



# GUIDE TO STRUCTURAL ENGINEERING OF BUILDINGS

From concept to production documentation



# BVK-PRO IN NUMBERS







# ABOUT US

### WE PROVIDE PROFESSIONAL SERVICES IN THE FIELD OF CONSTRUCTION ENGINEERING.

### Our team consists of construction and design engineers who are solving demanding tasks in the field of industrial, residential, civic and other construction through the analysis and design of the necessary constructions.

We are creating the necessary calculation, evaluation, as well as project documentation. We provide a personalized approach end-to-end: initial consultation, design and optimization (bim 3d modeling), delivering the necessary documentation. We collaborate with architects, planners, investors, as well as, manufacturers of steel, wooden and concrete structures. We have a broad experience in the design of reinforced concrete structures; steel, wooden, masonry, as well as, geotechnical structures. We provide consultancy services in the field of reconstruction or any other changes to the structural condition of an existing structure.



DON'T MISS ANYTHING IMPORTANT. SUBSCRIBE TO OUR NEWSLETTER! DEPARTMENT OF REINFORCED CONCRETE STRUCTURES

# DEPARTMENT OF REINFORCED CONCRETE STRUCTURES

Reinforced concrete is one of the most used materials in terms of load-bearing structure. This department focuses on the field of reinforced concrete structures and our ability to create stable, durable buildings. Reinforced concrete structures have a wide range of uses and are used for the construction of buildings, bridges, industrial facilities and many other projects. Our company specializes in working with these structures and we can provide comprehensive solutions for various construction needs.

# FOR OUR CLIENTS WE OFFER:

- Static and dynamic analyzes of reinforced concrete load-bearing structures
- Design of load-bearing structures with waterproof function white tank
- Foundation slabs supported by deep foundations audit of projects of load-bearing structures of buildings

# DEPARTMENT OF MASONRY STRUCTURES

Masonry structure is one of the most traditional and proven ways to build a support structure. In order to ensure the safety, stability and durability of masonry structures, it is necessary to carry out a thorough static verification.

This process is an integral part of the design and implementation of masonry constructions in various areas. The static verification of a masonry structure begins with the analysis of all factors that affect its stability. in addition, they are taken into account also environmental factors such as wind pressure, snow load, and in some cases an earthquake, depending on the geographic location of the building.





# SERVICES OF THE DEPARTMENT

### Study

- advice and consultation
- conceptual design of the bearing

# Documentation for zoning approval

- technical evaluation report
- pro-forma design

# Project documentation for building permits

# Construction engineering evaluation:

- consultation services as required
- calculation
- proposal of the skeleton

#### Contains

- technical evaluation report
- detailed calculation
- 3d model
- blueprint of foundations
- blueprint of levels
- blueprint of roofing
- blueprints for construction
  elements

# Project documentation for the construction

# Construction engineering evaluation:

- consultation services as required
- detailed calculation
- proposal of the skeleton and important detail

#### Contains

- technical evaluation report
- detailed calculation
- blueprint of foundations, levels and roofing
- blueprints for construction elements including details of reinforced concrete structures



- Universal software for drawing documents, production plans
- Creation of any shapes without limiting the complexity and membership of details
- Precise modeling of the entire prefabricated structure including built-in elements
- Three-dimensional modeling of reinforcement
- Exporting bim model in various file types with associated information
- List of material quantities
- Export on bending machine
- Easier cooperation between individual professions

# SOFTWARE EQUIPMENT:







Calculate yesterday's estimates

bvk-pro.com

**RIB** 

### COMPLETION OF THE UK FACULTY AREA, FMFI PAVILION OF TOP TECHNOLOGIES

Project documentation for the construction

### MLYNSKÁ DOLINA, BRATISLAVA 2022





### MULTIFUNCTIONAL CPR COMPLEX MULTIFUNCTIONAL CPR BLOCK – A

Project documentation for building permit

### **BRATISLAVA 2021**





DEPARTMENT OF REINFORCED CONCRETE STRUCTURES

### REFERENCES

### MEDICAL DISTRIBUTION CENTER

Project documentation for the construction

### **NITRA 2022**





# OUR TEAM OF THE DEPARTMENT



#### ING. CSABA BAJI FOUNDER

Civil engineer with authorization for static calculations of building structures

Leader of department of monolithic concrete structures



#### BC. GERGELY MÉSZÁROS

Main designer of mon. concrete and masonry structures

Specialist of prefabricated ceilings



### ING. PETER HOBOT

Civil engineer of mon. concrete structures

Main design engineer of mon. concrete and masonry structures



### ING. TAMÁS BACSFAI

Design engineer of mon. concrete and masonry structures



### ING. ZOLTÁN GRELLO

Design engineer of mon. concrete and masonry structures



### ING. MATÚŠ KRAVČÍK

Design engineer of mon. concrete and masonry structures



### ING. TOMÁŠ JAKUBECH

Design engineer of mon. concrete and masonry structures



#### VIKTÓRIA MEZZEYOVÁ

Design engineer of mon. concrete and masonry structures



# DEPARTMENT OF TIMBER STRUCTURES

Interest in timber buildings is growing over time. We are a modern, up-to-date static office, that's why the department of timber structures must Be an integral part of the bvk-pro company profile. In this section of our company work engineers specialized in timber structures. We offer static verification of timber structures for all types of buildings in the area of residential, civil and industrial engineering. Thanks to bim software, we can eliminate collisions of individual elements and save time and money during construction.



# SERVICES OF THE DEPARTMENT OF TIMBER STRUCTURES

# Documentation for zoning approval

- technical evaluation report
- pro-forma design

# Project documentation for building permits

# Construction engineering evaluation:

- consultation services as required
- calculation
- proposal of the skeleton

### Contains

- technical evaluation report
- detailed calculation
- blueprint of foundations, levels
- and roofing
- blueprints for construction
  elements



# Project documentation for the construction

# Construction engineering evaluation:

- consultation services as required
- detailed calculation
- proposal of the skeleton and important detail

### Contains

- technical evaluation report
- detailed calculation
- blueprint of foundations, levels and roofing
- blueprints for construction elements including detail and joints of timber structures

# Project documentation for manufacturing purposes

engineering documentation for timber
 construction

# SEMA SOFTWARE FOR **TIMBER STRUCTURES**





- With its many cad functions, sema offers a universal tool for design, planning application and production drawings
- All the special design elements enable useful and fast combinations of 2d and 3d data to create dimensioned floor plans, sections, elevations and detail drawings
- Graphics files from other programs can easily be imported •
- Offers three-dimensional component intersection with immediate calculation of all component lengths and processings
- It is possible to enter commonly used steel profiles, fasteners and brackets for more complicated structural requirements
- List of timber elements •
- Cnc machine exports

# SOFTWARE EQUIPMENT









# TIMBER STRUCTURES

We provide static analysis for family houses, residential buildings (block of flats), civil buildings (hotels, gyms, schools, kindergardens, multifunctional objects), high-span structures, extensions, etc.





### STUD-WALL STRUCTURES



JOIST BEAMS (STEICO)



GLUE LAMINATED TIMBER (BSH, LVL)



### COMBINATION OF TIMBER AND STEEL



RECONSTRUCTIONS

### AQUAPARK GALANDIA

Project documentation for manufacturing purposes, Cooperation - Ing. František Lužica

### GALANTA 2021







### **FAMILY HOME**

Project documentation for the construction Architect - Ateliér Van Jarina

### ŠTITÁRE 2020









### **RECONSTRUCTION OF HOTEL**

Project documentation for the construction Architect - .TEAM ABJ

### **TRENČIANSKE TEPLICE 2022**







# OUR TEAM OF DEPARTMENT OF TIMBER STRUCTURES



#### ING. ÁDÁM VARGA FOUNDER

Civil engineer with authorization for static calculations of building structures

Leader of department of timber structures



#### ING. LEA SZABÓ BODON

Civil engineer and design engineer of timber structures



# DEPARTMENT OF PREFABRICATED CONCRETE STRUCTURES

In this section of our company work engineers specialized in prefacbricated concrete structures. Thanks to bim software, we can eliminate collisions of individual elements and save time and money during construction. In the field of prefabricated reinforced concrete buildings, the key to success is static analysis and the use of appropriate details that ensure the safety and stability of the building. These modern structures contribute to the efficient use of resources and enable rapid adaptation to the changing needs of our societies and communities. Prefabricated structures lead to the creation of efficient, modern and specific buildings that meet different needs in the industrial, commercial and civil sectors. Their popularity is growing due to their ability to offer fast, reliable and efficient civil engineering solutions. Construction documentation of prefabricated elements is an essential component in the production process. This documentation includes all the information required for the production, quality control and assembly of prefabricated elements.



# SERVICES OF THE DEPARTMENT

# Documentation for zoning approval

- technical evaluation report
- pro-forma design

# Project documentation for building permits

# Construction engineering evaluation:

- consultation services as required
- calculation
- proposal of the skeleton

#### Contains

- technical evaluation report
- detailed calculation
- blueprint of foundations, levels
- and roofing
- blueprints for construction
  elements

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# Project documentation for the construction

# Construction engineering evaluation:

- consultation services as required
- detailed calculation
- proposal of the skeleton and important detail

#### Contains

- technical evaluation report
- detailed calculation
- blueprint of foundations, levels and roofing
- blueprints for construction elements including details and joints of prefabricated reinforced concrete structures

# Project documentation for manufacturing purposes

 Engineering documentation for prefabricated structures

# ALLPAN SOFTWARE FOR PREFABRICATED CONCRETE STRUCTURES



- Universal software for drawing documents, production plans
- Creation of any shapes without limiting the complexity and membership of details
- Precise modeling of the entire prefabricated structure including built-in elements
- Three-dimensional modeling of reinforcement
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- List of material quantities
- Export on bending machine
- Easier cooperation between individual professions

# SOFTWARE EQUIPMENT:







# PREFABRICATED CONCRETE STRUCTURES



### PRODUSTION AND INDUSTRIAL BUILDINGS



### STORAGE AND LOGISTIC HALLS



SHOPPING MALLS



STADIUMS

### **EXTENSION OF SAMSUNG PRODUCTION HALL - GÖD**







### ELEKTRODE OBJECT

- Floor plan dimensions 221 m x 127 m
- 2 floors 24 m high
- Max. span of prestressed trusses 27 m
- Filigree ceilings, system of primary and secondary beams
- Live loads of 1.0-2.0t / m2

### **MIXING OBJECT**

- Floor plan dimensions 268 m x 45 m
- 4 floors 38 m high split columns
- Basic grid 12 m x 11.5 m
- Ceilings prestressed t-panels
- Live load 1.0 t / m2

### FORMATION OBJECT

- Floor plan dimensions 102 m x 103 m
- 3 floors 38 m high split columns
- Max. span of prestressed trusses 26 m
- Ceilings from prestressed t-panels, respectively filigree ceilings
- Live loads of 1.0-2.0t / m2

### **DOOSAN COPPER FOIL BUILDING - 3. PHASE**

Production documentation of prefabricated elements



- Floor plan dimensions 272 m x 192 m
- 28 m high
- Max. dimensions of the prestressed trusses – 43 m
- Ceilings primary + secondary beam + filigree boards
- Variable loads on ceilings 1.5-3.0t / m2





DEPARTMENT OF PREFABRICATED CONCRETE STRUCTURES

# VYBRANÁ REFERENCIA

### KOŠICE FOOTBALL ARENA – STAGE II. + III.

Production documentation of prefabricated elements, Cooperation - Ing. František Lužica

**KOŠICE 2019** 







# TEAM OF DEPARTMENT OF PREFABRICATED CONCRETE STRUCTURES



### ING. ĽUBOŠ KELČÍK FOUNDER

Civil engineer with authorization for static calculations of building structures

Leader of department of prefabricated structures



### ING. VIKTOR MOLNÁR

Design engineer of prefabricated structures



#### ING. DOMINIKA SZABÓOVÁ

Design engineer of prefabricated structures



### ING. LADISLAV ÉRSEK

Design engineer of prefabricated structures



# DEPARTMENT OF STEEL STRUCTURES

In this section of our company work engineers specialized in steel structures.

We offer static assessment of steel structures for all types of buildings in the area of residential, civil and industrial engineering. We have extensive experience in the design of steel structures. With the optimal design of constructions, we can significantly save costs for investors. Modelling structures in 3d from the beginning of designing in tekla structures software is our advantage. The structures are precisely modeled to the nearest hundredth of a millimeter, including all components, welds and screws.





DEPARTMEN OF STEEL STRUCTURES







# SERVICES OF THE DEPARTMENT OF STEEL STRUCTURES

### Study

- advice and consultation
- conceptual design of the bearing system

### DOCUMENTATION FOR ZONING APPROVAL

- technical evaluation report
- pro-forma design

# Project documentation for building permits

# Construction engineering evaluation:

- consultation services as required
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  elements

# Project documentation for the construction

# Construction engineering evaluation:

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# Project documentation for manufacturing purposes

- 3d model tekla
- reports
- sectional plans of individual elements
- drawings of parts preparation in the factory
- laying plan of trapezoidal sheets
- laying plan of sandwich panels
- assembly drawings (assembly plans)
- drawings of built-in plates



- With its many cad functions, tekla offers a universal tool for design, planning application and production drawings
- All the special design elements enable useful and fast combinations of 2d and 3d data to create dimensioned floor plans, sections, elevations and detail drawings
- Graphics files from other programs can easily be imported
- Offers three-dimensional component intersection with immediate calculation of all component lengths and processings
- It is possible to enter reinforcements, welded areas, bolts, etc.
- List of steel elements

### SOFTWARE EQUIPMENT:









# STEEL STRUCTURES



### CIVIL BUILDINGS, E.G.

- PETROL STATIONS
- SHOPPING CENTRES
- MULTIFUNCTIONAL BIULDINGS
- SPORTS HALLS
- ETC.



### INDUSTRIAL BUILDINGS

- FILM STUDIOS
- WAREHOUSES
- PRODUSTION HALLS
- FACTORIES
- ETC.



### SPECIAL STRUCTURES

- DESIGN ELEMENTS
- PIPELINE BRIDES
- STAIRTOWERS
- SUPPORTING STRUCTURES
  OF TOBOGGANS
- ETC.

### JEDLIK ÁNYOS HIGH SCHOOL

Project documentation for manufacturing purposes

### **BUDAPEST 2022**



DEPARTMEN OF STEEL STRUCTURES

### REFERENCES

### FILM STUDIO IN HUNGARY

Project documentation of steel structures

### **BUDAPEST 2022**



## OUR TEAM OF DEPARTMENT OF STEEL STRUCTURES



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