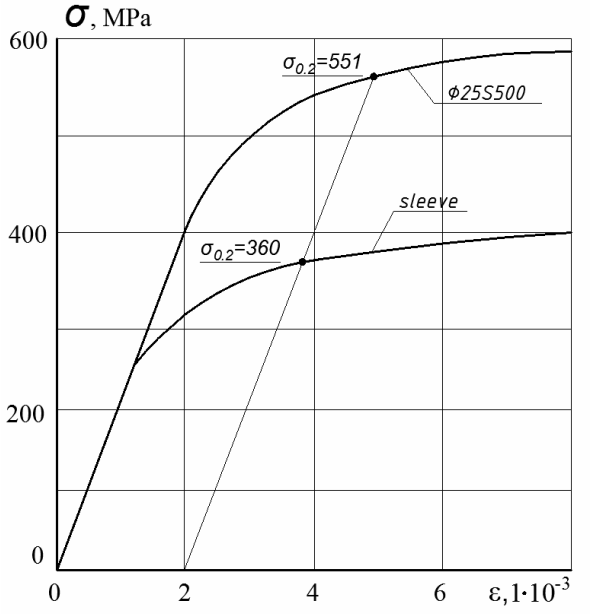

Fig. 2. Strain diagram of steel rods and steel main pipe couplings

When compressing deformation in the coupling sections considerably smaller deformations abutting rods at all stages of the load (fig. 3). Explanation for this is the lower intensity of stress on greater cross-sectional area. In the transition zones at the beginning and end of the sleeve is formed deformation gradient associated with the process of redistribution of stresses between the docked and coupling rods. It is in these areas observed bending of the sample at the time of buckling force threshold compression.

Columns concreting was performed on the basis of Polotsk State University. Concrete was made on PRUE "Novopolotskzhelezobeton" and delivered to the testing laboratory EI "PSU" in the form of ready mix. Concreting samples occurred in the laboratory EI "PSU". Concrete mixture compression when laying concrete in formwork was produced with vibrators.

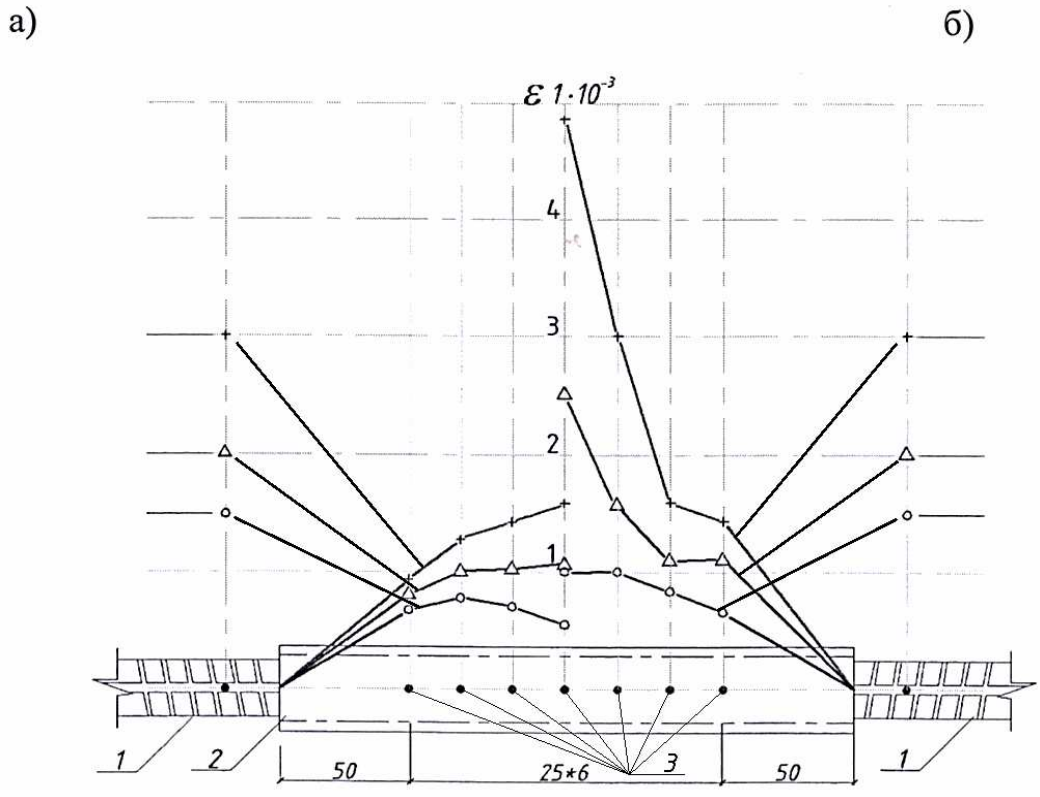

Fig. 3. Strain diagram sample butt joint under compression (a) and tension (b):
1 – docked rebars; 2 – sleeve;
o – strain at the level of loading $0,5N_{max}$; Δ – the same with $0,7N_{max}$; + - the same with $0,9N_{max}$

Columns prototypes were tested on a hydraulic press PR-1000. For uniformity of transmission to the column, immediately prior to the experiment, the headroom between the columns and press plates laid a layer of cement-sand mortar. The load is applied columns was carried out stages – 0.1 N_{destr}delayed 10 minutes. Transverse and longitudinal deformation of concrete were measured at the interface using strain gauges and dial indicators.

Table1 – Characteristics of full-scale samples – columns

№	The code sample	Characteristics of the sample and the symbol	The prism Strength of concrete,MPa	Destroying the longitudinal force, kN
1	К-1	Control samples without connections (•)	33,5	2100
2	К-2		45,8	2420
3	К-3	Four connections in the same level (x)	33,5	2140
4	К-4		45,8	2500
5	К-5	Fourconnectionswithoffset(▲)	45,8	2400
6	К-6		45,8	2490
7	К-7	Two connections(v)	45,8	2450
8	К-8		33,5	2200

The results of processing of the measurements were constructed graphs showing the dependence of the relative transverse deformations of concrete columns of the applied load (fig. 4).

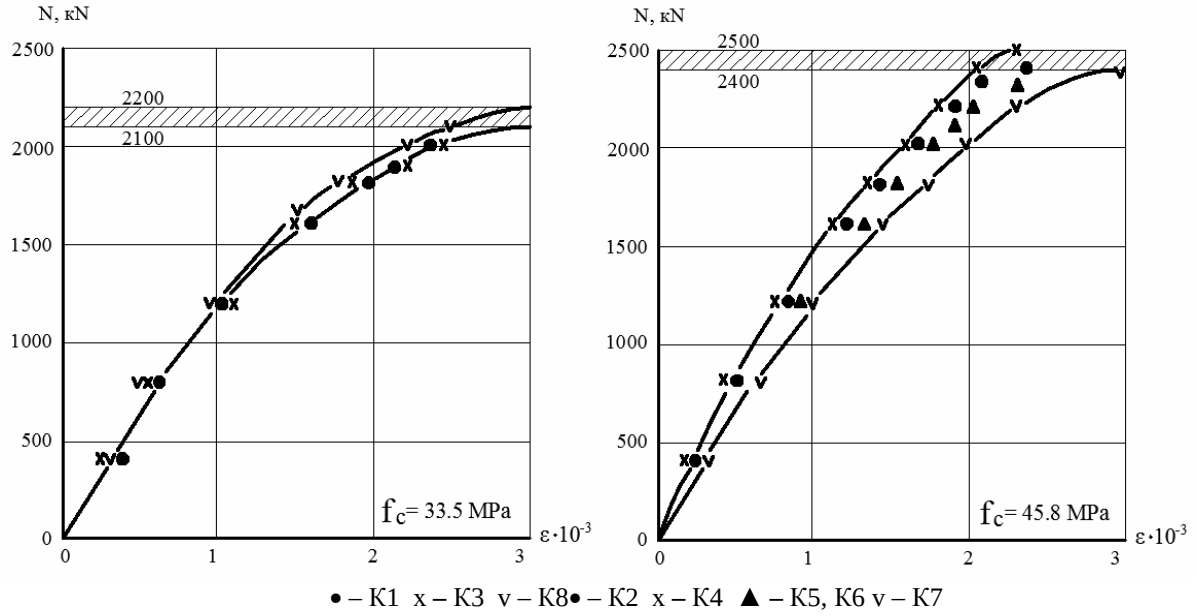

Fig. 4. Relative cross deformation of concrete of prototypes columns

– Character of the strain distribution was set along the length of prototypes couplings and its compliance as a linear displacement relative to the coupling rods abutting. The areas of strain concentration along the length of the connection were creating.

– Experimental tests of columns with coupling sleeve gave possibility to determine the strength of prototypes columns at the central compression.

– Placing a mechanical connection in the compressed zone did not lead to additional significant strains in concrete and did not affect the strength, and there were no influence on stiffnessof tested concrete columns.

– The obtained results allow us to recommend new construction mechanical connections for practical application.

REFERENCES

1 Дьячков, В.В. Механические соединения арматуры – применение и тенденция развития / В.В. Дьячков // Бетон и железобетон. – 2013. – № 4. – С. 8 – 9.

2 Лешкевич, О.Н. Результаты испытаний сварных и механических стыковых соединений арматуры класса S500 / О.Н. Лешкевич, А.И. Чубрик // Строительная наука и техника. – 2010. – № 6. – С. 130 – 133.

3 Устройство для соединения концов арматуры: пат. 2930 Респ. Беларусь, E04C5/16 / В.В. Чупров, Ю.В. Попков, В.И. Сидоренко; заявитель Полоц. гос. ун-т. - № U20060002; заявл. 03.01.2006; опубл. 31.08.2006// Афіцыйны бюл. / Нац. Цэнтрінтэлэктуал. уласнасці. – 2006. – № 4. – С. 173.

4 Устройство для соединения концов арматуры: пат. 3091 Респ. Беларусь, E04C5/16 / В.В. Чупров, Ю.В. Попков, В.И. Сидоренко; заявитель Полоц. гос. ун-т. – № U20060201; заявл. 03.04.2006; опубл. 30.10.2006 // Афіцыйны бюл. / Нац. цэнтр інтэлэктуал. уласнасці. – 2006. – № 5 – С. 162.

UDC 72 (Architecture); 502/504 (Environmental science)

ECOLOGICAL TRENDS IN THE BUILDING INDUSTRY

MAŁGORZATA ŚLIWKA
AGH University of Science and Technology, Poland

The article discusses the criteria for environmental assessment of buildings and the various methods of environmental certification. Sustainable building is based on the use of environmental technologies, such as non-waste technologies, low emission technologies and renewable energy sources, reducing of energy consumption and use of ecological materials.