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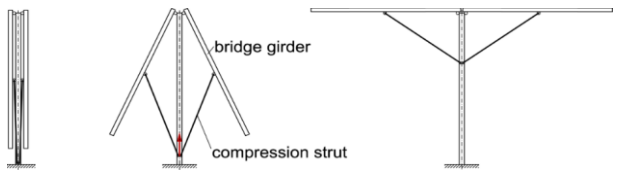
BALANCED LIFT METHOD

▲ *Construction of Lafnitz bridge on the S7 motorway in Austria*

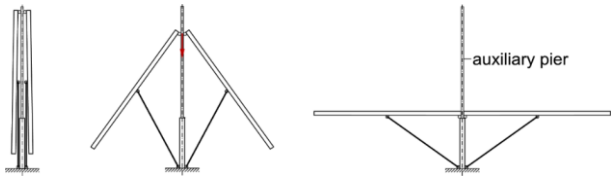
In this new bridge construction method, the key elements of the bridge girders are assembled in a vertical position and then rotated to the final horizontal position. The span of the bridge girders is reduced by the compression struts, which allows considerable savings in construction materials. The proposed method is particularly advantageous for bridges with high piers and span lengths between 50 m and 250 m. The usage of temporary pylons (see photograph) enables the expedient application of the balanced lift method for bridges with low piers. This method was used in Austria for two bridges on the S7 motorway. Cost savings of 30 % could be achieved for the bridge decks in comparison to the originally planned steel-concrete-composite bridges.

CONSTRUCTION METHODS

Bridges with high piers



Bridges with low piers



ADVANTAGES

- Savings in construction materials of approx. 20% to 30% in comparison to incremental launching or the balanced cantilever method
- Fast vertical assembly of bridge girders and compression struts
- Short construction time and reduced costs
- Established technologies are available for the lifting or lowering process and the hinges
- The method is also applicable for temporary bridges and lift bridges

PATENT STATUS

- Patents granted in DE, AT, CH, ES, FI, FR, GB, IT, PL, SE, NO, EP, US, CA, AU, RU, JP, CN

COOPERATION POSSIBILITIES

- Project based cooperation
- License agreement

CONTACT

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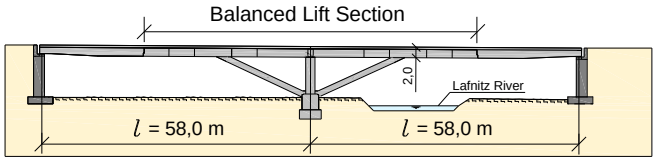
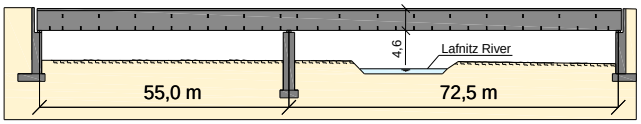
BALANCED LIFT METHOD

CONVENTIONAL CONSTRUCTION METHODS

BRIDGES WITH TWO SPANS AND LOW PIERS

Span l = 50 – 80 m

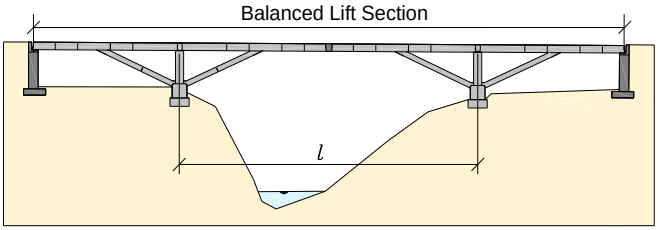




An example of a bridge with two spans and low piers is the S7 bridge spanning the Lafnitz River in Austria. The bridge was built in an environmentally sensitive area, therefore a construction using conventional formwork was not permitted. The alternative design using the balanced lift method proved to be 30 % less expensive than the original design with the launching of a steel bridge girder. The detailed design, commissioned by the ASFINAG, has been performed by TU Wien in cooperation with Schimetta Consult GmbH. Lafnitz bridge and the very similar Lahnbach bridge were successfully built with this new construction method in 2019 and 2020.

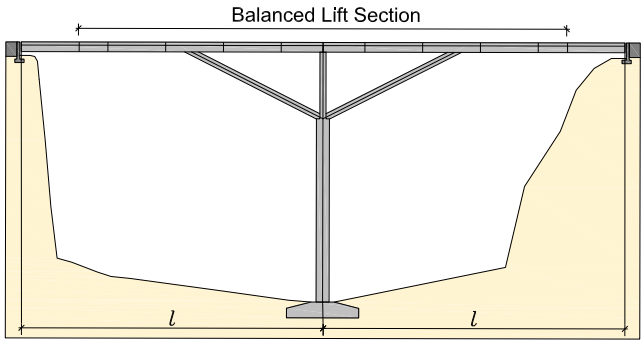
BRIDGES WITH THREE SPANS AND LOW PIERS

Main span l = 50 – 100 m



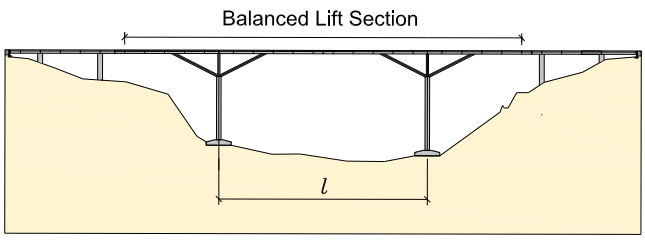
BRIDGES WITH TWO SPANS AND HIGH PIERS

Span l = 50 – 125 m



MULTISPAN BRIDGES WITH HIGH PIERS

Main span l = 100 – 250 m



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