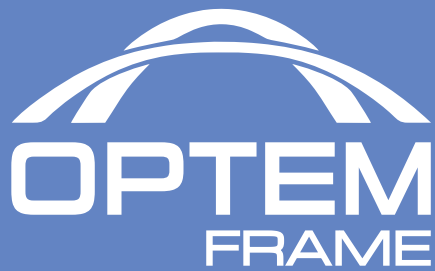


OPTEM FRAME



**PRECAST CONCRETE
FRAME BRIDGE SYSTEM**



The **optemFRAME** original precast bridge system is tailored to the needs of civil engineering constructions.

Optem has developed a solution to meet high requirements of the construction market.

We have combined efficiency with short lead times.

The optemFRAME precast structures allow the construction of:

- overpasses and road bridges,
- railway bridges,
- pedestrian and bicycle underpasses,
- wildlife crossings.

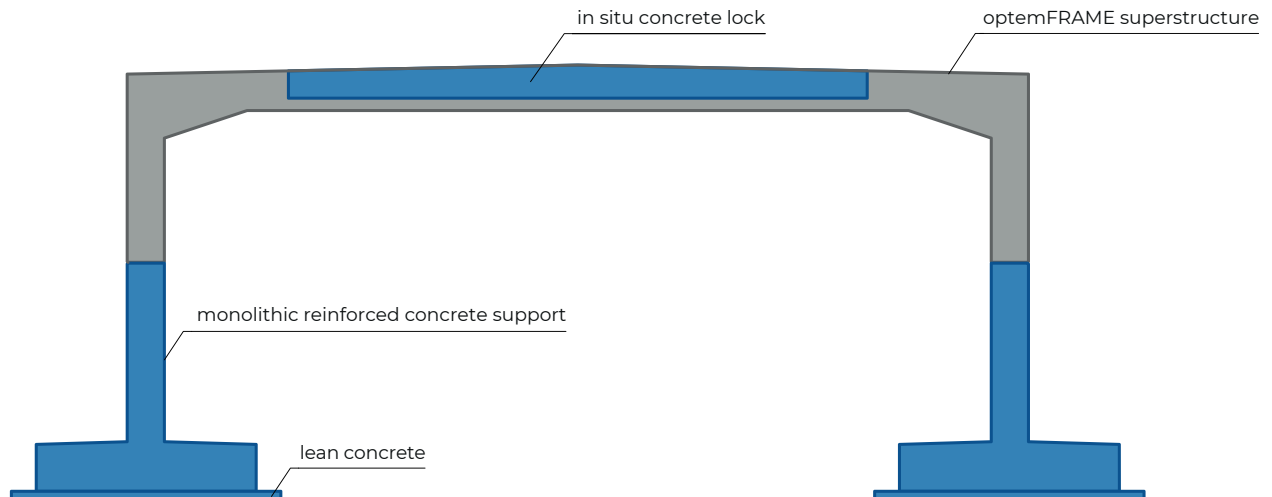


We have multi-year experience and a large engineering team.

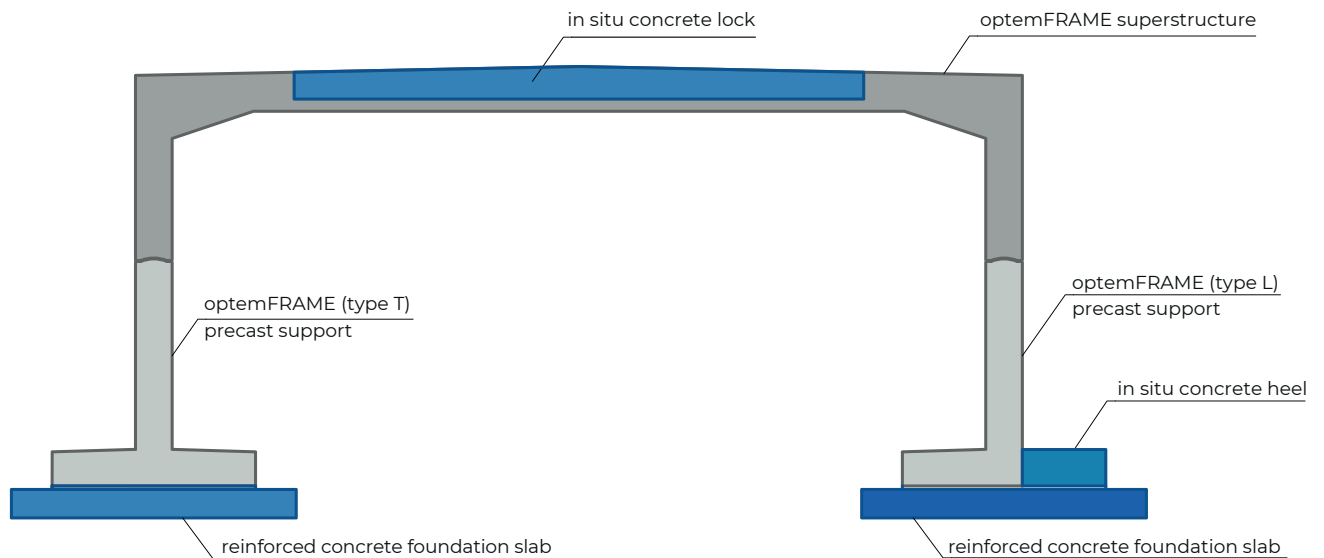
The optemFRAME precast system department is involved in the construction process at every stage of implementation, starting with the design preparation, through the delivery and assembly of the finished elements, to the complete execution of the structure.

Components of the optemFRAME system:

Monolithic supports variant

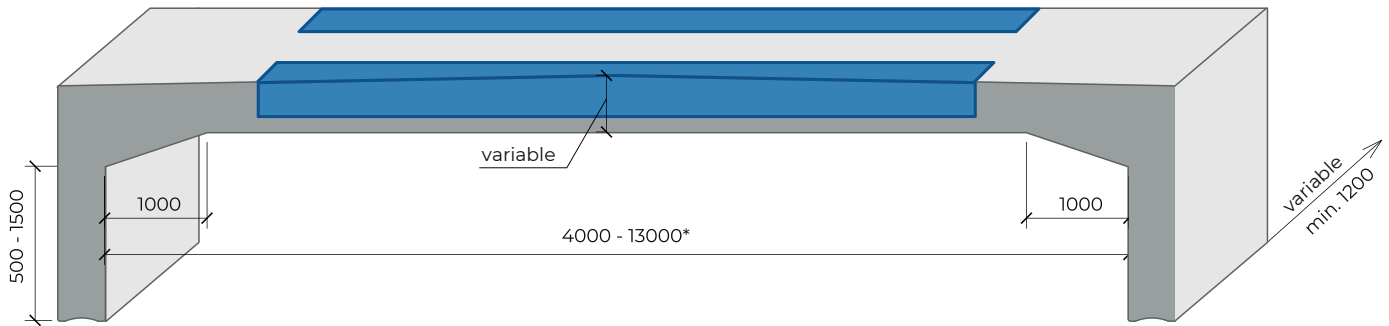


optemFRAME precast supports variant



In comparison with monolithic supports, the use of precast frame elements and supports significantly reduces construction time. The connection between the precast superstructure elements and the supports was designed to ensure an easy on site assembly. The idea of the tongue and groove system allows for maintaining centric position and precise placement of the frame elements on the supports.

optemFRAME precast elements



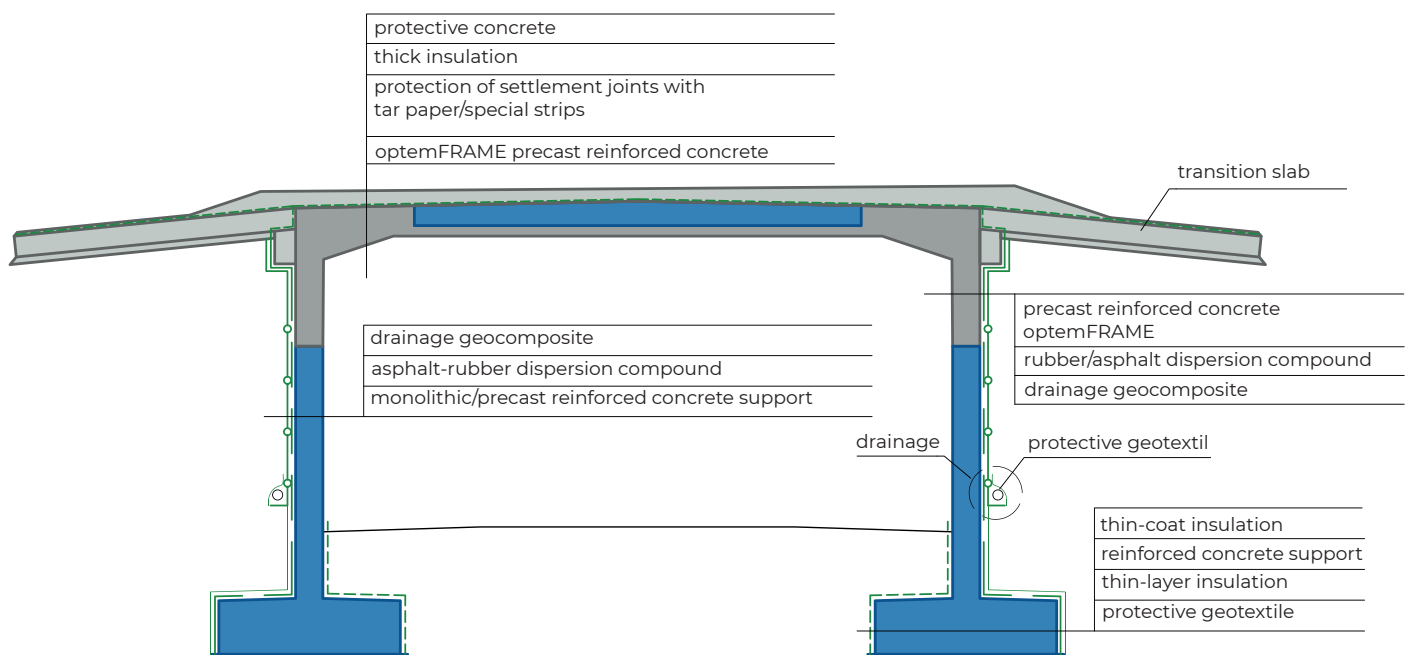
* Production of precast elements with longer spans considered individually.

The thickness of the deck varies depending on the type of structure (road, railway) and the thickness of the ground above the structure. The width of the precast element is chosen so that its dimensions and weight would not require oversize transport.

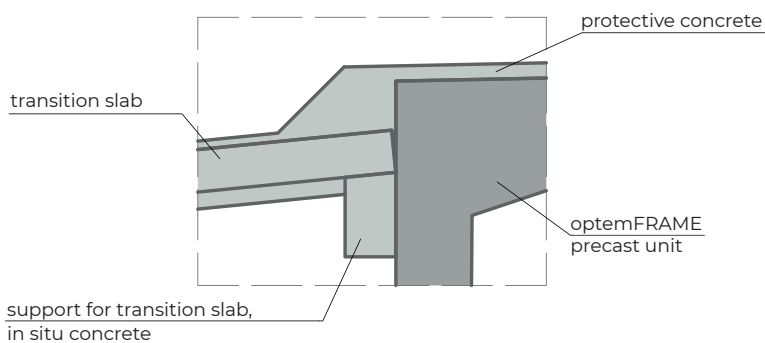
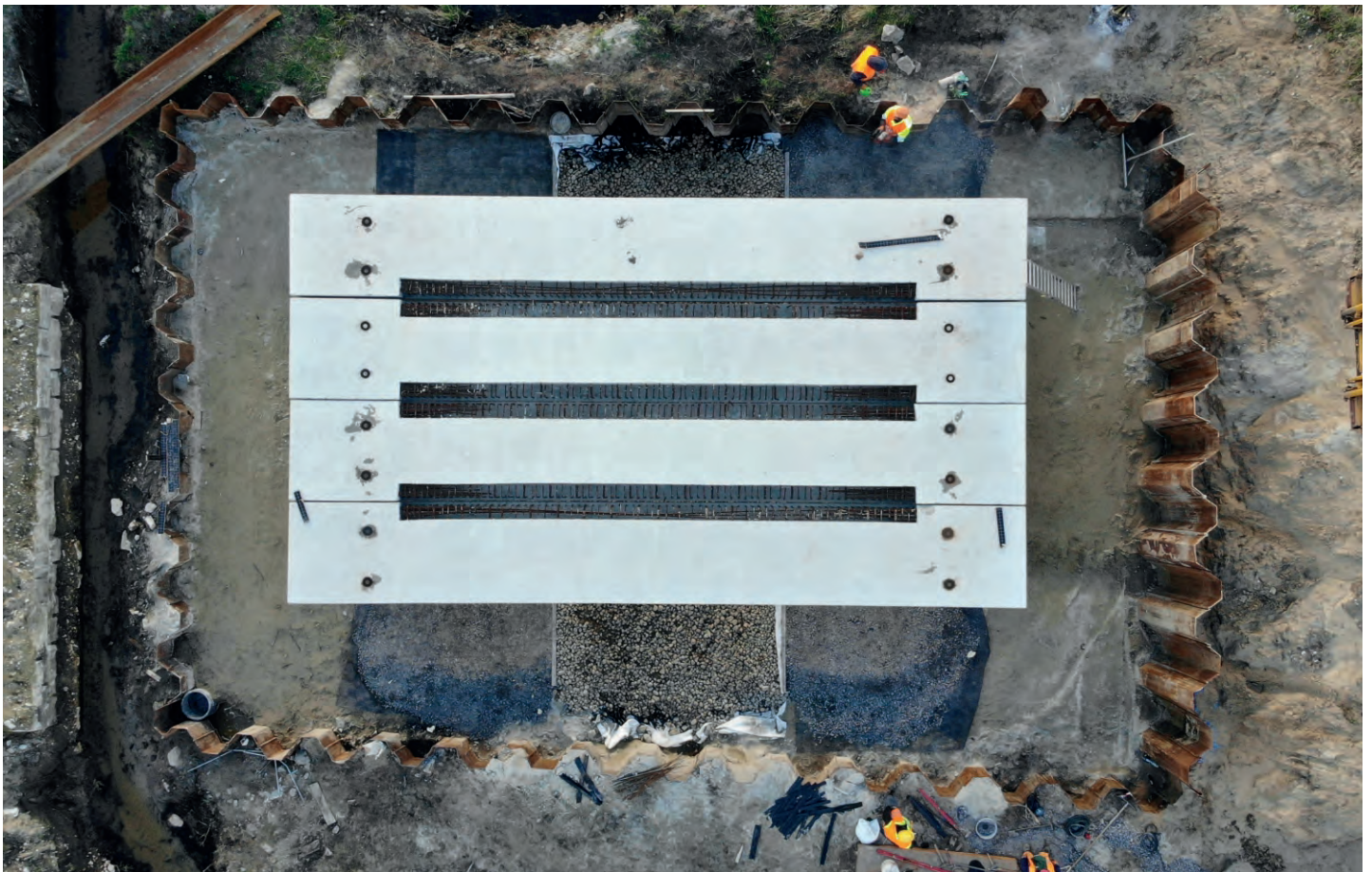
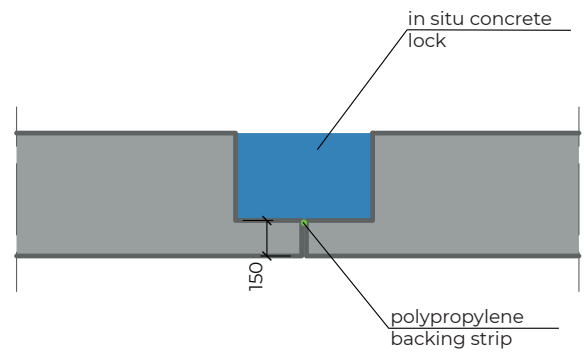
DURABILITY of the optemFRAME precast elements

The durability of optemFRAME precast structures is influenced by:

- production of precast elements in certified plants,
- high concrete quality that meets contractual requirements,
- appropriate concrete care,
- tight waterproofing system on the backfill surface side,
- tight connection between precast elements through appropriate joint protection and the formation of a concrete-filled lock between adjacent segments.



The monolithic lock not only has a connecting function, but also reduces the weight of the precast element. This has a significant impact on the efficient assembly of the elements on site and the transport of the precast elements.



DETAIL of the transition slab support

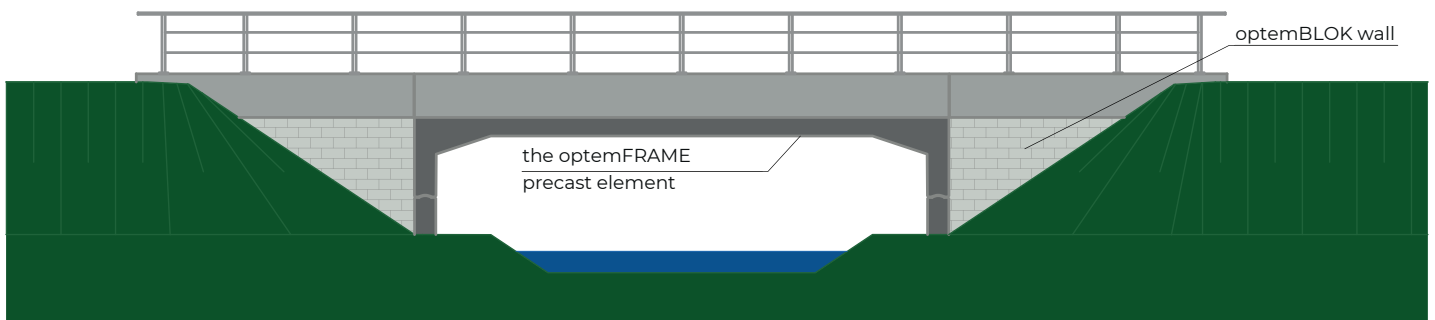
Monolithic support for a transition slab possible.

COMBINATION OF THE optemFRAME AND THE optemBLOK SYSTEM

The optemFRAME technology works closely together with the optemBLOK system.

Benefits of the connection:

- The OPTEM company has extensive experience in designing both systems. By using the systems from the same company the structure is treated in a comprehensive and complete way. Problems with coordination are avoided,
- Fast erection of the optemBLOK technology retaining walls compared to the traditional reinforced concrete walls,
- Aesthetics of walls made with precast concrete blocks.



EXAMPLE OF THE TWO SYSTEMS COMBINATION





E20 Railway Sochaczew – Swarzędz

Investment description:

The scope of work on the facility included the assembly of precast frame and supports, construction of additional monolithic elements, insulation and the precast optemBLOK retaining walls. The assembly of the precast elements took 2 days and the completion time for the entire facility was 1 month.

Location: Kutno

Products used:

optemFRAME, optemBLOK



Regional Road 203 section Ustka

Investment description:

The road viaduct on the regional road no. 203 consists of six 9-metre-long precast frames supported by monolithic supports. The scope of works included the assembly of precast frames, insulation, construction of sidewalk slabs, transition slabs and the optemBLOK retaining walls.

Location: Zaleskie

Products used:

optemFRAME, optemBLOK





Railway 16 Ozorków - Łęczyca

Investment description:

Two railway facilities with a clearance of 11 m and 9 m were made fully of precast elements – precast frames, supports and retaining walls. Work on one of the structures was carried out with two railway tracks in operation, with some work being performed at night. The scope of work on both structures included the assembly of precast frames and supports, insulation and the optemBLOK reinforced earth retaining walls.

Location: Łęczyca Railway Station, Sierpów

Products used:

optemFRAME, optemBLOK



Railway 220 Olsztyn - Gutkowo

Investment description:

The 7 m clear precast frames were placed on the optemFRAME system supports. The structure is used to carry a pedestrian and cycle path under the railway line 220. The underpass was built in an open excavation, with the railway line completely shut down. The installation of the entire facility took 2 days.

Location: Olsztyn

Products used:
optemFRAME

OPTEM Group consists of:

DESIGN OFFICE

- **bridge** department
- **building** department
- **geotechnics** department
- **road** department

THE DEPARTMENT OF INVESTMENT PERFORMANCE

- the construction of precast bridge-type structures: **optemARCH**, **optemFRAME** and **optemPLATE**
- the construction of the **optemBLOK** retaining walls
- the construction of engineering structures
- the construction of building structures

OPTEM

THE DEPARTMENT OF TECHNOLOGY

- **optemARCH** – Precast concrete arch bridge system
- **optemFRAME** – Precast concrete frame bridge system
- **optem PLATE** – Buried corrugated steel structure system
- **optem BLOK** – Reinforced earth retaining wall system with small-sized precast concrete blocks
- **optemFROG** – Precast concrete amphibian/reptile protective fencing system



ONE COMPANY – MULTIPLE SOLUTIONS

ONE COMPANY – MULTIPLE SOLUTIONS