



# Sant Celoni footbridge

Sant Celoni, Spain / 2017

Owner  
Client  
Scope

Departament de Territori i Sostenibilitat - Generalitat de Catalunya  
Infraestructuras.cat  
detailed design



Currently, the C-35 road runs southwest-northeast in the municipality of Sant Celoni, leaving the urban area on one side and the Moli de les Planes industrial area on the other without pedestrian-enabled crosses. The project of the footbridge, therefore, is a result of a connection need between the urban center with the industrial area, complying with the requirements of the DG d'Infraestructures de Mobilitat and the Sant Celoni City Council. The basic requirements were two: to leave enough space for a future unfolding of the C-35 road under the main span and to respect a minimum width in the frontage roads.

The most remarkable element of the footbridge is the main curved steel beam that spans over the C-35 with free distance of 20.60 meters. The access ramps to the main span are designed parallel to the C-35 so that the affectation to the frontage roads is minimized. Stairs are incorporated, also parallel to the C-35, on the opposite side of the ramps.

A structural continuity is established between ramps, stairs, connection landings and footbridge so that only expansion joints are between abutments and ramps. Another singularity of this project is the lighting system consisting of a functional and aesthetic LED lighting located in the lower banister of the handrail.

For this project, a BIM model has been developed in Revit that has been the basis for the drawings generation and thus allowed the extraction of measurements. The most singular element of the footbridge is the main external beam of curved guideline and variable section. The section of this element is constituted by two diaphragms (one of them broken) and two wings that are aligned to the diaphragm and fly a few centimeters towards the outside.

To ensure the constructive simplicity of this element, a small geometric study was developed using Grasshopper that allowed reproducing the original appearance of the footbridge using only simple curvature sheets (avoiding warping). This model served as the basis for obtaining the exact dimensions of the section at each point of the beam and was used for the generation of the Revit model.



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