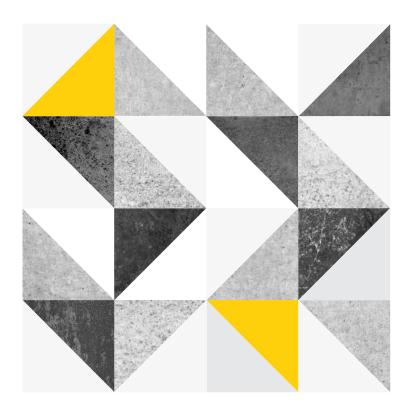
KONSTRUKTIV KOVALSKA

Product Catalog

individual precast concrete



Leader in the production of individual reinforced concrete products

4

4 production facilities

2

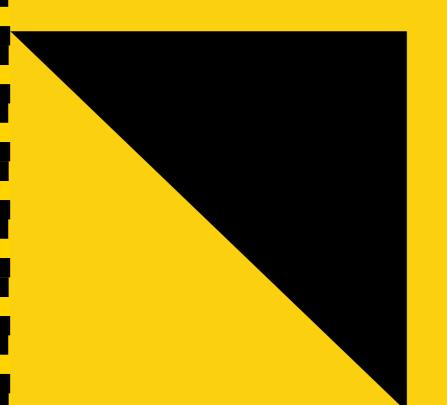
2 hollow core slab production lines

200 thous. m³

200 000 m³ annual concrete production

250

Over 250 completed facilities



KONSTRUKTIV KOVALSKA

KONSTRUKTIV KOVALSKA

The rapid development of building technologies used in the manufacture of prefabricated reinforced concrete structures makes it possible to build objects of complex architectural forms, and of varying in height and purpose.

Contents

Advantages of using prefabricated	06
einforced concrete structures of	
ndividual production for the	
construction of frame structures	

	construction of frame structures	
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Advantages of using prefabricated reinforced concrete structures of individual production for the construction of frame structures

Project efficiency

- Arbitrary design of a frame structure without reference to outdated series
- Possibility of covering large spans (up to 33 m)
- Minimal material consumption of structures

High Quality and Aesthetics

- The quality of structures is guaranteed by plant production
- The prefabricated reinforced concrete elements can take any shape, size and color while maintaining high quality of the product surface

Reduced construction costs

- Possibility to pre-fabricate frame elements prior to commencement of works on a construction site
- Simple structural connections
- No electric welding
- Possibility of installation at low temperatures
- Reduced number of assembly operations and people on a construction site

Fire resistance

 Ensuring fire protection requirements for structures without additional special measures to increase fire resistance

Low operating costs

- No need for additional finishing of reinforced concrete frame elements without a threat of their damage by atmospheric influence
- The internal surfaces of prefabricated concrete elements are almost not susceptible to damage and are easy-to-wash

Foundation pockets

Foundation for frame structures may be made of prefabricated reinforced concrete and castinplace version. The disadvantage of the latter is the complexity of maintaining the required accuracy of arranging the cast formwork for high-density reinforcement concrete and high labor input at the construction site. Application of foundation pockets makes the construction and operation much economic and considerably increases its rate.

A prefabricated reinforced concrete foundation pocket is installed on the lean concrete base by mounting pipes. It has connection bars, which are concreted together with the slab part of the foundation, which ensures precision of its design position and reliable connection with the foundation structures. It is possible to prefabricate a foundation pocket with the slab part.

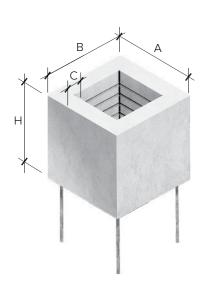
Types of foundations pockets

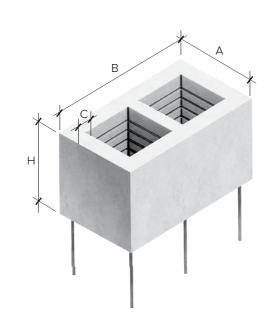
The Kovalska Industrial and Construction Group has developed sets of foundation pockets for columns of different sizes and types, as well as pockets for structures with expansion joints. Foundation pockets are designed for the installation of columns with a cross section from 300 x 300 mm to 600 x 600 mm.

Foundation pockets of three main types are being manufactured: single, double (if expansion joints are necessary) and quadruple pockets (in the case of expansion joints intersection). In addition, it is possible to manufacture individual foundation pockets for columns with a larger cross section.

SINGLE. TYPES 1950, 1990

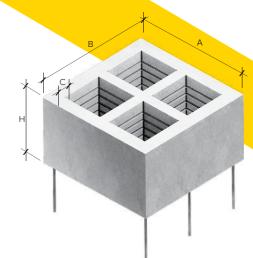
DOUBLE. TYPES 1995



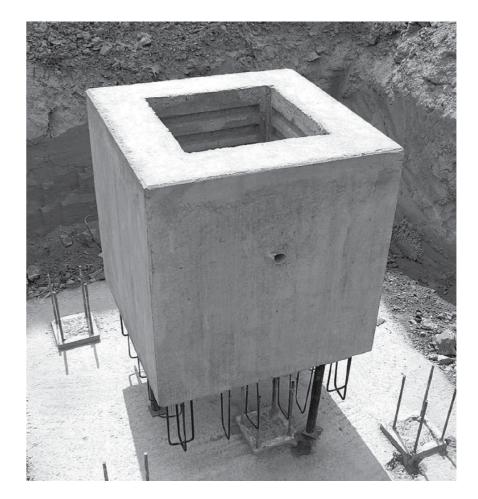


QUADRUPLE. TYPE 1999

FOUNDATION POCKET WITH THE SLABPART



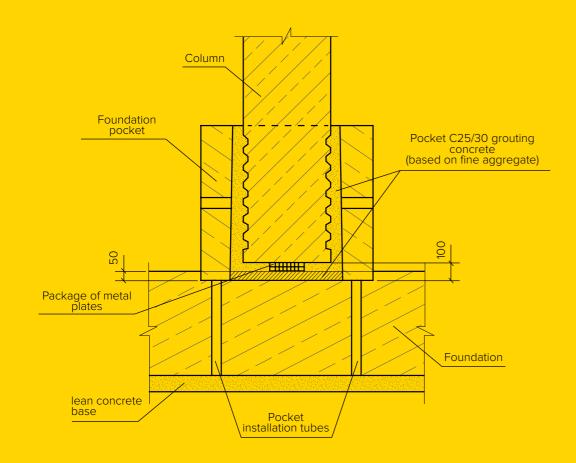




Standard Sizes

Туре	A mm	B mm	H mm	C mm	Weight mm	Maximum Column Size mm
1950	1000	1000	900	190	1,325	500
1990	1160	1160	1000	220	1,955	600
1995	2160	1160	1000	220	3,445	600
1999	2160	2160	1000	220	6,025	600

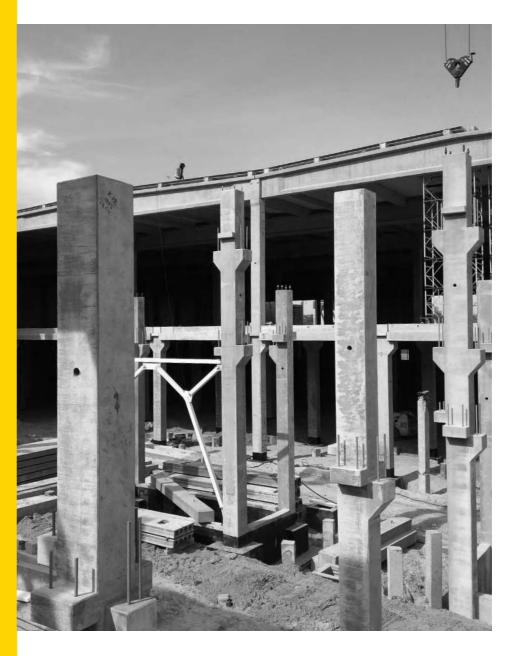
CONNECTION NODE



Reinforcement conditionally not shown

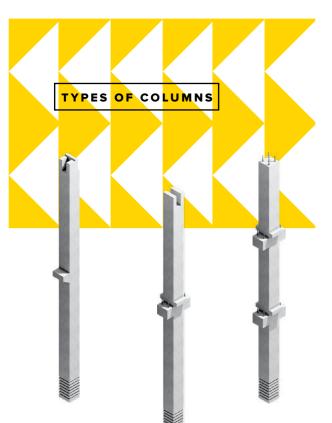
Columns

Prefabricated reinforced concrete columns are designed to receive load from elements of floor, roof and wall elements. Columns are used both for single-story and for multi-story buildings and structures.

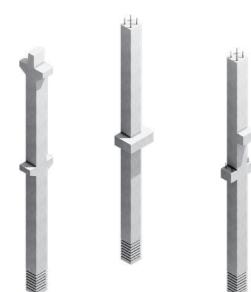


Depending on the overall dimensions, columns provide fire resistance of up to 2.5 hours, enabling the use of these structures in a variety of buildings and structures.



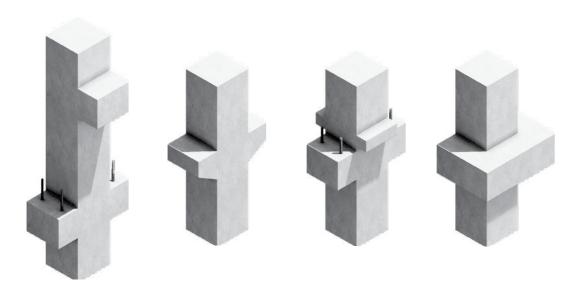


Prefabricated reinforced concrete columns have standard dimensions (A, B) from 300 mm to 800 mm, but individual production of columns of larger dimensions is also possible. The length of the deliverable assembly is up to 16 m. Columns can be designed with any number of different corbels, cutouts, embedded parts, anchor bolts and other additional elements.



Corbels

The classic scheme of connection beams or purlins to columns involves their resting on corbels, which are located completely below or within the beam. The corbels can be positioned within columns at different markings and different column planes, allowing columns to be used in buildings with tiered flooring and ceiling.





CONNECTION

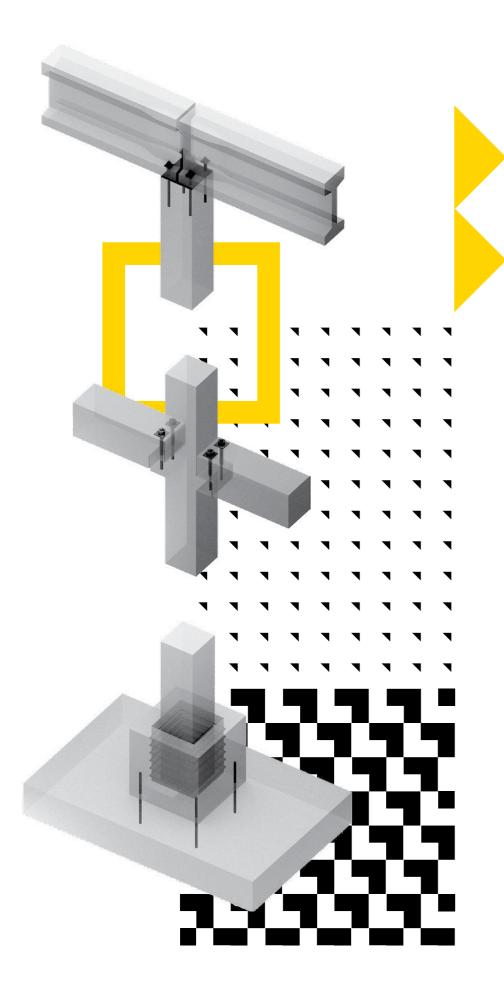
Reinforced concrete columns are connected to foundation structures by way of grouting in reinforced concrete pockets or by connecting the embedded parts of columns with anchor bolts of the foundation.

Connection of columns in height (extension) is performed through the anchor bolts released from the column head of the 1st tier and through the embedded parts (shoes), which are located in the base of the column of the 2nd tier.

Columns are connected to horizontal interfloor beams according to the classical scheme through corbels.

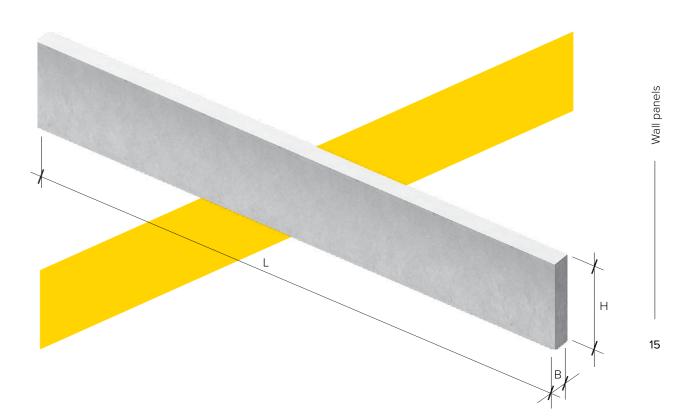
Connection of columns with horizontal ceiling beams is performed on anchor pins.





Wall panels

Wall panels are a single-layer or three-layer rectangular section structure. They are intended for single- and multi-storey heated and unheated buildings of various purposes.



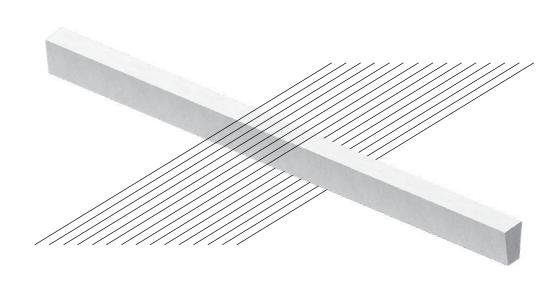
Standard Sizes

L	H mm	B <i>mm</i>
6000-12000	500-1800	200-400

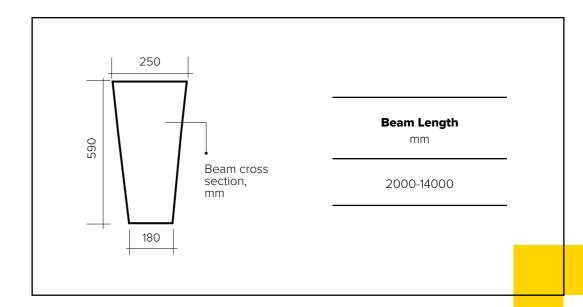
Purlins

Purlins are horizontal secondary beams that carry loads from light roofing material and transfer it to the main beams. Reinforcement of the purlins is prestressed strands. Concrete cover provides a fire resistance limit of up to 60 minutes.

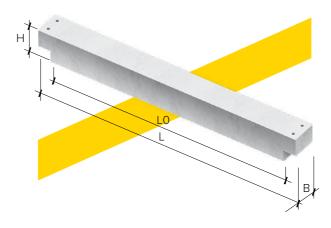
Purlins have a wide scope of application: warehouses, industrial shops, logistics and shopping centers, where light roofing materials are used for covering. As a rule, the spacing of the purlins is 3 to 4.5 m.



Standard Sizes

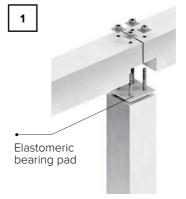


Rectangular Beams may be used as floor beams, roof beams, as well as foundation beams. They are made of both reinforced concrete and prestressed reinforced concrete.



CONNECTION

Beams are connected to the columns using anchors. Beams are mounted on anchors released from the columns and tightened with nuts through steel washers, or the anchors are filled with the anchor mixture. Before mounting the beams, in order to prevent the destruction of the edges, elastomeric bearing pad are installed.



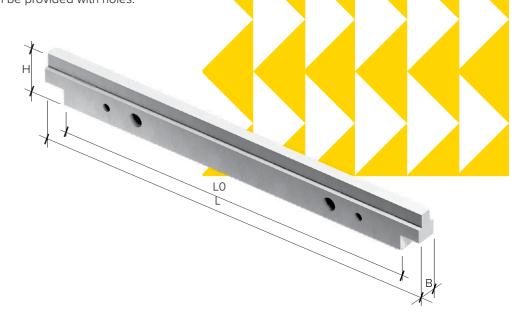


21

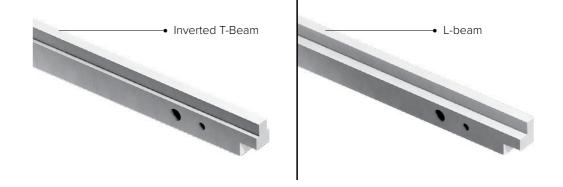


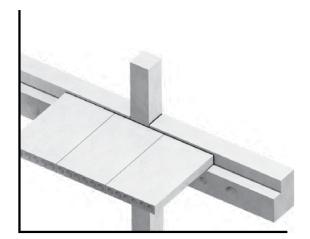
L-Beams and Inverted T-Beams

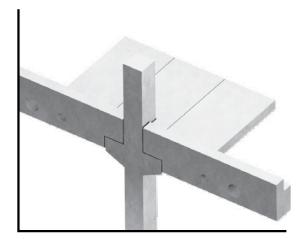
L-Beams and Inverted T-Beams are used as standard floor beams. As the beam flange is located in the lower area, the height of the beams under the floor is reduced making them more attractive for application in public buildings, shopping and entertainment centers and decreasing the overall floor height. To run various kinds of service lines, this type of beams can be provided with holes.



BEAM TYPES





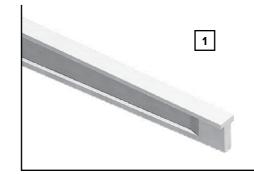


SI-Beams

SI-beams are used as roof beams in heated and unheated buildings with spans of 18–33 m, such as industrial and production buildings, warehouses, retail spaces, halls of public buildings (children's schools, sports and event halls), etc. The slope of the upper faces is from 1:33 (3%) to 1:20 (5%). The beams are used together with reinforced concrete or steel purlins, hollow-core or ribbed slabs. I-section is typical and most rational for prestressed beams. The fire resistance of such I-beams equals to 60 minutes. To run various kinds of service lines, this type of beams can be provided with holes.



TYPES OF BEAMS

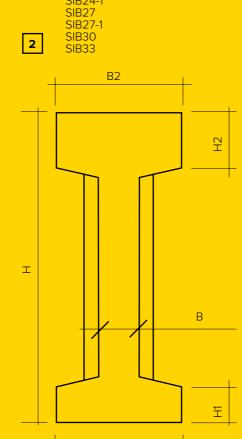




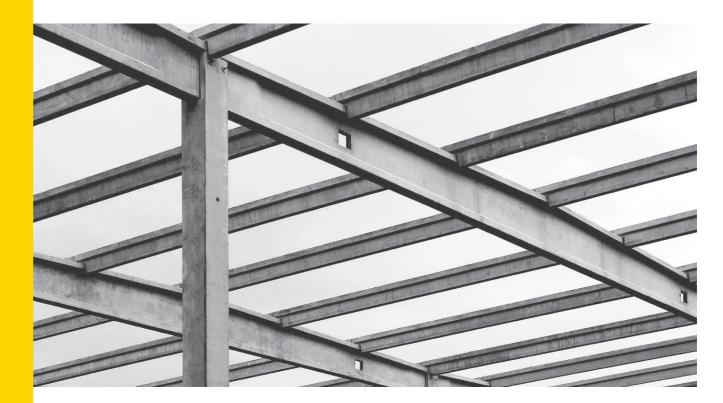
22

B1

24

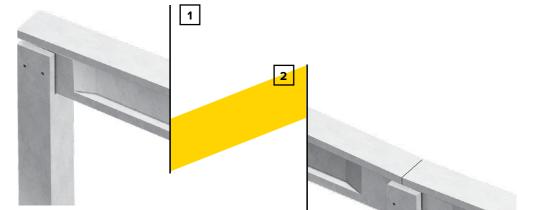


Beam Type	Support H	H mm	H1 <i>mm</i>	H2 <i>mm</i>	B mm	B1 <i>mm</i>	B2 <i>mm</i>	L mm	Weight m
SIB18	1100	1370	180	160	130	300	600	17980	13,6
SIB24	1100	1454	180	160	130	300	600	23980	18,2
SIB24-1	1400	2000	180	170	120	540	540	23980	22,8
SIB27	1400	2070	180	170	120	540	540	26980	25,8
SIB27-1	1500	2175	170	200	140	540	600	26980	33,2
SIB30	1500	2250	170	200	140	540	600	29980	37,1
SIB33	1500	2325	170	200	140	540	600	32980	41,2

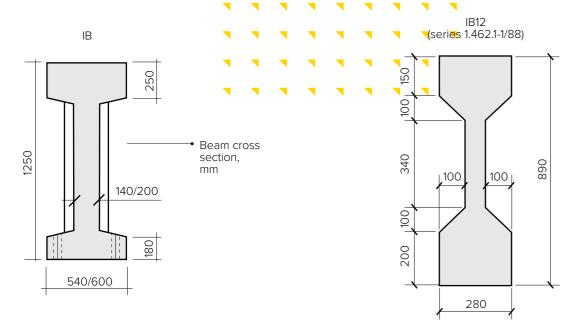


CONNECTION

Beams are connected to columns through anchors. Beams are mounted on anchors released from columns and are tightened with nuts. Before mounting the beams, in order to prevent the destruction of the edges, elastomer support pads are installed in the places where the beams rest.



SI-Beam



CONNECTION

Beams are connected to columns by installing the beam on the head of the column. IB are mounted on anchors and tightened with nuts through metal washers, and IB12 are welded to the embedded part of the column. Before mounting the IB, in order to prevent the destruction of the edges, elastomer support pads are installed.







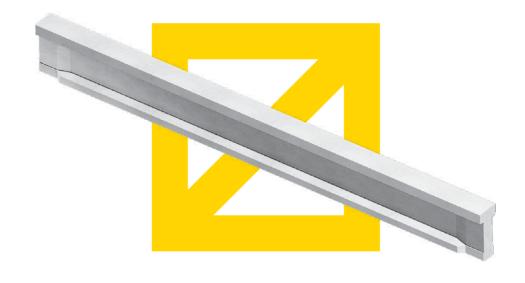
26

29

Crane runway beams

Beams with a length of 6 m (T-Beam, with a height of 800 mm) and beams with a length of 12 m (I-Beam, with a height of 1250 mm).

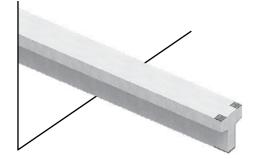
Depending on the design of the production premises, the beams can be designed and manufactured individually — in accordance with the type of loading and lifting mechanisms.

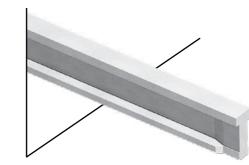


Beam Types





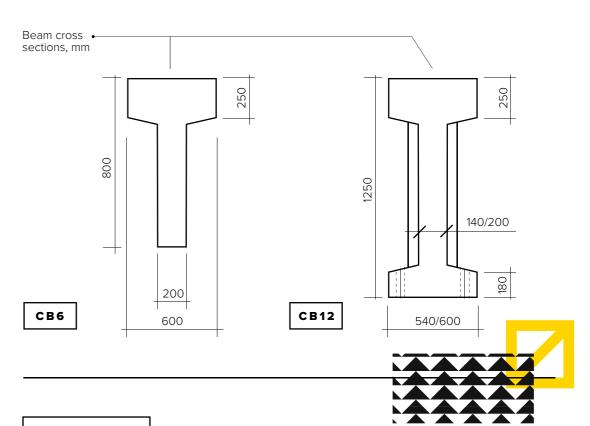






Standard Sizes

Beam length – 6000 mm Beam length – 12000 mm



CONNECTION

When mounting, crane runway beams are bolted to the columns, followed by welding of the beam embedded parts to the embedded parts in the columns. For fastening the rails, beam flanges are provided with holes. Metal tubes are laid within the holes to protect concrete from destruction during the transmission of horizontal crane loads.

31

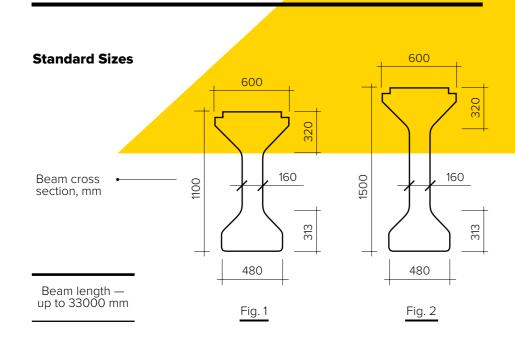
Bridge Beams

Bridge beams are intended for construction, reconstruction and repair of highway bridges. Kovalska ICG produces prestressed I-shaped bridge beams for prefabricated monolithic reinforced concrete spans of bridges and overpasses, which are designed for current temporary loads A-15, NK-100 as per requirements of DBN V.1.2-15:2009 "Bridges and pipes. Loads and effects"

When arranging the transverse dimension of the structure, the maximum pitch in the axes between the beams is as follows: for beams with a height of $1.1 \, \text{m}$ — not more than $1.9 \, \text{m}$; for beams with a height of $1.5 \, \text{m}$ — not more than $1.6 \, \text{m}$. The minimum thickness of the roadway monolithic slab is $20 \, \text{cm}$.

Beton Complex Plant also produces other elements that are used for the construction of bridges and roads, namely: driving piles, headwall blocks, cornice blocks, bridge boards, stair flights, attachment blocks, backwalls, transition slabs, road slabs, trays, utility network rings, elements of pedestrian underpasses, curb blocks, individual structures.

In 2017, Darnytskyi Reinforced Concrete Constructions Plant, JSC started production of bridge beams with a length of up to 33 meters (Fig. 2).





Certification and Quality Control

BB-24 and BB-33 bridge beams have undergone a series of special tests and examinations to obtain a certificate of conformity (No. UA 1.003.0173568-11).

Structures are manufactured in accordance with state building regulations: DSTU BV 2.6-2:2009 "Concrete and Reinforced Concrete Products. General Specifications" and are certified by the State Committee of Ukraine for Technical Regulation and Consumer Policy.

The certificate was issued by the state certification body of Ukrmetrteststandart, SE on the basis of test reports* conducted by the research department of the Research Institute of Building Structures.

In addition, the quality service of the laboratory of Beton Complex maintains comprehensive control over the quality of raw materials and products at all production stages: input, operational and output control. This allows getting the highest quality of the final product.

with one semi-platform

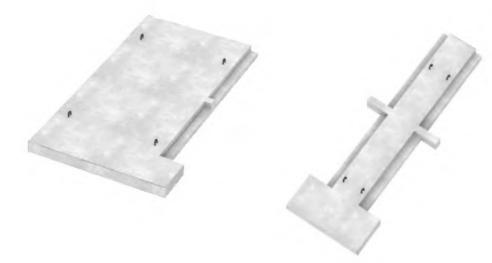
with two semi-platforms





STAIR PLATFORMS

32





Kovalska ICG manufactures a broad range of fire wall elements of individual design.

FIREWALL COLUMNS



FIREWALL PANEL



37

Hollow core floor slabs

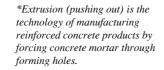
Hollow core floor slabs

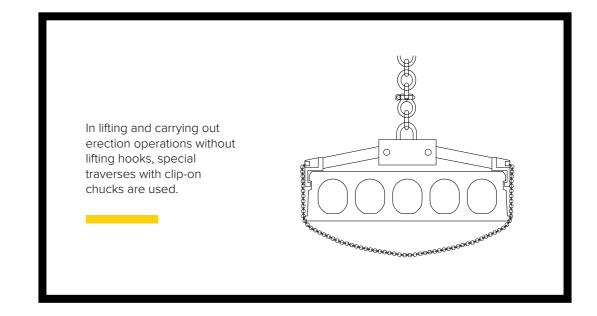
Kovalska ICG produces a wide range of floor slabs by applying the extrusion method on the up-to-date technological line for the off-form slab formation manufactured by Nordimpianti System S.r.l. (Italy). These are multi-cavity prestressed slabs made of heavy concrete by applying the method of continuous long-line extrusion process*.

Hollow core floor slabs may be used to arrange load-bearing structural floor and roofing elements of buildings and structures for various purposes. Slabs manufactured by applying the extrusion method are used in construction of residential and industrial facilities with load-bearing walls made of bricks or blocks, as well as in frame or frame and monolithic structures to cover spans of up to 20 m inclusive. They are an alternative to slabs manufactured by applying conveyor-type production method or conveyor technologies.

Slabs are made with a height of 200, 220, 265, 320, 400 and 500 mm, and a width of 550, 750, 950, 1100, 1350 and 1500 mm with a height of 220 mm. Slabs with a height of 200, 265, 320, 400 and 500 mm can be made with a width of 1200 mm, or shortened in width according to an individual order.

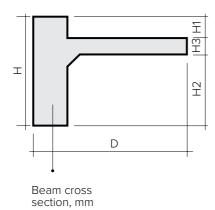






Elements of Sports Facilities

Tribune steps are the most common element used in construction of all types of stadiums. Step shape is determined by the place of their installation at the stadium.

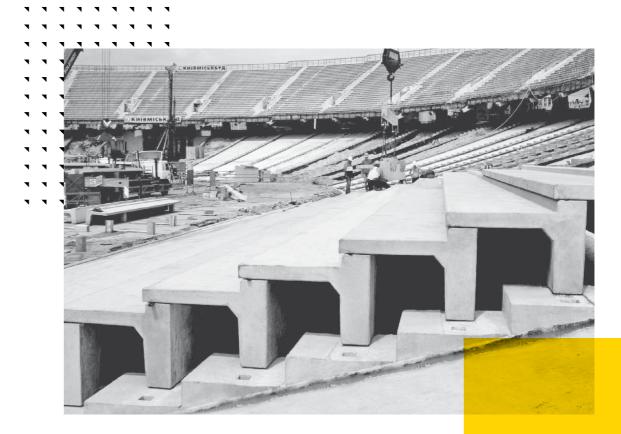




Standard Sizes

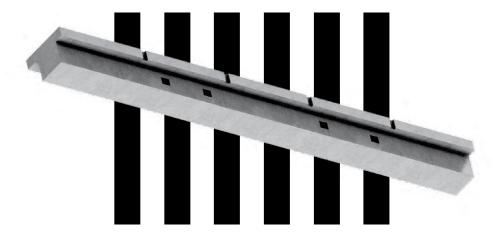
(step length: 5000–9000 mm)

Name	H1 <i>mm</i>	H2 <i>mm</i>	H3 <i>mm</i>	H mm	D mm
CK-1	70	510	110	700	1040
CK-2	80	500	110	700	1040
CK-3	95	485	110	700	1040
CK-4	110	470	110	700	1040
CK-5	125	455	110	700	1040
CK-6	140	440	110	700	1040
CK-7	155	425	110	700	1040
CK-8	170	410	110	700	1040



Support Beams

Support beams serve as the starting point for erection of tribune steps. They, similarly to the steps, may be 5 to 9-m long and made-to-measure for an appropriate project.



39

Completed Facilities

Today, Beton Complex is proud to present the most significant facilities that were erected due to the supply of high quality concrete products of its own production:



Potato Storage

Verhuny village, Cherkasy region

2020 **5** 613 m³

Storage

Mykulychi village, Kyiv region

2020 **5**03 m³

Logistics Complex

Bilohorodka

2020 2161 m³

Shopping and Entertainment Center

52a Obolonskyi Ave., Kyiv

2019 **3**70 m³

Poultry Farm

Volodymyr-Volynskyi

2019 **488** m³

Retroville Shopping and Entertainment Center

9 47 Pravdy Ave, Kyiv

2019 720 m³

Holfist Golf Club

20 Obolonska Embankment, Kyiv

2019

445 m³

NOVUS **Supermarket**

8a Ivan Pulyui Str.,

2019

X 420 m³

Epicenter Supermarket

49 Mayakovskyi Str., Boyarka

2019 **5**80 m³

Kronospan

20 Lutska Str., Novovolynsk

2019

4 676 m³

Logistics **Complex**

Zymna Voda village, Lviv region

2019 **5** 6 450 m³ Logistics Complex

> Murovane village, Lviv region

2019 **2**80 m³

Completed Facilities

Completed Facilities



Oil Factory

Odesa region

2019 **2** 642 m³

Daneya Production and Warehouse Complex

Ivano-Frankivsk

2018 2 400 m³

Domino's Pizza Production Complex

Trebukhiv village

2018 388 m³

XII Misyatsiv Zoo



79 Verbova Str., Demydiv village, Kyiv region

2016

560 m³

Yunha Tennis Academy



2016 **%** 860 m³

Parking

Sofia Rusova Str.,

43

2015 **1** 410 m³

Spartak Supermarket

Brovary

2018 **2**30 m³

Logistics Complex

Murovane village, Lviv region

2018

2 110 m³

AUSHAN Supermarket

7 Zdolbunivska Str.,

2018 **X** 740 m³

Completed Facilities

Completed Facilities

Completed Facilities

Printing House

Facilities of various purposes



1-A Knyahyni Olhy Str., Tarasivka village, Kyiv region



3 132 m²

School

The second start-up facility within expansion of the school No. 151



3 Lisnycha Str., Chapayivka village



X 864 m²

Vegetable Store

Production and warehouse complex



20-A Buzova Str., Buzova village, Kyiv region



5 900 m²

Shopping Center

DomoSvit

Shopping center



1-D Balukova Str., Kriukivshchyna village, Kyiv region



1776 m²

Warehouse for **Special-Purpose** Machinery

Warehouse complex



Sofiivska Borshchahivka, Kyiv-Sviatoshyn district, Kyiv region



5 6 636 m²

Service Station

Facilities of various



Zoriana Str., Sviatopetrivske village, Kyiv region



390 m²

Warehouse complex

Production and warehouse complex



141 Sviato-Pokrovska Str. Hostomel village



8 064 m²

«Butik» **Shopping Center**

Shopping center



V. Chornovola Str., Brovary



3 168 m²

Sewing Shop «San Garden»

Production and warehouse complex



O Horodok



7 070 m²

Factory «Atelye **Keramiky**»

Production and warehouse complex





2 Viskozna Str.,



X 1440 m²

«OVI» **Shopping Complex**

Shopping center



Kutuzovska Str., Tsyrkuny, Kharkiv region



13 600 m²

Zhytomyr Cardboard Factory

Production and warehouse complex



7 Stanyshivska Sq., Zhytomyr



216 m²

Completed Facilities

Completed Facilities



Dnipro Starch and Syrup **Plant**

Production and warehouse complex



9 11 O. Ostrovskoho Str., Dniprovske urban village, Dnipropetrovsk region



14 364 m²

NOVUS

Shopping centers

Sviatoshynska Str., Kyiv



4 275 m²

2 Tsentralna Str., Irpin

2017

4 212 m²

Polzunova Str., Kyiv

2015

4 275 m²

Sofiivska Borshchahivka village

⊞ 2017

3 212 m²

AUCHAN

Shopping center





4 485 m²

"Poznyaky 4-A" microdistrict, Kyiv

2016

35 000 m²

AVTEK

Production and warehouse complex





1728 m² 9 Pshenychna Str.,

Kyiv 2009 — 2012 7 200 m²

Office, **Warehouse and Production** Complex

Production and warehouse complex



Sofiivska Borshchahivka village

2017

> 900 m²

«Monomakh» **Production and** Warehouse Complex

Production and warehouse complex



Velyka Dymerka urban village, Kyiv region



5 5 568 m²

Dried Fruit Confectionery Shop

Production and warehouse



Knyiazhychi village, Brovary district, Kyiv region



3 360 m²

Warehouse

Office

and

Production and warehouse complex



Murovane village, Lviv region



12 500 m²

<u>Amtel</u>

Logistics complex



Kyiv-Sviatoshyn district, Kyiv region



42 000 m²

Spektr

Production and warehouse complex



Obukhiv, Kyiv region



X 8 456 m²

Academ City

Shopping and entertainment center



2016

5 472 m²

Completed Facilities



Residential **Estate with** Public **Facilities**

Facilities of various purposes



Vyshneve, Kyiv region



5 228 m²

Center for the Preparation of Agricultural Goods

Facilities of various



Martusivka village, Boryspil district, Kyiv region



12 500 m²

«Oriyentyr» Building Materials Manufacturing Company

Facilities of various purposes



28-A Nezalezhnosti Str., Kyiv region





«Vinnytsia **Broiler**» **Poultry Farm**

Facilities of various



Vinnytsia



3 090 m²

Flour Products Factory

Production and warehouse complex



Boryspil, Kyiv region



2016

46 000 m²

Production and Warehouse Building with Offices

Production and warehouse complex



Simyi Sosninykh Str.,



4 032 m²

Igor Sikorsky Kyiv International Airport

Facilities of various purposes



Medova Str., Kyiv



% 8 184 m²

Building Materials Production Shop

Production and warehouse complex



Obukhiv, Kyiv region



X 1984 m²

Office and Trade Building Facilities of

«Mayster Bild»

various purposes



Ohubynske village, Kyiv region





Administrative and Logistics

Logistics complex

Complex



Sofiivska Borshchahivka, Kyiv-Sviatoshyn district, Kyiv region



2016 18 280 m²

«Vinnytsia Broiler» **Poultry Farm**

Production and



6 Promyslova Str., Zhytomyr



17 526 m²

«FMSE Desna» Warehouse Complex

Production and warehouse complex



O Dudarkiv village, Boryspil district, Kyiv region



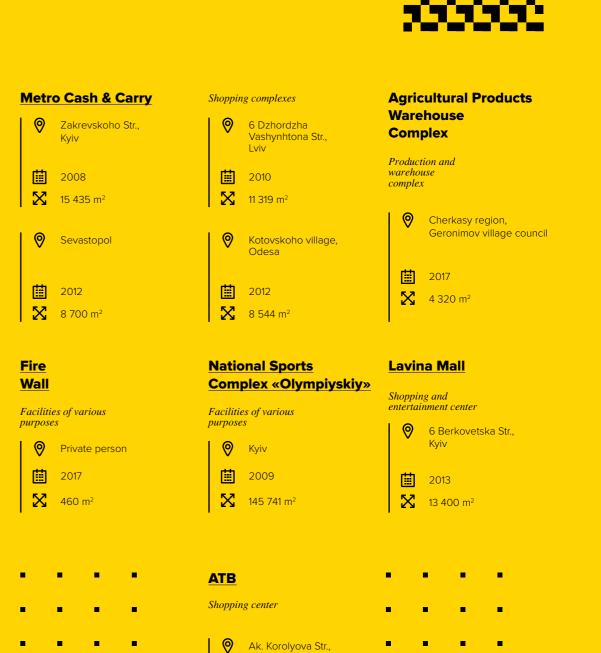
11 888 m²

51

88

Ekomarket Shopping complexes 9 12 Zakrevskoho Str., 13/1 M. Tymoshenka Lisova metro station, Str., Kyiv Kyiv 2013 2012 2012 **5** 762 m² 3 960 m² 1200 m² Chernihiv 2012 42 Shkilna Str., 105-A III Internatsionala Str., **5** 040 m² Pereyaslav-Khmelnytskyi Irpin Mariupol 2012 2012 2012 4 560 m² 2 160 m² 2 040 m² **RLC BILLA Biokon** Logistics complex Shopping center Logistics complex Kalynivka village, Velyka Oleksandrivka A. Akhmatova Str., Brovary district, village, Boryspil district, Kyiv region Kyiv region 2011 – 2012 2010 2013 **X** 84 100 m² 19 000 m² **3** 240 m² Karavan Shopping and entertainment center Kosmichna Str., Dnipro 2008

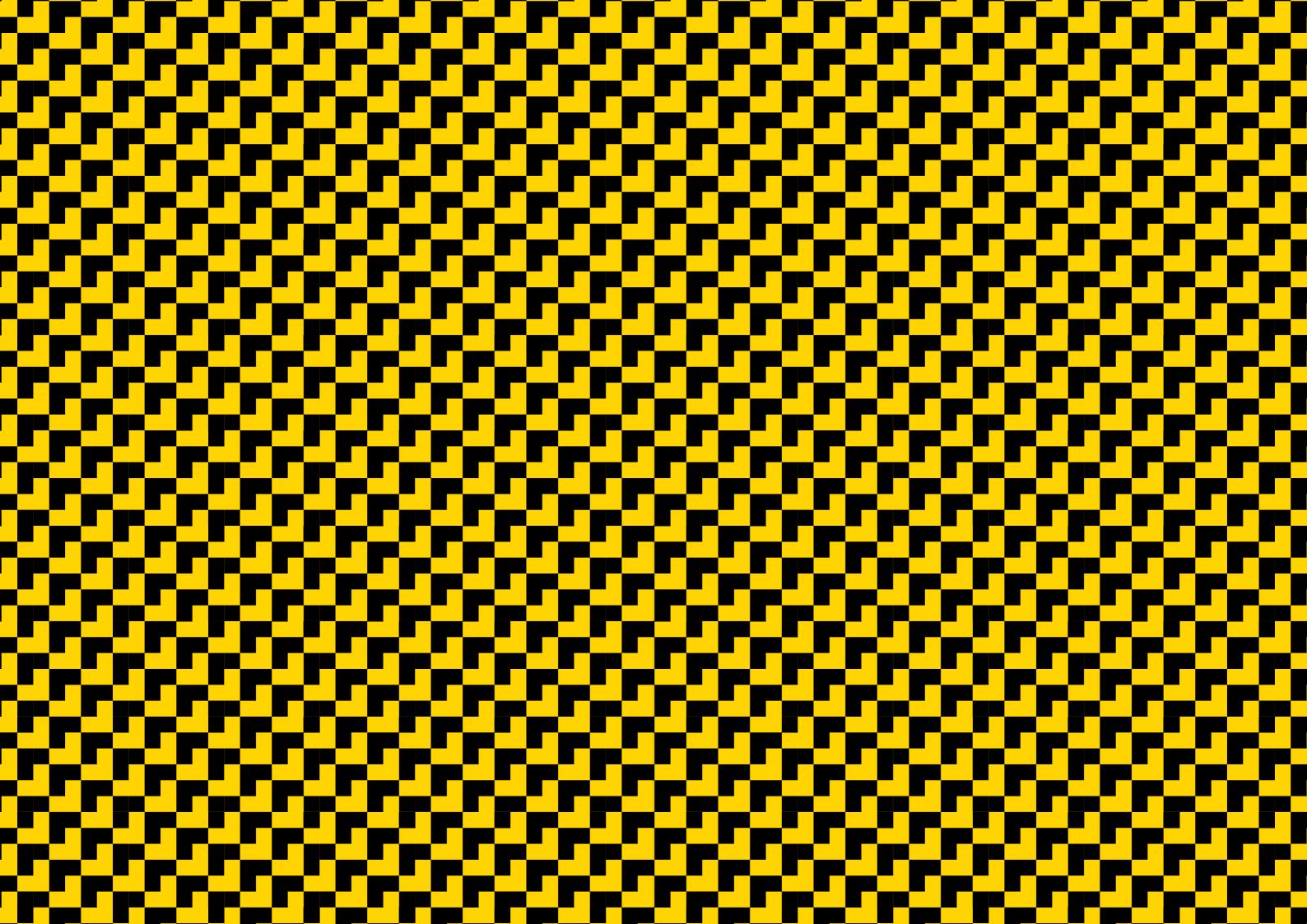
90 200 m²



Kyiv

2018

3 618 m²



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Petro Dulia

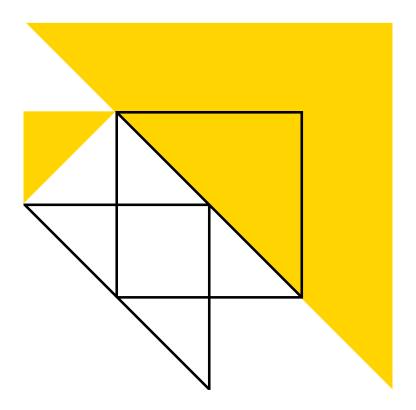
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