



Bridge side view.



Road and sidewalks on the bridge.

Bridge of Font de Sant Miquel. Gelida, Spain.

CLIENT	Diputació de Barcelona
DATE	2015 - 2016
LOCATION	Catalonia, Spain.
FIELD OF ACTION	Construction Project and Construction Management

INES Ingenieros has carried out the detailed design and construction management of “Contention improvement and widening sidewalks” on the bridge of the Font de Sant Miquel (Road C-243b) in the municipality of Gelida.

The work took place between July 2015 and January 2016, increasing the amount of material execution of the works € 232,861.06. The structure on which has made the interception is on the urban crossing of the C-243b road passing through the town of Gelida, and its function is to bridge the “Torrent de Sant Miquel”.

The bridge is in the village, in an area of steep slopes and bordered by housing at different levels. Prior to the implementation, these were the bridge’s main features:

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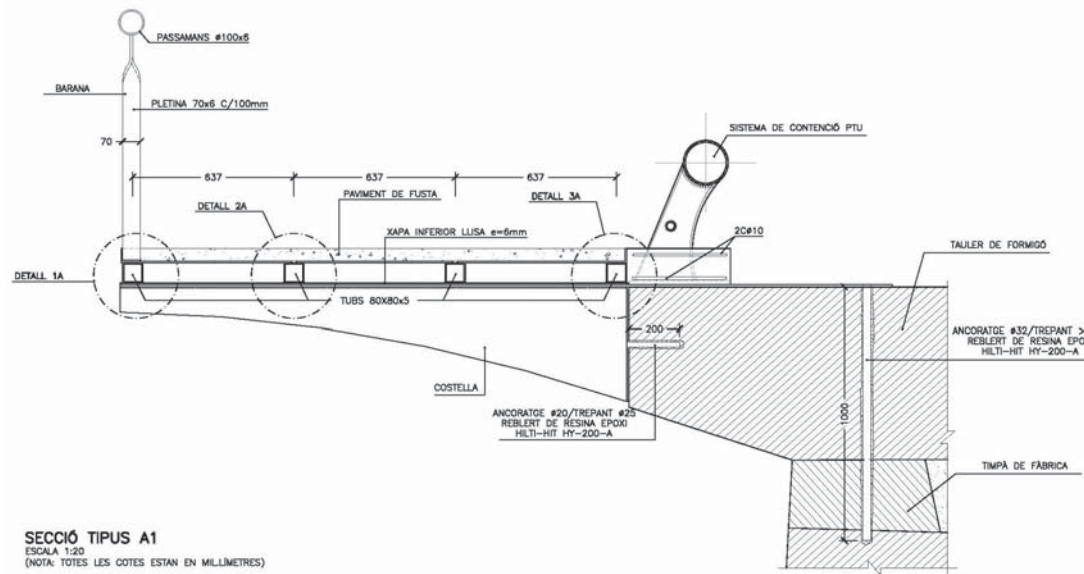


Bridge previous state.

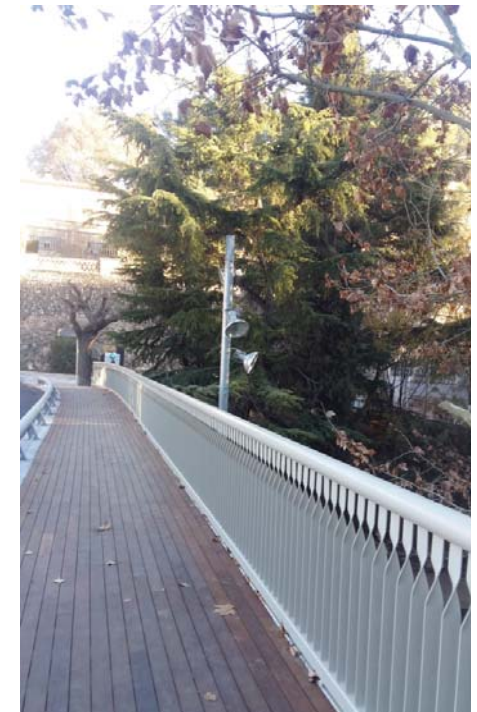


Bridge previous state.

- Massonry arch bridge.
- Total length length 38 m.
- 2 cantilever sidewalks of 0.80 m width.
- External metal railing.
- Pavement > 6 m width.
- Output curve radius 25 m.



Bridge cross section



Overpassproof steel curb.



Extension down view.

As a special feature, it should be noted that the curve of the north side access had a very small radius that caused the invasion of heavy vehicles oncoming traffic.

The existing containment was a steel road safety barrier type because it is the one that occupies less space in the section of the bridge, allowing maximum clearance on the inside curb (0.70 m) to allow the passage of wheelchairs and strollers.

The targets of the work on improving and widening contentions consist of providing sidewalks wide enough to allow pedestrian traffic in accordance with the provisions of accessibility and urban mobility and, further, that allows to integrate contention systems according to the security level of the bridge.

The widening of the sidewalk has been considered in order to achieve an optimum solution, reaching a width of 2.00 meters. Together, these actions allow a slight expansion of the road, resulting in a slight improvement in vehicle traffic along the bridge and its approaches.

Throughout the edge of the road, it is arranged a non exceedable metal curb for speeds below 60 km / h. In the nearest housing construction area it has been supplemented with a baffle which prevents the effect of intrusion caused by the expansion, continuing a rail on the outside edge.

The solution adopted is based on the extension of the current board

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about 1.20 meters, taking place at an early stage cutting the existing cantilever reinforced concrete using diamond wire (removing the end portion of the cantilever, about 0.80 meters wide) to a constant net thickness of 450 mm, later to run an overhang of 2.00 meters wide all-metal structure.

The sidewalk, executed in wood at the request of the City of Gelida, rests on transverse ribs parabolic variable depth from 450 mm (in the anchoring section to the existing concrete slab) to 100 mm at the end.

These ribs arranged at least every 2.40 m, will section T, with a width of 250 mm upper flange, and will be manufactured in steel S355 J0 10 mm thick.