

CONSOLIS

ASA

Precast solutions in the residential and sport facility sector in Hungary

Consolis ASA Hungary



Zsolt Kovacs / 04.10.2018

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4. Future perspectives

1. Overview of the Consolis and ASA Group

A global expert in precast concrete solutions serving the building, civil works and rail infrastructure markets.

Complete offer from design to assembly

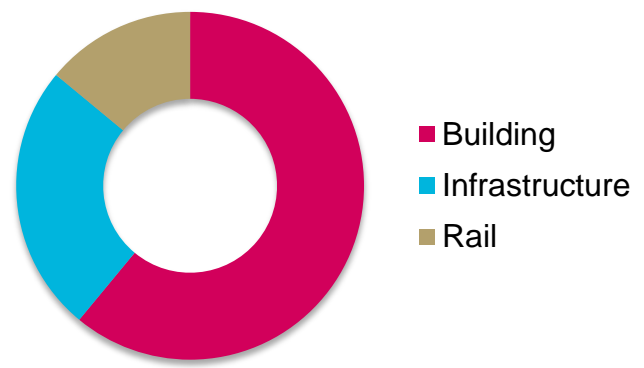
- Strong history of product innovation
- Off-the-shelf and tailor-made solutions
- Digitalization of production processes
- Global footprint with a commercial presence in 28 countries
- > 11,000 people of which 500 engineers

Global presence

x number of plants per region



2017 Sales: €1.5bn



1. Overview of the Consolis and ASA Group

Consolis ASA Hungary (ASA Építőipari Kft.) was founded in 1990 by the technical staff and on the premises of the former national construction company no. 31. The know-how, the experience, the technical production possibilities were improved and developed considerably during the last decades, yet the same unalterable focus on **innovation and quality** remains the main trademark of ASA Építőipari Kft. **ASA CONS ROMANIA** was established in 1999, as part of the group ASA Építőipari Kft. and from July 2008 both are part of the **Consolis Group**.



1. Overview of the Consolis and ASA Group

FOCUS ON

SPORT FACILITY AND STADIUM STRUCTURES



RESIDENTIAL BUILDINGS



2.1 Rising of precast concrete usage in stadiums

EXPANSION OF THE PRECAST SOLUTIONS IN THE STADIUM BUILDING IN EE

Example stadiums from the world:

Krestovsky Stadium (St. Petersburg, Russia, 2017)



Cast-in-situ structure

Allianz Stadium (Wien, Austria, 2016)



Cast-in-situ joints

Haladás Stadium (Szombathely, Hungary, 2016)



Connections with bolts

Mixed cast-in-situ and dry connections

Puskás Ferenc Stadium (Budapest, Hungary, 2018)



Significance of precast solutions



2.1 Rising of precast concrete usage in stadiums

Krestovsky Stadium (St. Petersburg, Russia, 2017)

Exampl



Case in slab structure

Stadium (Bucuresti, 2017)

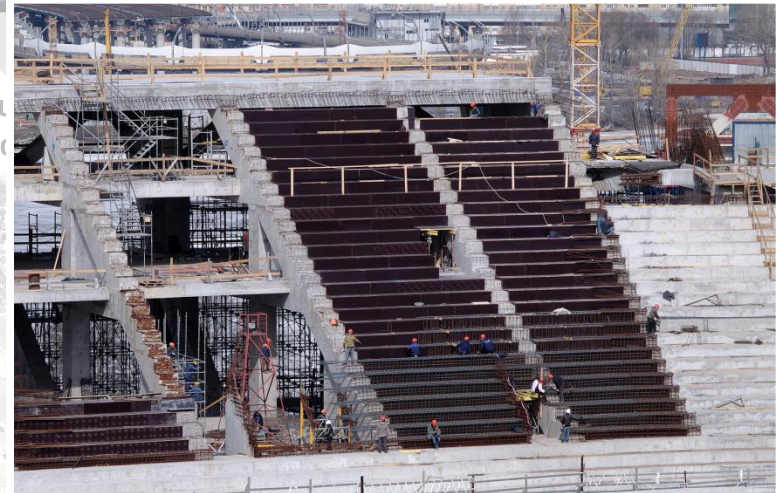


Case in slab joints

connections with bolts



Precast concrete (Bucuresti, 2017)



Significance of precast concrete solutions



2.1 Rising of precast concrete usage in stadiums

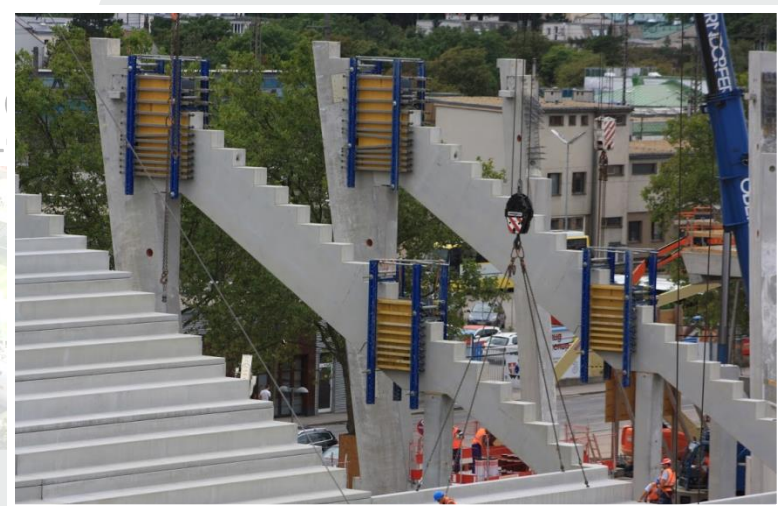
Allianz Stadium (Wien, Austria, 2016)

Exampl



Case in site structure

Stadium (2016)



Case in site joints

connections with bolts



Pu (Buc)



importance precast solutions



2.1 Rising of precast concrete usage in stadiums

Haladás Stadium (Szombathely, Hungary, 2016)

Exampl



Case in steel structure



Case in steel joints

Connections with bolts



Pu (Buc

ificance precast solutions

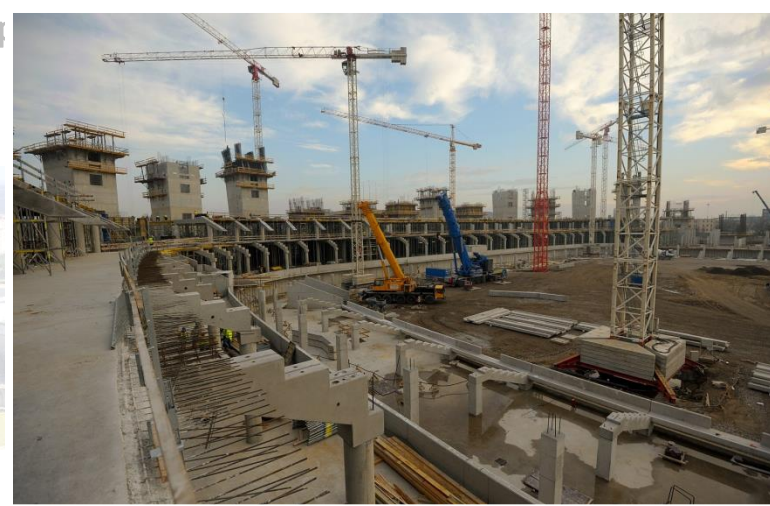


2.1 Rising of precast concrete usage in stadiums

Puskás Ferenc Stadium (Budapest, Hungary, 2018)



Example



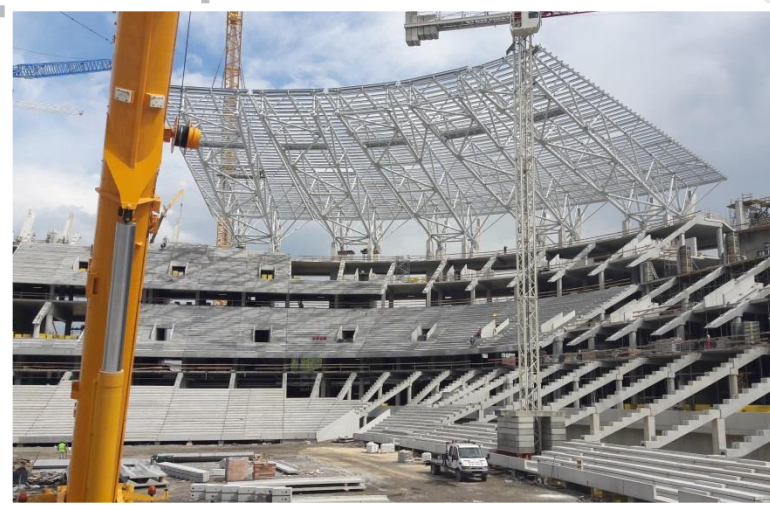
Case in site structure

Stadium
2018

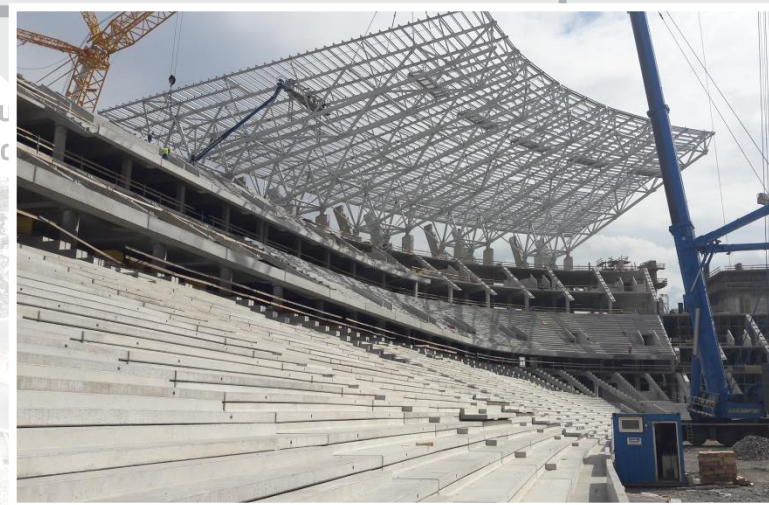


Case in site joints

connections with bolts



Puskás
(Budapest)



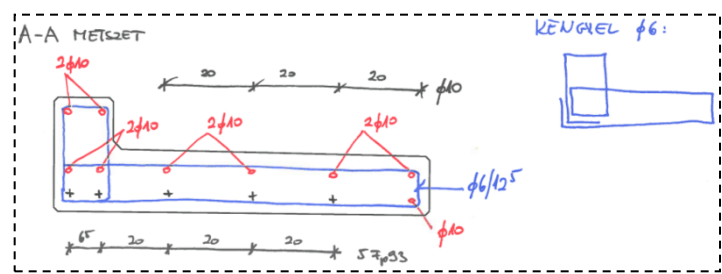
finance
precast
structures



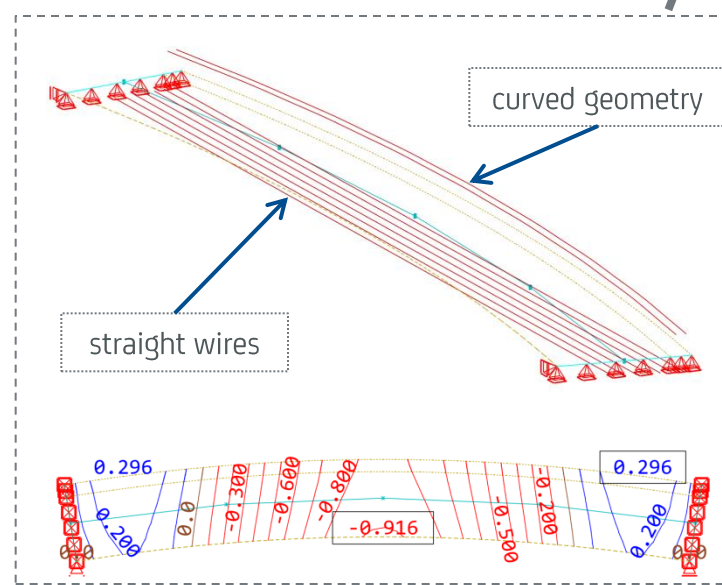
2.2 Highlights of precast solutions in Hungarian stadiums

GRANDSTAND ELEMENTS for the PUSKÁS STADIUM

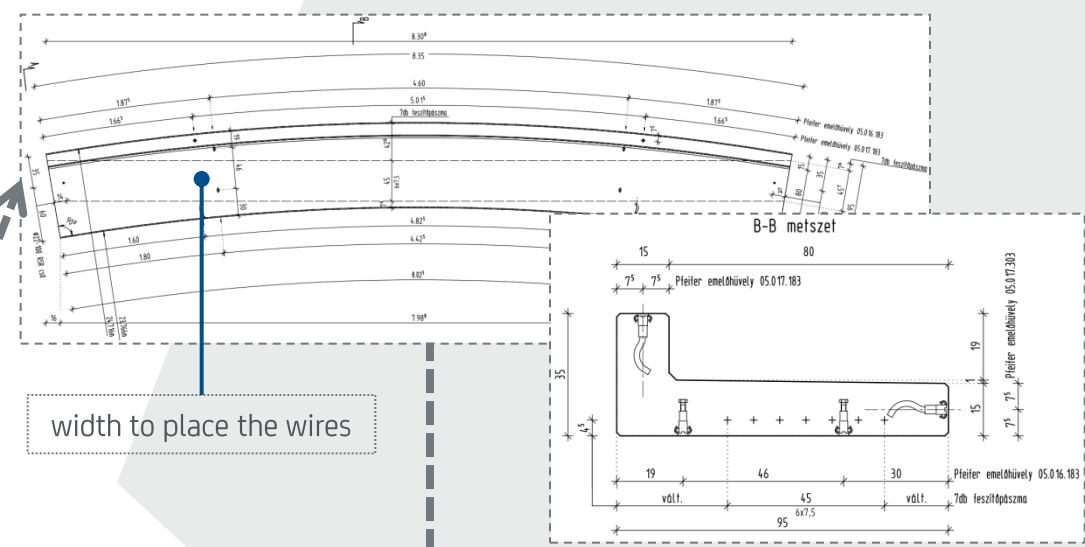
FIRST SKETCHES



CALCULATION MODELL and ELEMENT DESIGN



ELEMENT DRAWINGS



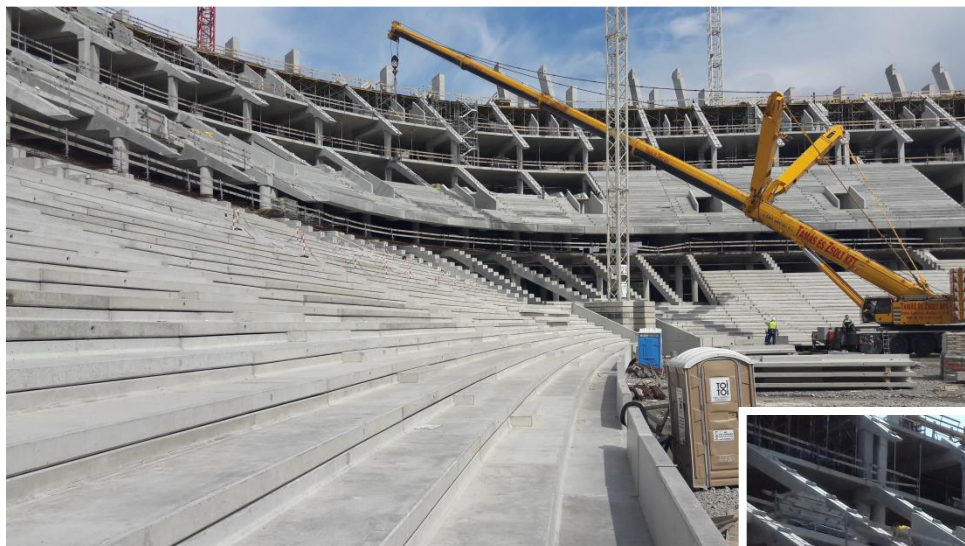
PRODUCTION



2.2 Highlights of precast solutions in Hungarian stadiums

GRANDSTAND ELEMENTS for the PUSKÁS STADIUM

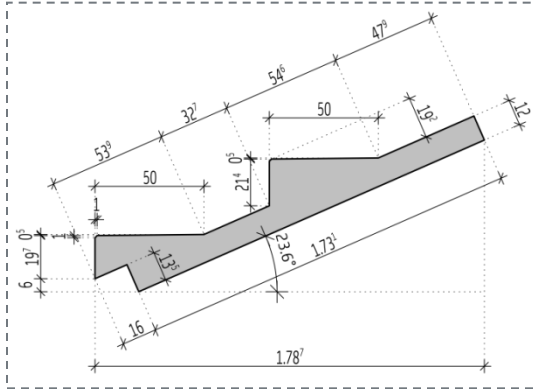
BUILT-IN PHASE



2.2 Highlights of precast solutions in Hungarian stadiums

GRANDSTAND ELEMENTS for the HALADÁS STADIUM

CROSS-SECTION

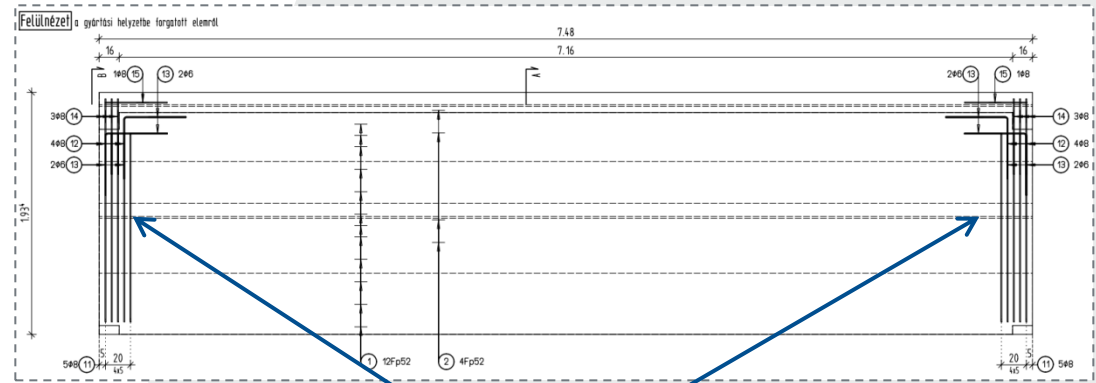


LABORATORY TESTS for the PROPER LOAD BEARING CAPACITY



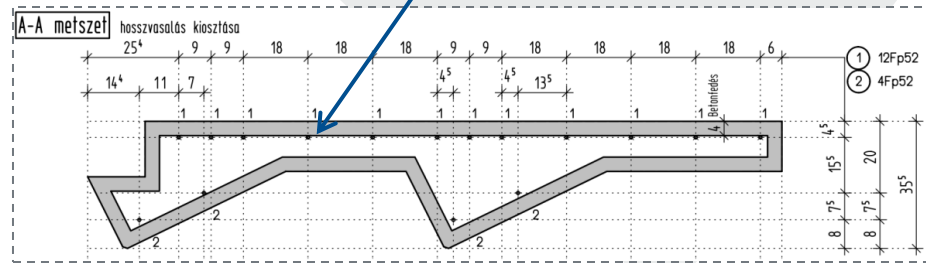
REINFORCEMENT PLAN

Plastic fiber reinforced concrete



additional reinforcement only at the beam ends

plastic fiber reinforced concrete + prestress wires



2.2 Highlights of precast solutions in Hungarian stadiums

GRANDSTAND ELEMENTS for the HALADÁS STADIUM

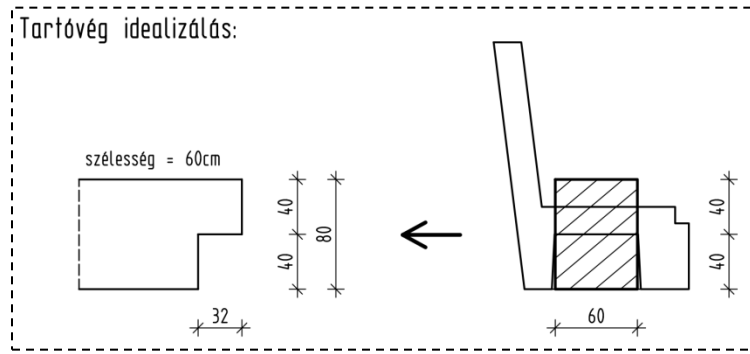
BUILT-IN PHASE



2.2 Highlights of precast solutions in Hungarian stadiums

PERIMETER BEAMS for the PUSKÁS STADIUM

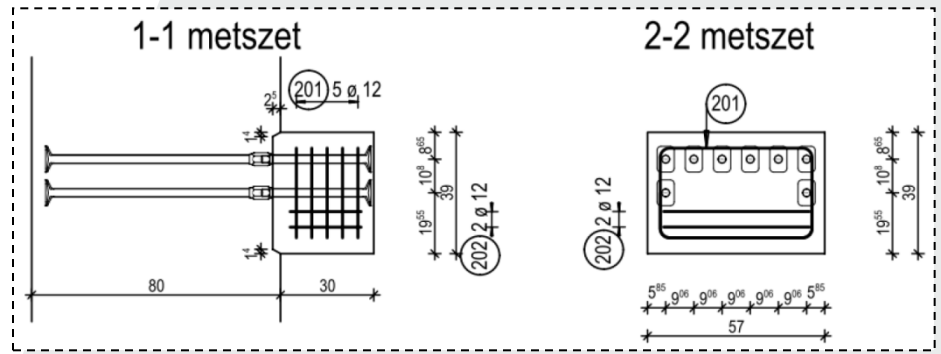
BEAM END IDEALIZATION:



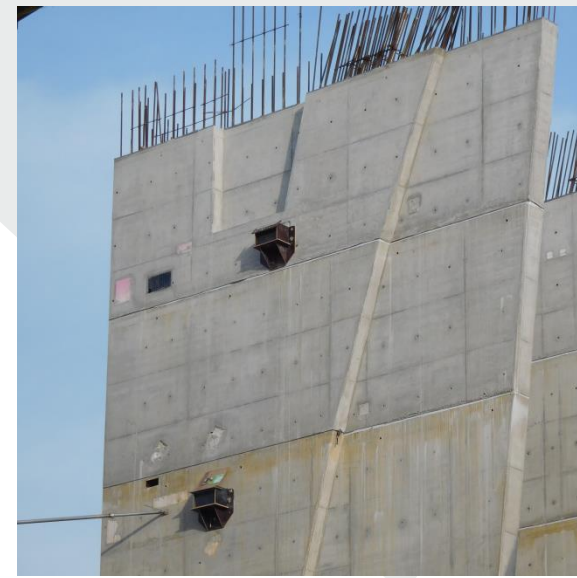
POST CASTED CONSOLE REINFORCEMENT:



ELEMENT DRAWINGS:



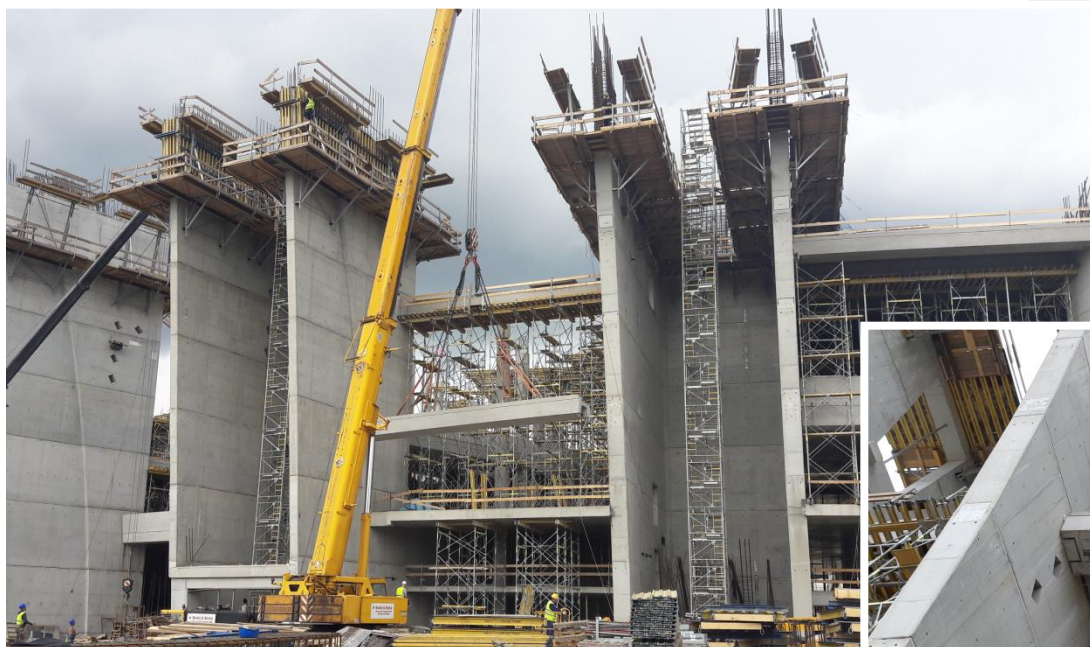
POST CASTED CONSOLE FORMWORK:



2.2 Highlights of precast solutions in Hungarian stadiums

PERIMETER BEAMS for the PUSKÁS STADIUM

BUILT-IN PHASE



3.1 Possibilities and advantages of precast structures in the residential housing

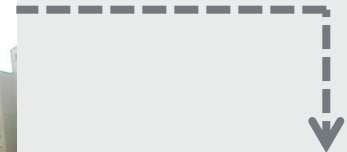
EXPANSION OF THE PRECAST SOLUTIONS IN THE RESIDENTIAL HOUSING IN EE



Renovation mainly focuses on the thermal insulation



Minor image improvement for precast



Ongoing changes

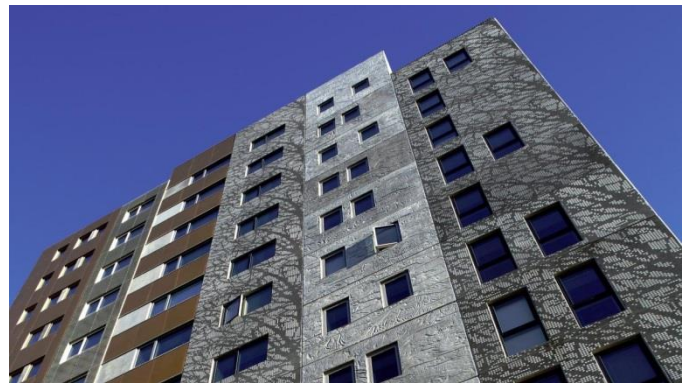
- **Precast slab elements** started to be used in residential buildings as well
- **Insulated precast walls** having better evaluation in the eyes of the people
- Shortage of labour force for cast-in-situ works → advantages of **fast precast assembly**
- **Aesthetic solutions** for attractive houses



Old communist condominiums

- Evaluated as bad quality solutions
- Heavy elements
- Poor thermo insulation and acoustic properties

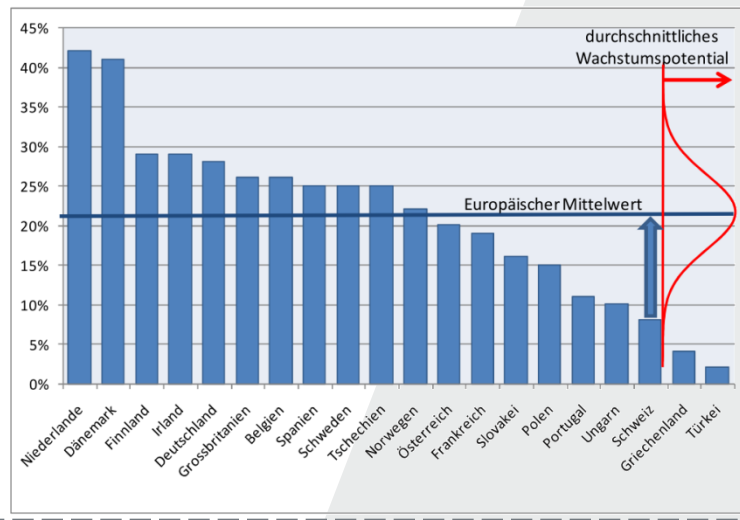
EUROPEAN TREND: complete precast residential blocks and offices



3.1 Possibilities and advantages of precast structures in the residential housing

EXPANSION OF THE PRECAST SOLUTIONS IN THE RESIDENTIAL HOUSING IN EE

Proportion of the cement usage for precast products compared to the total cement consumption in 2010:



Source: Thomas Rinas, Gerhard Girmscheid - Kooperationen und innovative Vertriebskonzepte, Geschäftsmodell für den individuellen Fertigteilbau

IN HUNGARY:



Precast product mainly used for industrial purposes



First big residential project with precast columns and slabs in 2018



What brings the future? The Western- and Norther European trends?

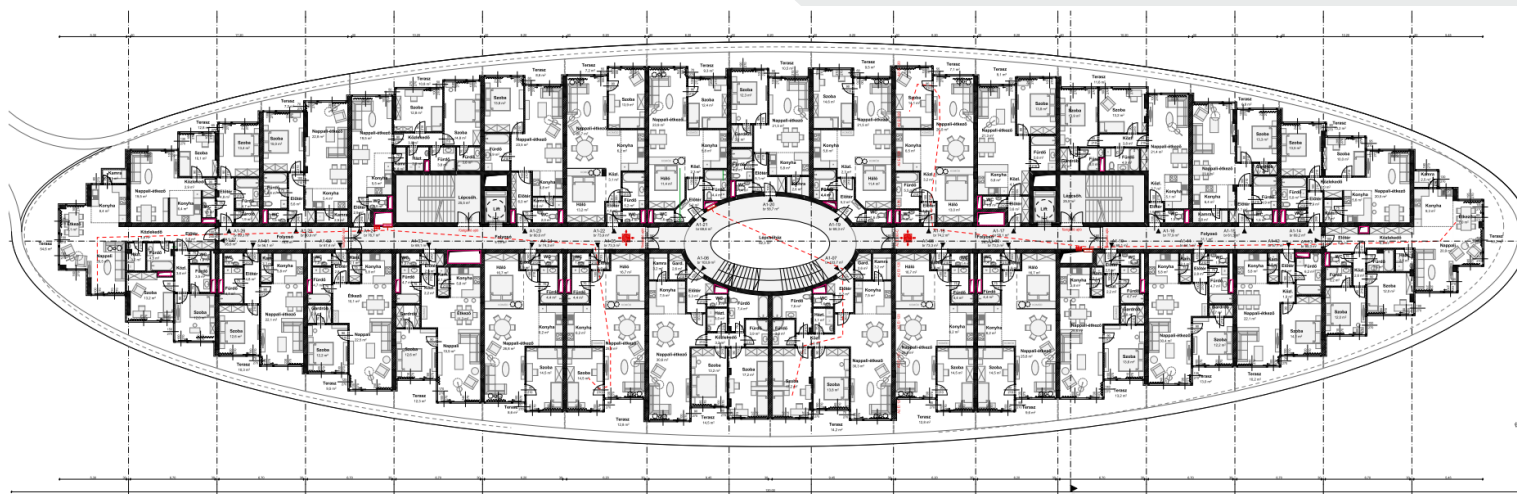


Time

3.2 Precast solutions in Hungarian residential buildings

PRECAST SOLUTIONS for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

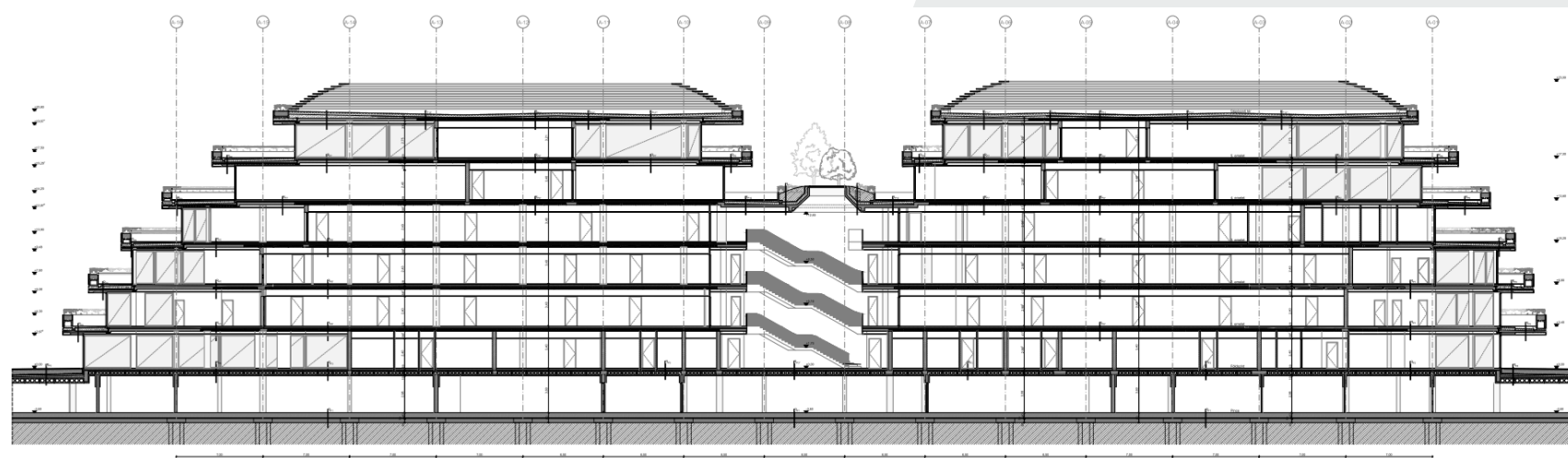
FIRST BIG RESIDENTIAL PROJECT WITH PRECAST SLABS IN HUNGARY IN 2018



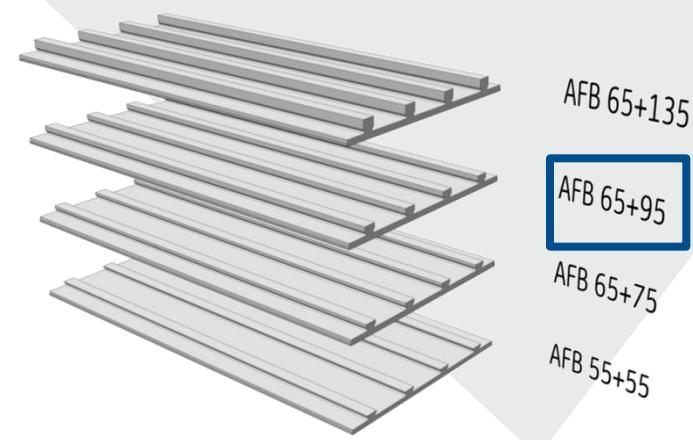
3.2 Precast solutions in Hungarian residential buildings

PRECAST SOLUTIONS for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

FIRST BIG RESIDENTIAL PROJECT WITH PRECAST SLABS IN HUNGARY IN 2018



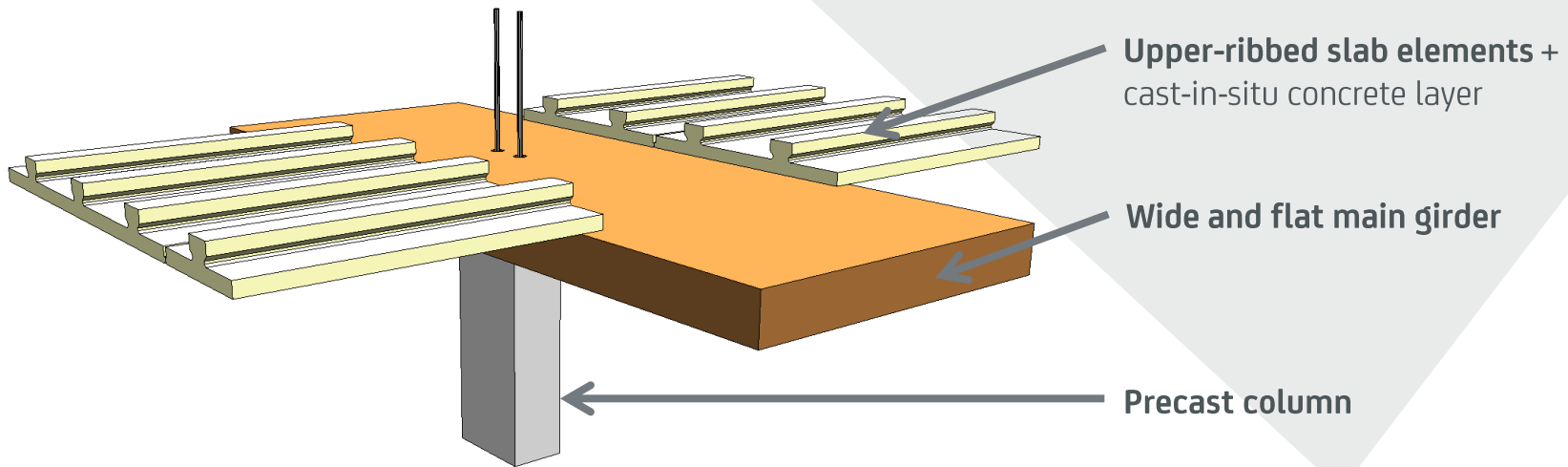
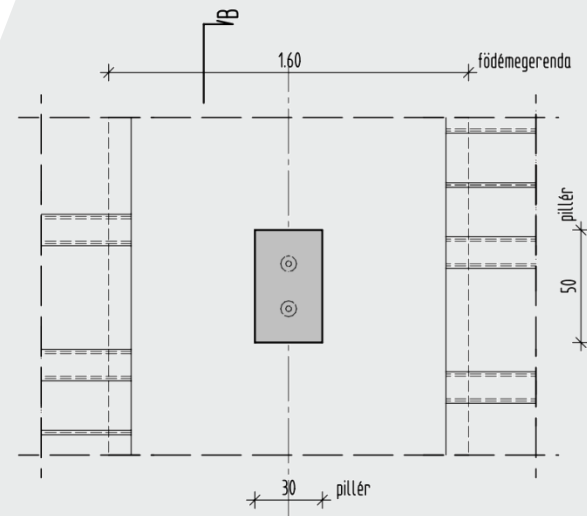
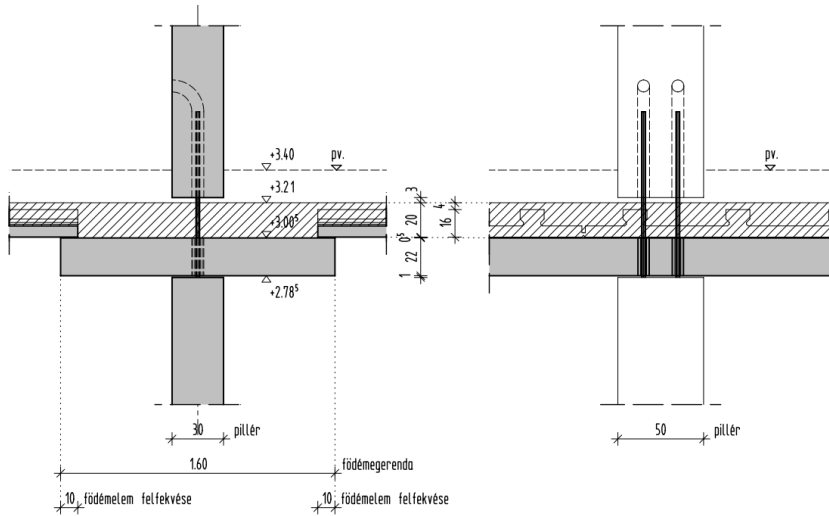
UPPER-RIBBED SLAB ELEMENTS CHOSEN for the SLAB STRUCTURE:



3.2 Precast solutions in Hungarian residential buildings

PRECAST SLAB SOLUTION for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

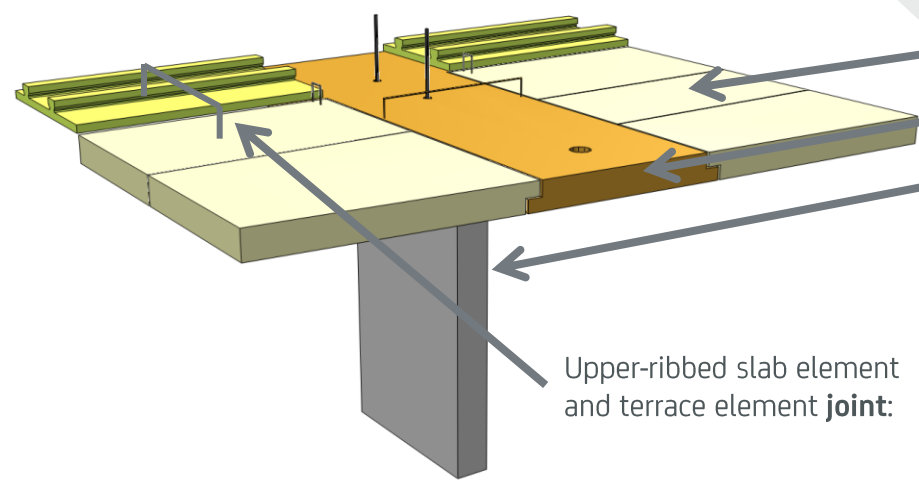
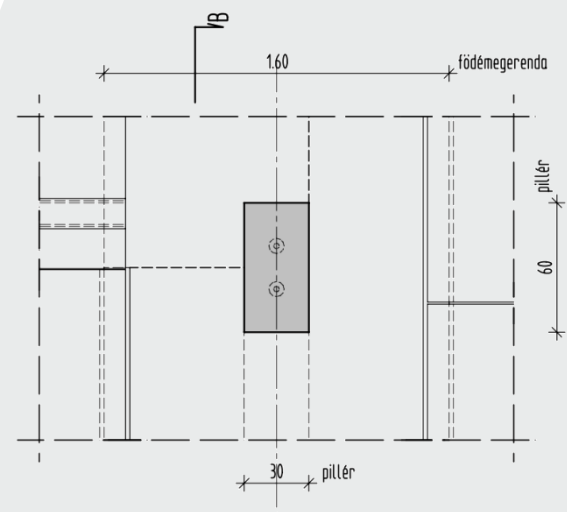
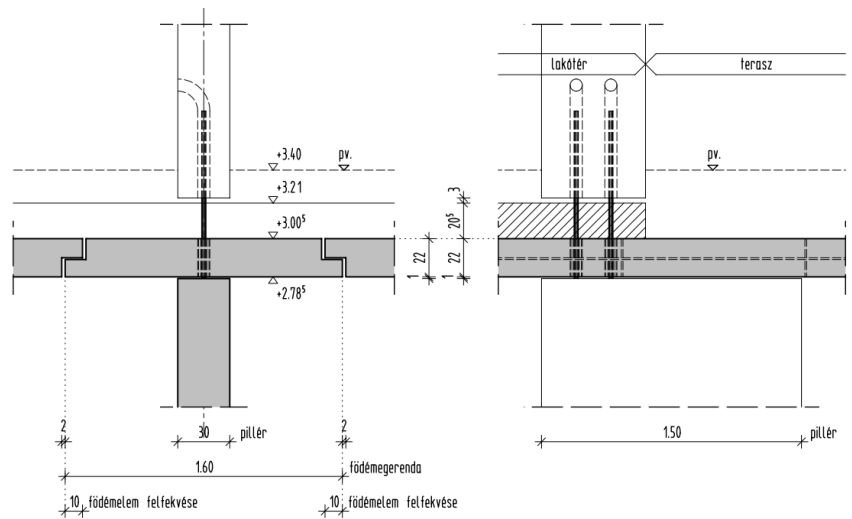
BASIC STRUCTURAL BUILD-UP of the SLABS under the LIVING PLACES



3.2 Precast solutions in Hungarian residential buildings

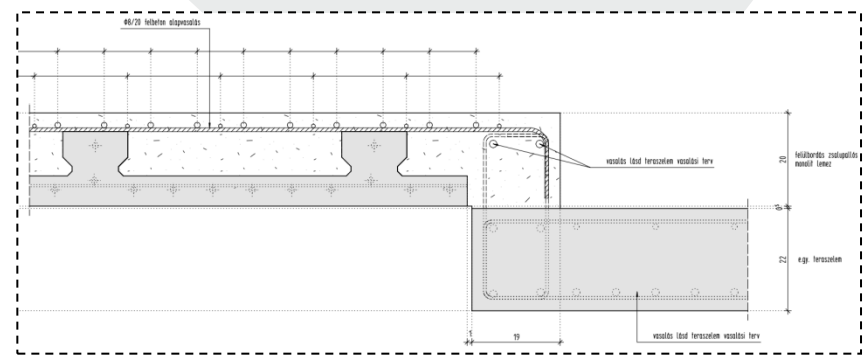
PRECAST SLAB SOLUTION for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

BASIC STRUCTURAL BUILD-UP of the SLABS in the TERRACE AREA



- Solid precast slab elements
- Wide and flat main girder
- Precast column

Upper-ribbed slab element and terrace element joint:



3.2 Precast solutions in Hungarian residential buildings

PRECAST SLAB SOLUTION for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

BUILT-IN PHASE

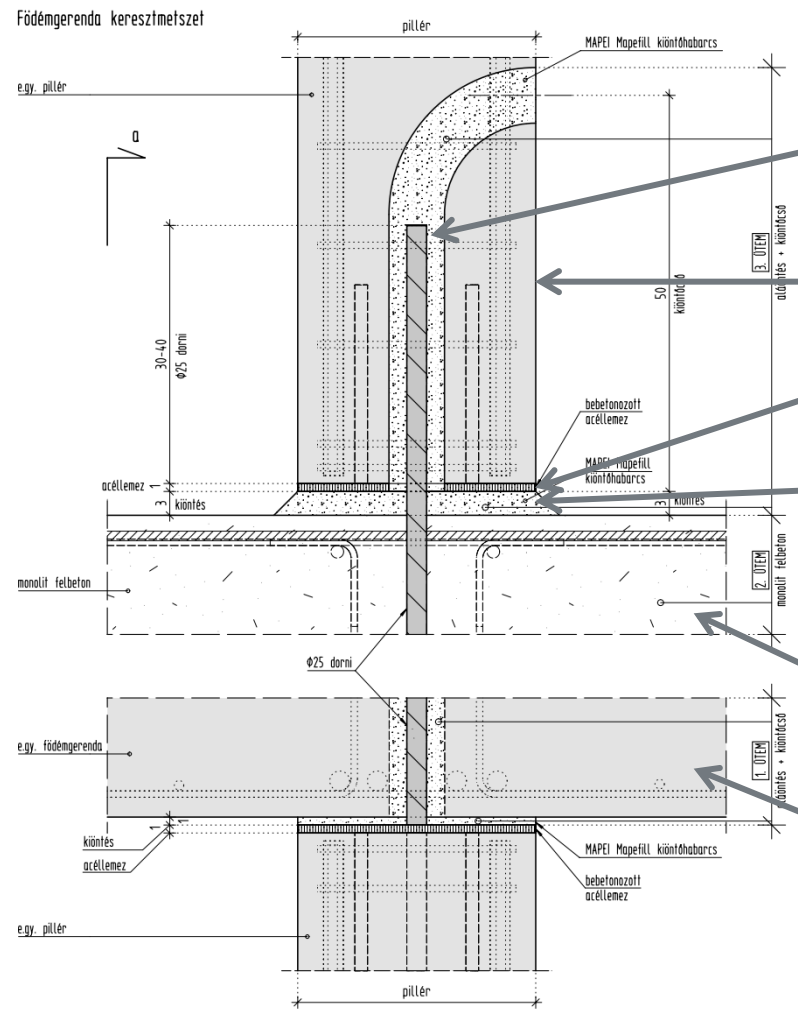


3.2 Precast solutions in Hungarian residential buildings

PRECAST COLUMN SOLUTION for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

COLUMN JOINTS with STEEL PLATE FITTING

Födémgerenda keresztmetszet



Ø25 reinforcement bar

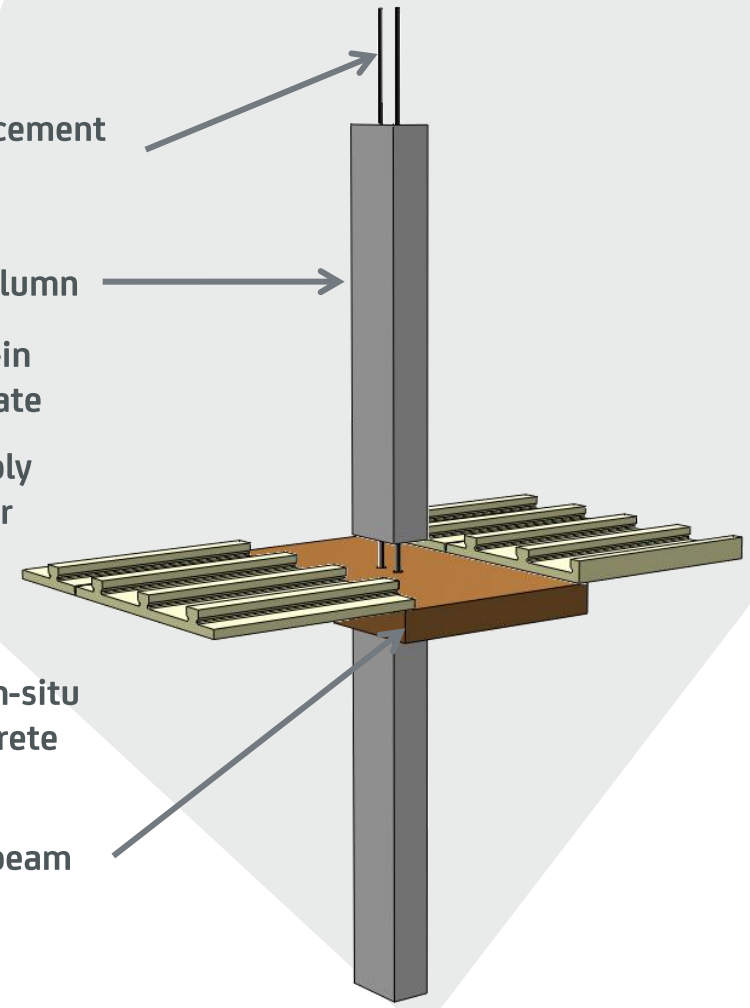
precast column

casted-in steel plate

assembly mortar

cast-in-situ concrete

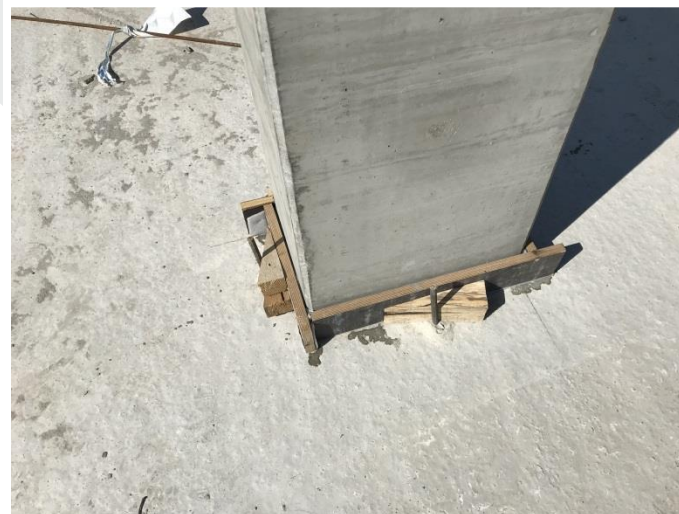
slab beam



3.2 Precast solutions in Hungarian residential buildings

PRECAST COLUMN SOLUTION for the CÉDRUS LIGET RESIDENTIAL PROJECT in SZEGED, HUNGARY

BUILT-IN PHASE



4. Future perspectives

SPORT FACILITY SECTOR

INCREASING PROPORTION OF PRECAST CONCRETE COMPARED TO THE TOTAL CONCRETE AMOUNT



Harmonized usage of the precast and cast-in-situ concrete parts

- Taking advantage of their properties and usage fields
- Usage of dry joints (bolts) fastens the assembly speed



Converting the originally cast-in-situ building parts also to precast structures

- For example the slabs in stadiums and sport facilities
- For long span slab the mushroom slabs can provide a suitable solution for sport facilities



RESIDENTIAL SECTOR

INCREASING PROPORTION OF PRECAST CONCRETE COMPARED TO THE TOTAL CONCRETE AMOUNT

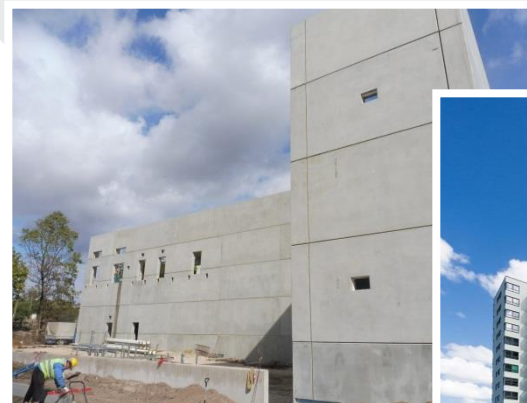


Not only column structure but also wall structure buildings to be converted to precast (European trends)

- Usage of sandwich facade wall elements
- Various application of hollow-core and upper-ribbed slab elements



COMPLETE PRECAST RESIDENTIAL BUILDINGS FOLLOWING THE WESTERN- AND NORTHERN EUROPEAN TRENDS



Questions?

Thank you for your kind attention!
Questions?