



**LIC**

Structures  
System L-600

## Introduction

LIC has a long trajectory in the implementation of large concrete structures. The amount and diversity of the works we have carried out have given us a vast knowledge on the processes and systems of implementation.

Such experience has allowed us to detect a significant lack in the current shoring and formwork systems for bridge decks, both in the technique and security fields.

LIC's critical point of view has boosted us, through our Engineering and Projects department, to the development of our own systems.

LIC developed systems are adapted to new market needs (bigger concrete bridges decks and therefore heavier sections, usually implemented at high altitudes). Pursuant to those technical conditions, we have projected the shoring and formwork system with the biggest capacity in the market, reducing the elements and allowing it to speed up the implementation process.

In this context, we present the **L-600 SYSTEM** as the best solution for the implementation of large concrete bridges decks carried out at extreme heights.





## System L-600

The L-600 system is a comprehensive solution for the implementation of concrete bridge decks, especially those that include large and high spans. This system consists of a group of loading towers, beams or lattice main girders and deck formwork sets, which contributes to both technical and security improvements, making it the best option in Falsework bents.

### L-600 Towers:

Loading towers of high bearing capacity, 6,000 KN per rectangular 4-legged tower, increasing the loading capacity up to 12,000 KN by means of doubling the legs. The towers are dimensioned to work without bridging among them, just being anchored to the base footing.

The towers are accessed through a ring staircase that surrounds it; intermediate platforms and on top of the tower.

The L-600 system includes a profile support system, for the pier area, by means of windows in the bridge piles, this way; the need of a loading tower is eliminated in this area.

### L-600 profiles and lattice main girder:

To save the large spans, a series of great loading capacity box lattice main girders, with a section of 2.2 x 2.2 meters.

The inner platform that they include, together with the integrated security system (banisters and kick plates) create a secure corridor that allows you the access the whole concrete deck and to receive the deck formwork set from the inside.

For smaller spans, it is possible to use I beam profiles.

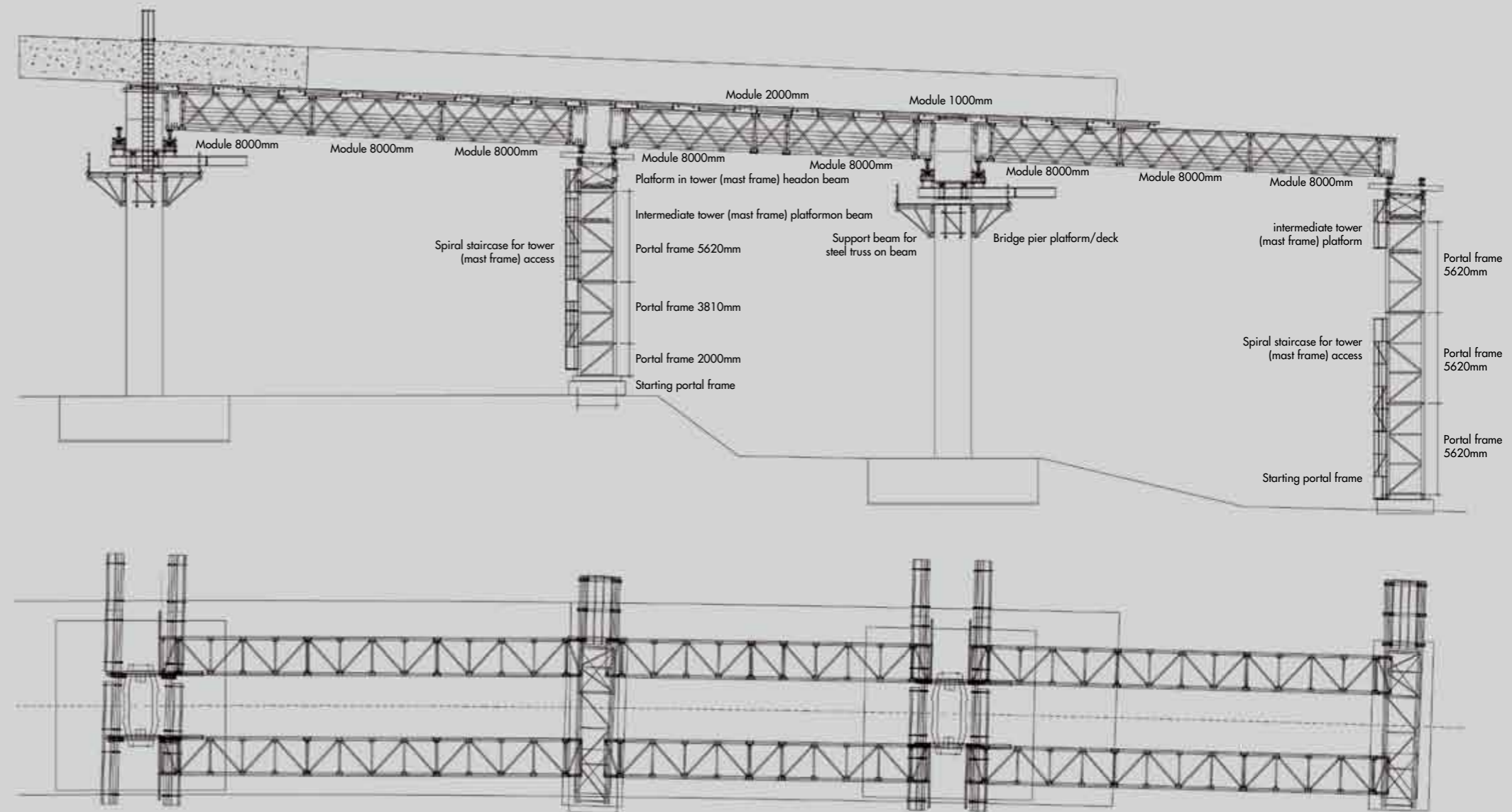
### L-600 deck formwork sets:

Special deck formwork sets system, with enough capacity to work resting on just two lattice girders and, therefore, with important transversal separations.



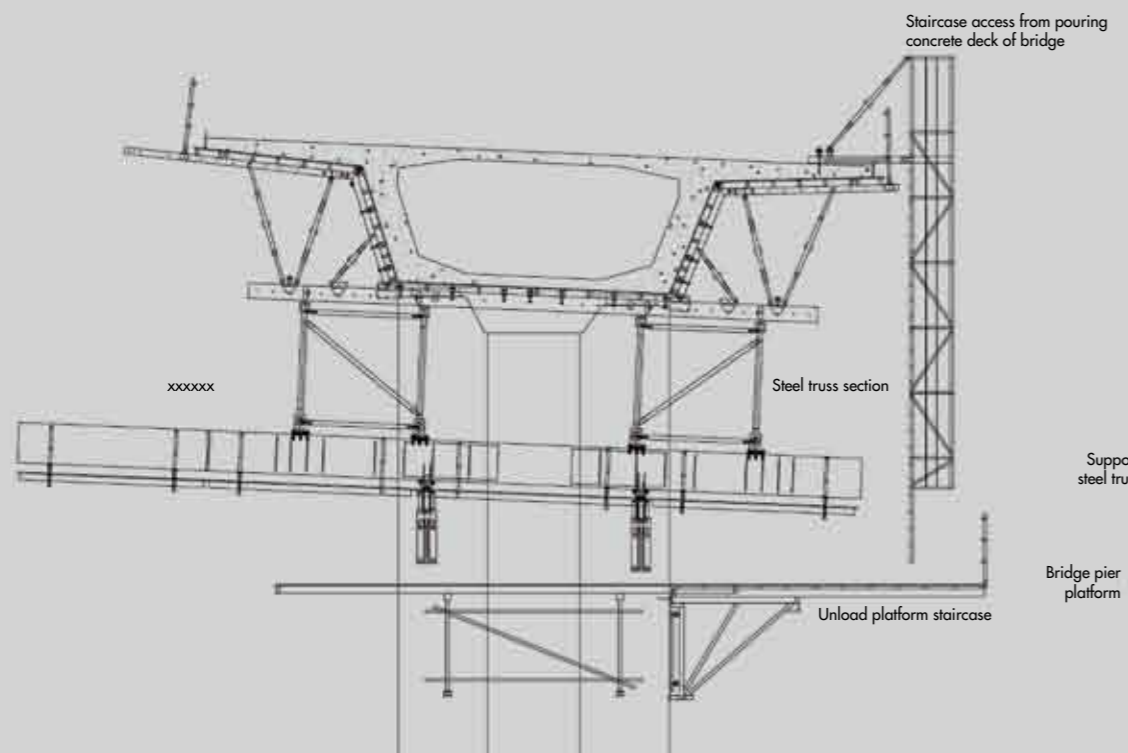


- Towers made of modules that, at the same time, are made of frames 2200 mm in width between axes; and heights of 2000 mm, 3810mm and 5620 mm.
- Bases in different measurements, allowing the adjustment of the towers in fixed heights, or to the land, thus reducing the earthworks.
- Loading capacity of 6,000 KN on simple towers.
- Possibility to increase the loading capacity to 12,000 KN, by adding a supportive frame at both sides (double tower).

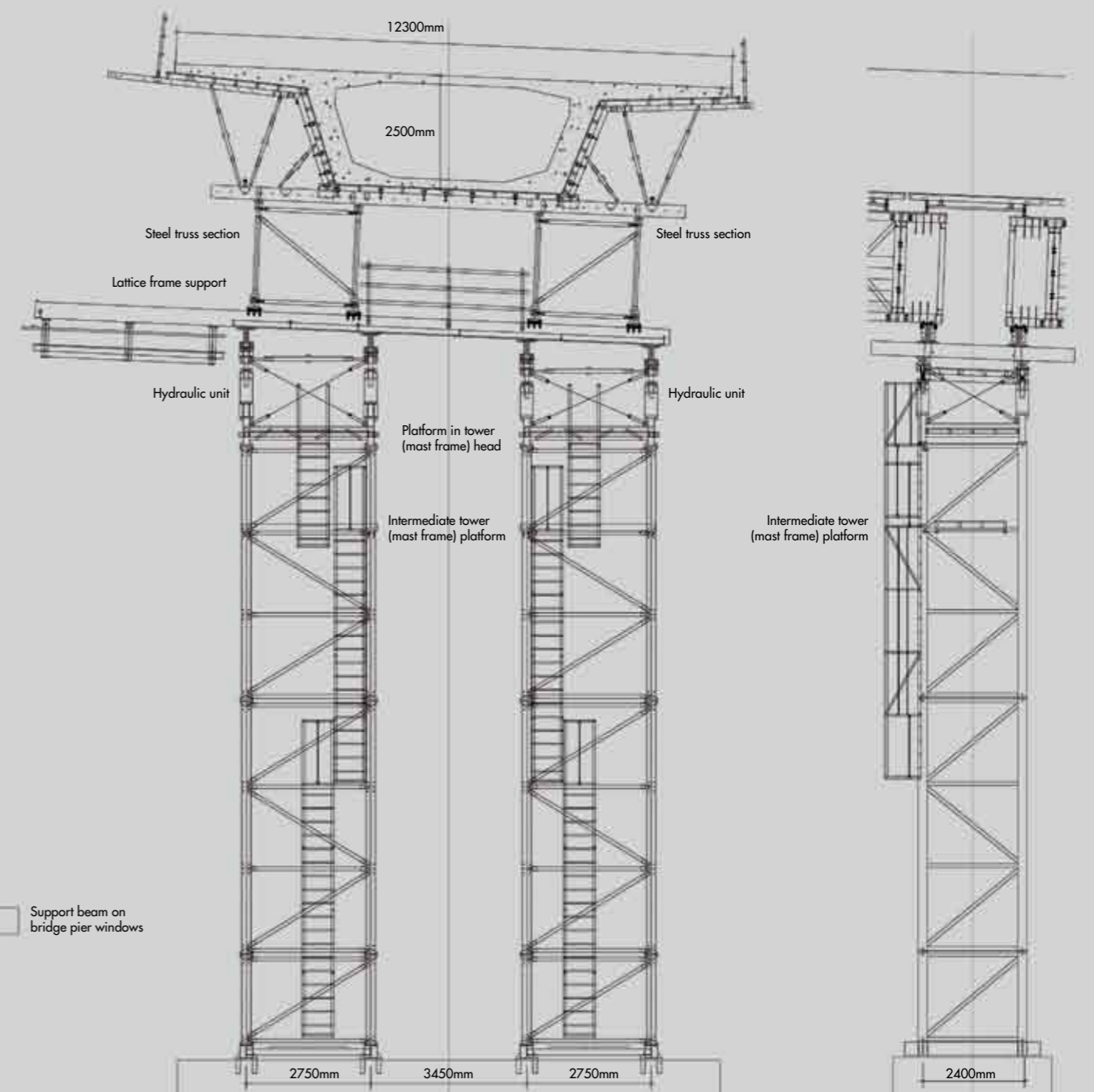
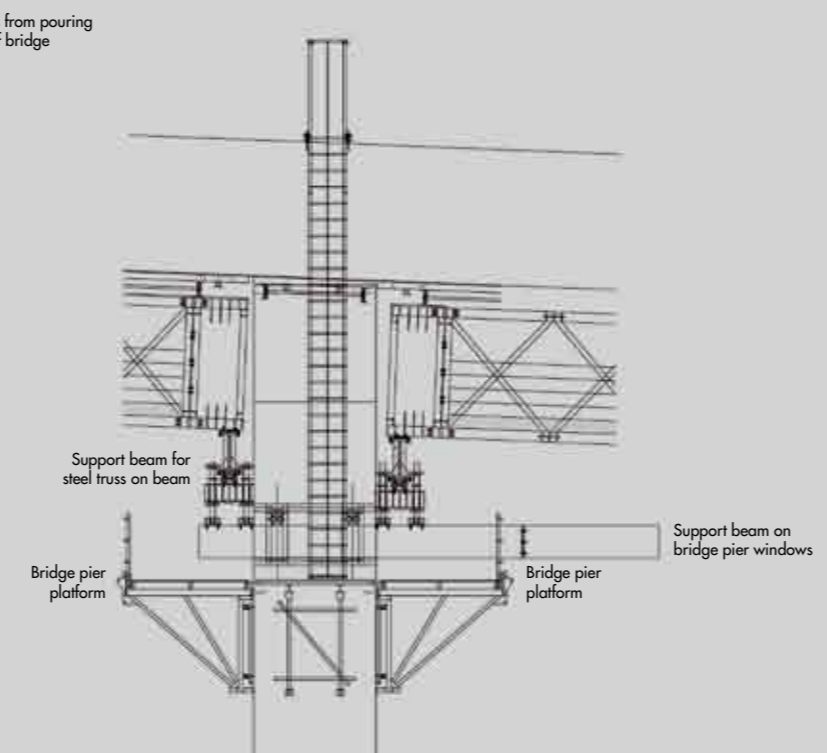


Floor and elevation.  
Type I-600 span shoring.

- Guaranteed stability against overturning thanks to an anchoring system from tower to footing.
- In terms of structure, the towers do not need bridging.
- It is possible to use it with I beams profiles or lattice girders, depending on the lights to be executed.
- High loading capacity lattice girders to save the larger spans with built-in security and corridors to carry out the work from the back side.
- Deck formwork sets of 3.0, 3.5 and 4.0 m in length with cross beams based on IPN-280.



Pile section

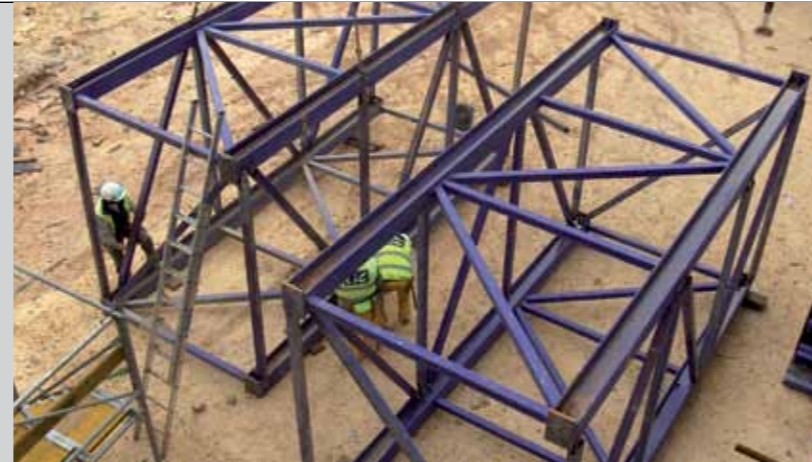


Tower section



The assembly of the L-600 towers is an easy and fast operation:

1. Starting with the modules, the sections of the tower are completely assembled on the ground (including the elevation regulated spindles). Each section has an inner platform at the end.
2. The assembly of the whole tower will be carried out vertically, receiving and assembling the sections from the secure surface of the platforms. To access those, the sections include a surrounding ring staircase.



The towers of the L-600 system are calculated as open-planned, not needing bridging for heights less than 30 meters, or even higher if the required loading capacity is smaller.

This way the obvious risks from the assembly are avoided for the necessary bridging system of the rest of the current shoring. Even more, considering the high heights for which these towers were conceived.

They also include platforms, at the top of the towers, that allow the receipt of the span profiles (whether they are lattice girders or I beams profiles), as well as the way from a tower to another in a completely secure manner.



The L-600 shoring has a system of support profiles on bridge piles, by means of windows, that reduces the number of towers needed, therefore reducing the number of footings and, thus, the cost, time of implementation and environmental impact.





For large spans, the L-600 system includes great loading capacity box lattice main girders measuring 2.2 x 2.2 meters.  
 The lattice girder has an inner platform with a banister and kick plate, making it a secure area from which to carry out different works, such as the reception of formwork sets from the inside.



High loading capacity formworks sets to use over two lattices girders, thus reducing the amount of material and the number of movements.



For the extraction of the span profiles, the L-600 system has transversal profiles, longer on the shade of the control console, over which the first ones are shifted until they have access using a crane.  
 Pieces with Teflon are used in order to facilitate the manoeuvre, reducing the friction between the profiles.





## Works carried out with the L-600



1 VIADUCT OF MASSEGAR

Building of the platform for the new railway access of the high-speed line in the section from Madrid to Levante. AVE section from Siete Aguas to Buñol.

2 VIADUCT OF RODENILLO 1

Building of the platform for the new railway access of the high-speed line in the section from Madrid to Levante. AVE section from Minglanilla to the Contreras' dam.

3 VIADUCT OVER ARROLLO DEL PUENTE

Building of the platform for the new railway access of the high-speed line in the section from Madrid to Levante. AVE section from Abia de la Obispalia to Cuenca.

4 VIADUCT OF CUESTA NEGRA

Building of the platform for the new railway access of the high-speed line in the section from Madrid to Levante. AVE section from the Contreras' dam to Villagordo.



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