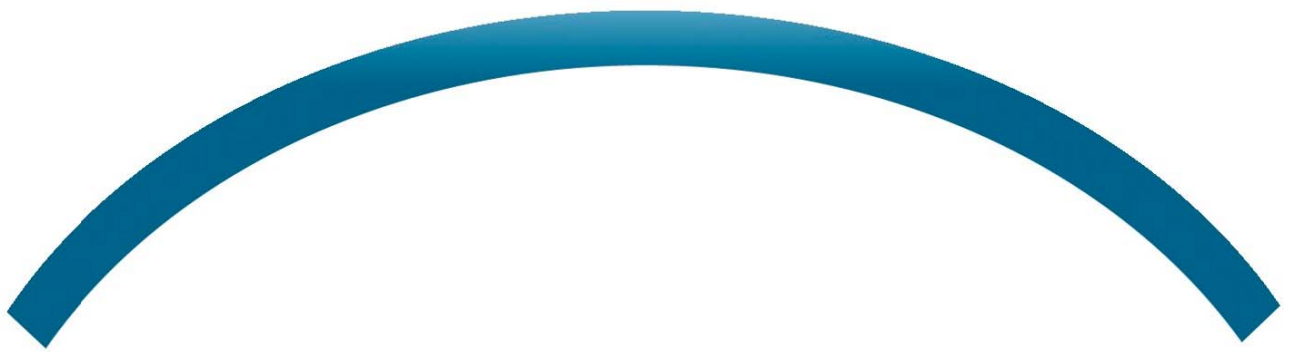


INTELLIGENT DESIGN OF TUNNELS AND LINEAR STRUCTURES

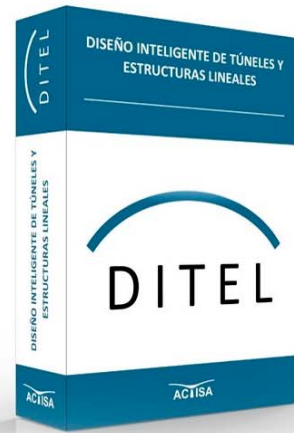
隧道和线性结构智能设计



DITTEL

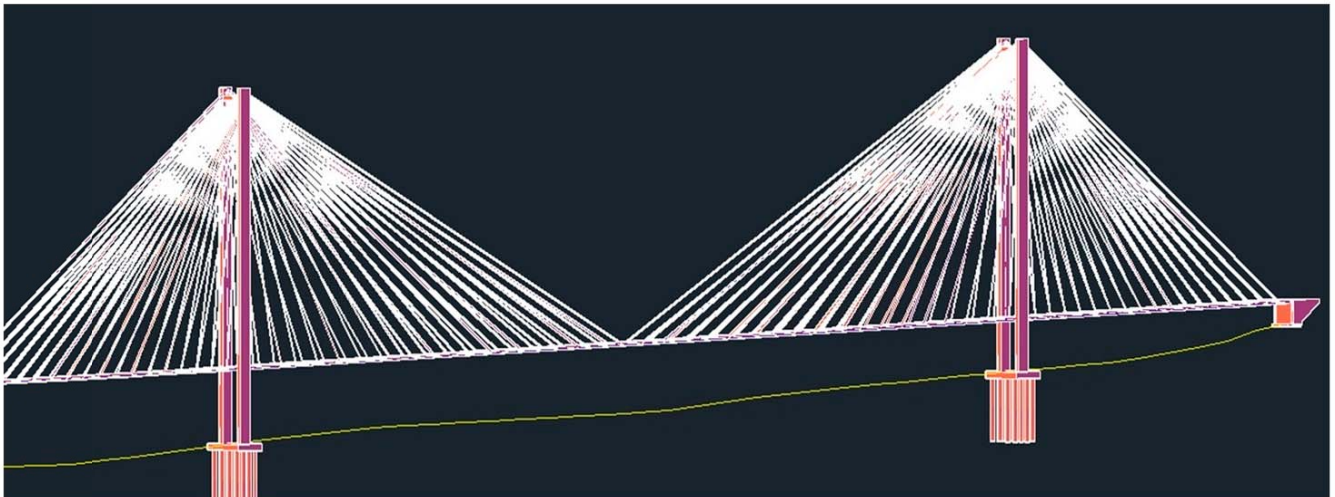
WHAT'S DITEL?

DITEL is software based on ARTIFICIAL INTELLIGENCE applied to the automatic design of structures and tunnels.



WHAT DOES DITEL DO?

After entering a plan axis and a longitudinal profile axis, the software is able to obtain almost instantly the plan, profile, cross section in any PK and/or to generate in 3D the structure or tunnel to be designed.

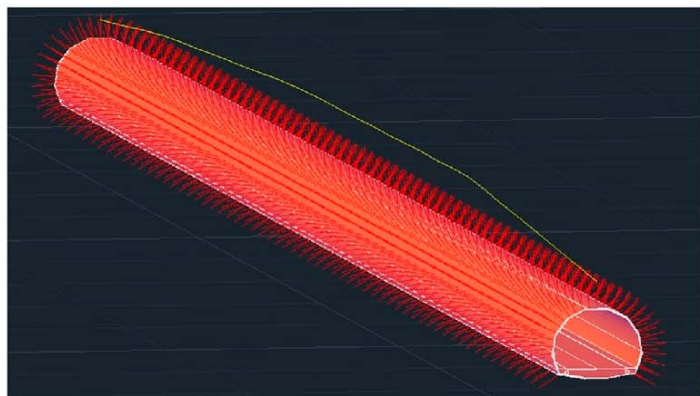


SOME QUALITIES OF DITEL

DITEL allows working directly with the plan axis and longitudinal profiles created with TADIL Road and TADIL Railway, apart from the axis created by the user.

Full combined creation of buttresses, piers, foundation and deck.

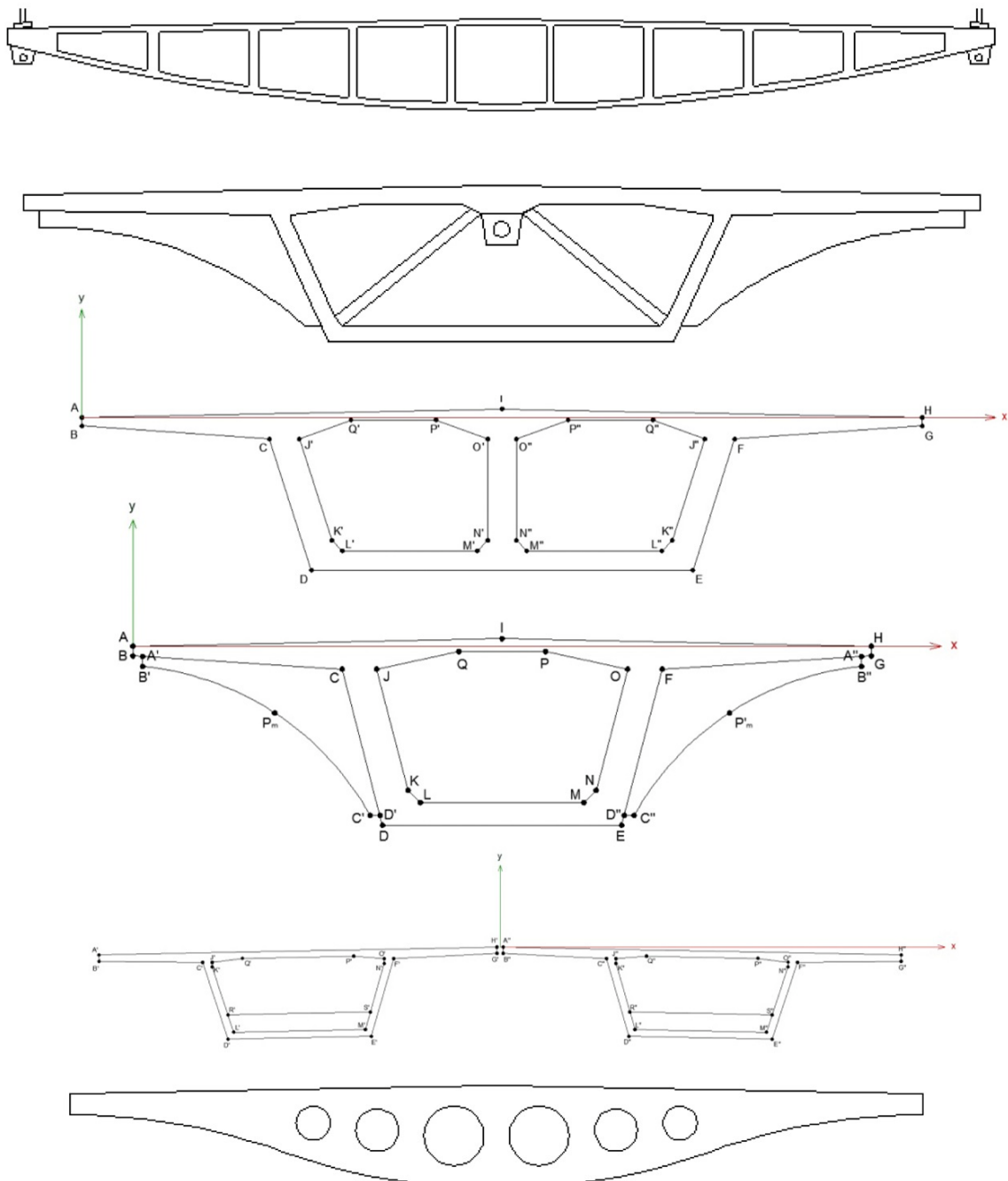
Full creation of tunnels, taking into account the RMR of the geotechnical area they pass through.

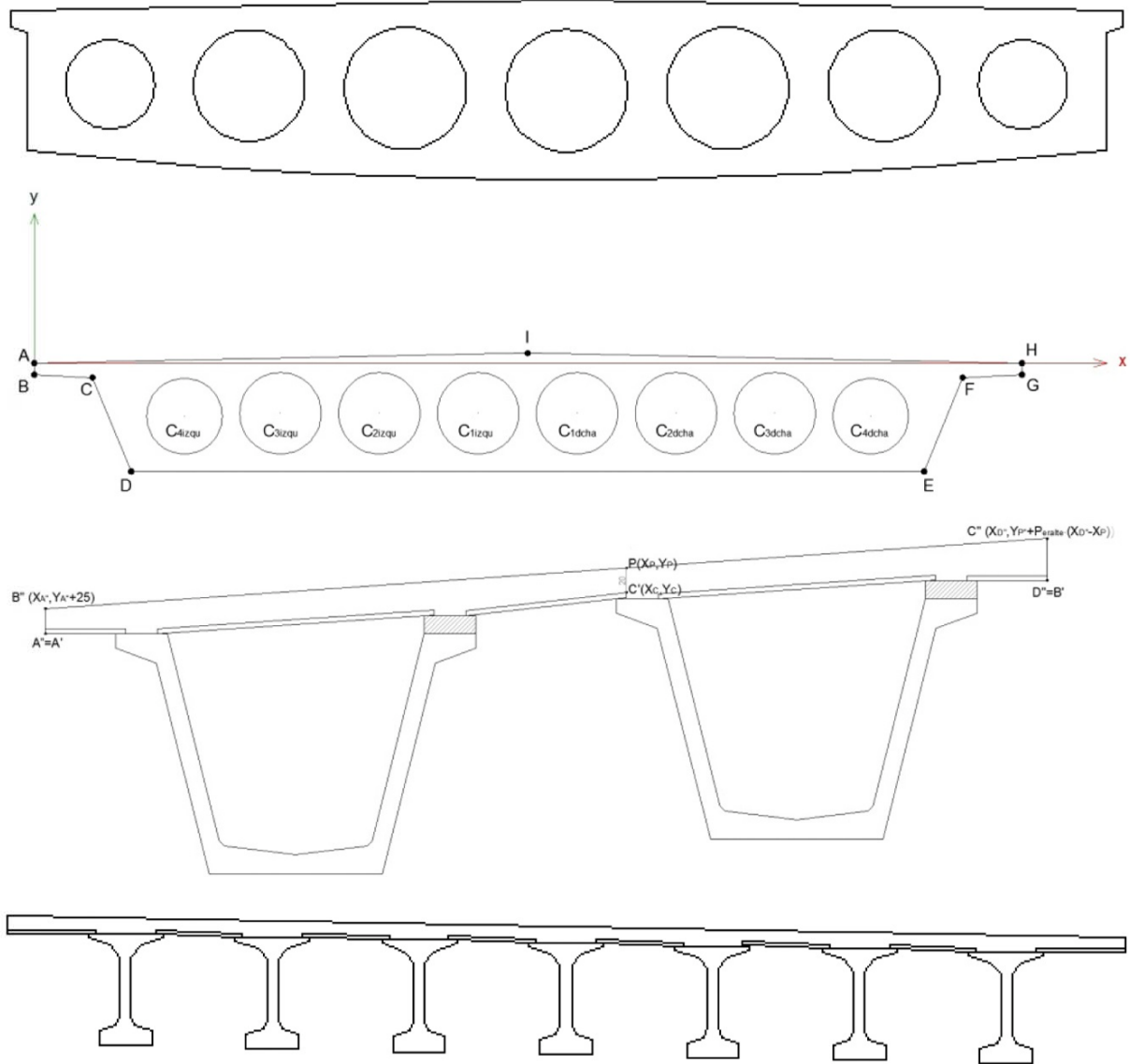


The interaction user-DITEL is direct:

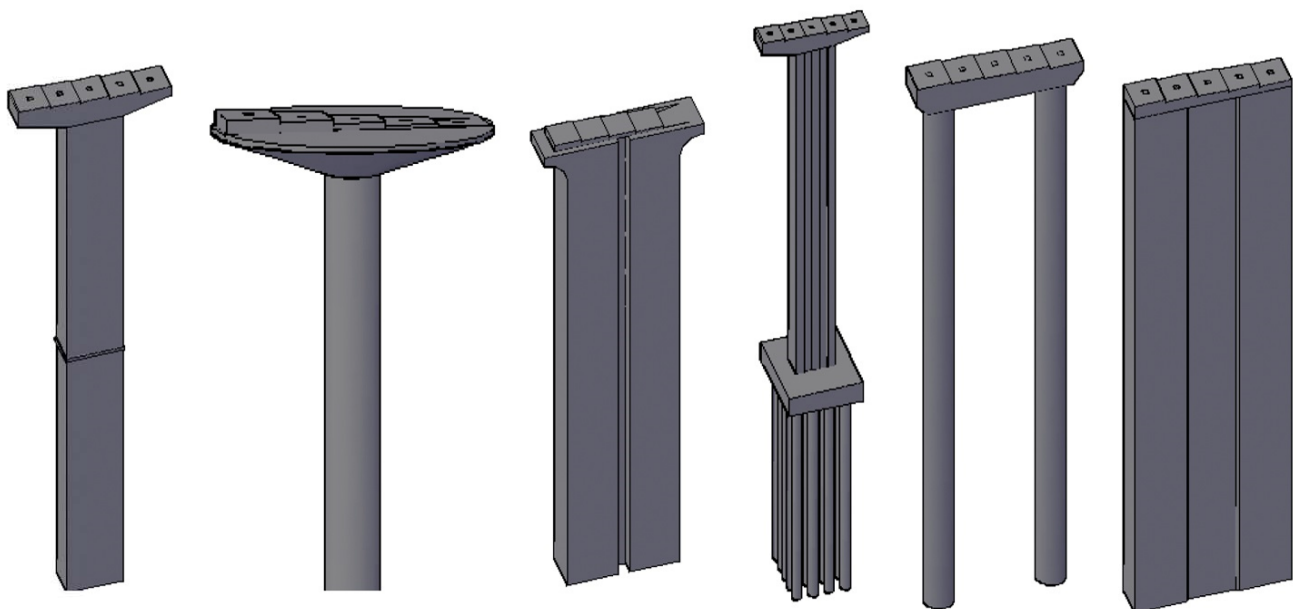
- 1º. The user enters the plan axis and longitudinal profile.
- 2º. Stretches in the axis where to place structures or tunnels are defined.
- 3º. Typologies of structures and/or tunnels to use are created.
- 4º. DITEL generates the plan, profile, cross section in any PK and/or the structure or tunnel in 3D.

DITEL has a wide range of decks: Cable-stayed with central, A or H pylon, arch below, box, box with parabolic edge, ribbed box, voussoir, voussoir with parabolic edge, slab with double lower curve, slab lower curve, straight slab, straight slab with parabolic edge, box girder, double T-section beams.

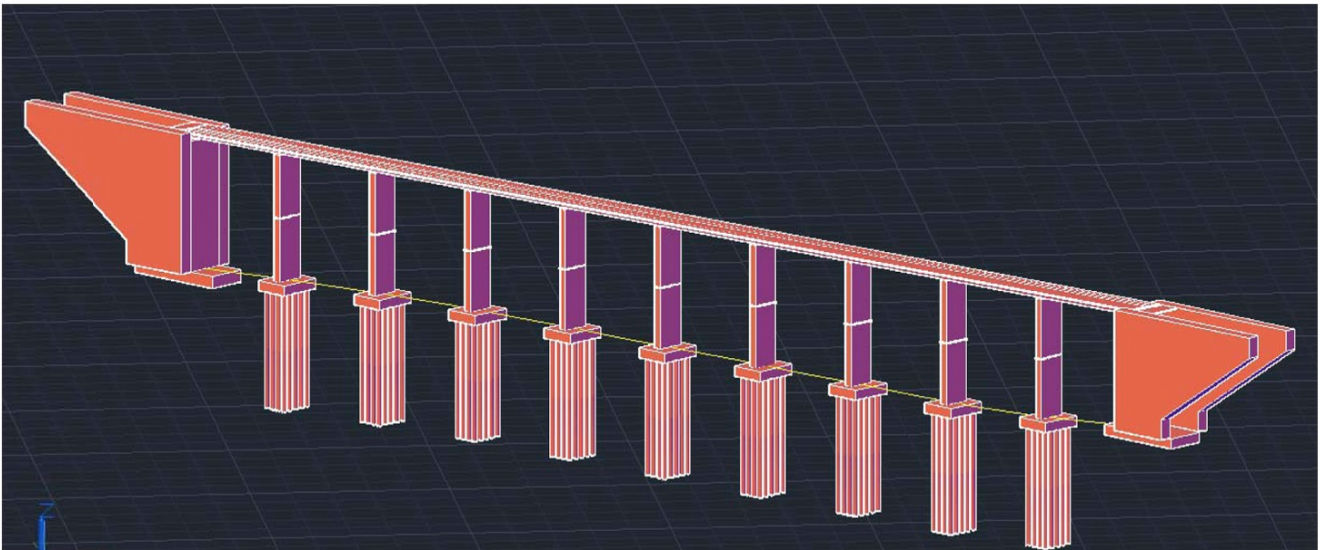
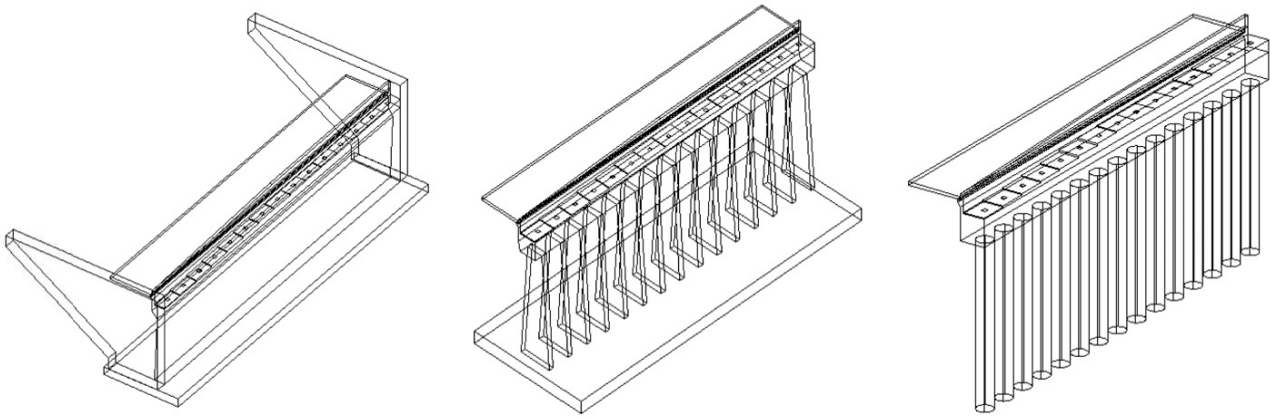




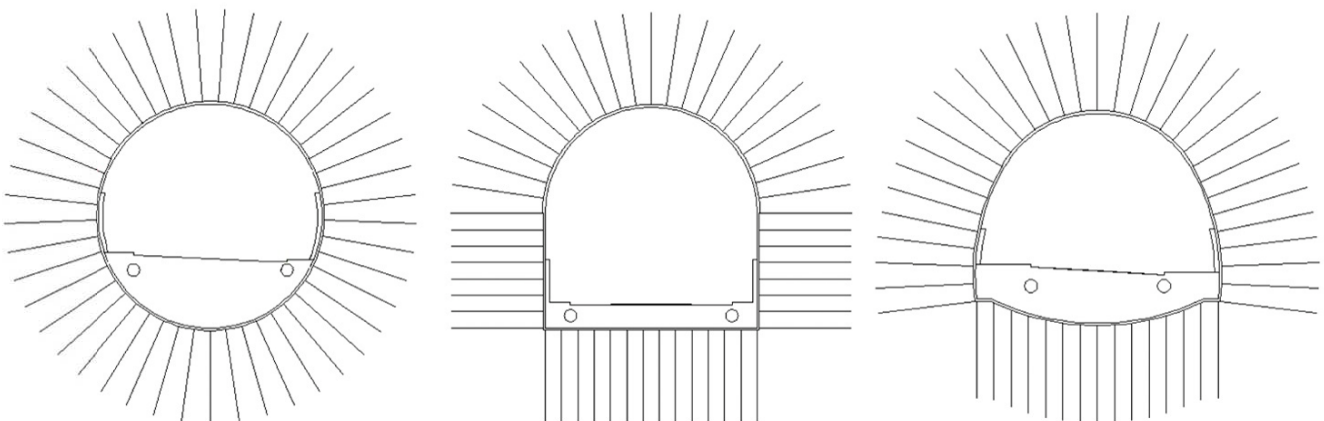
The software also has the following types of piers: Lintelled walls, wing walls, direct walls, lintelled shafts, one-circular shaft, one-elliptical shaft and one-D3T type shaft.



DITEL enables three types of buttresses: closed, open and floating buttresses.



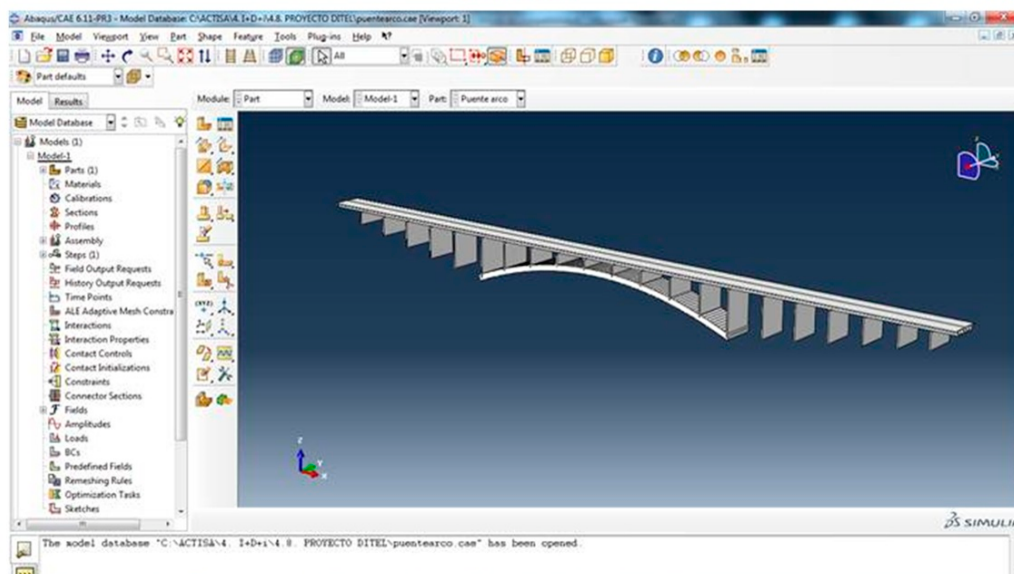
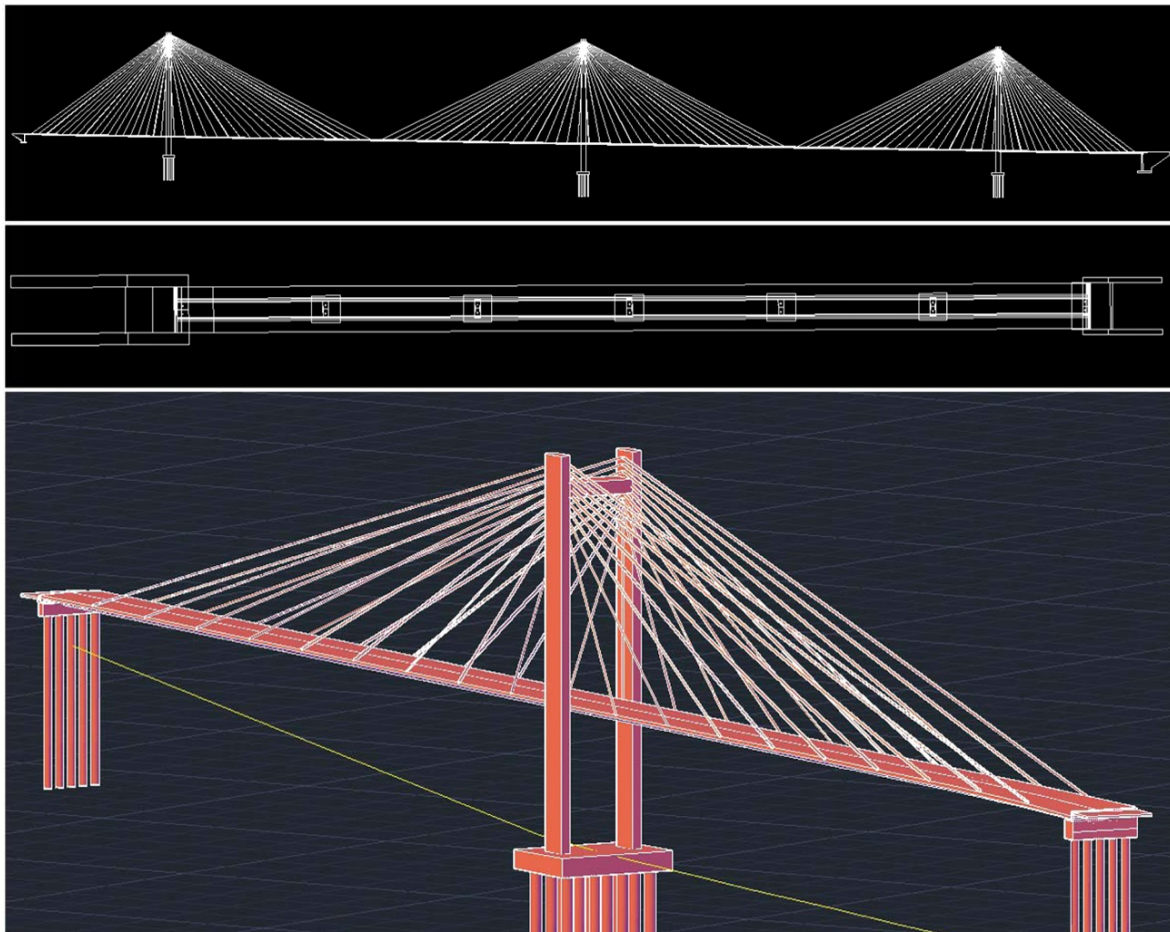
DITEL considers three type solutions of tunnels: circular, horseshoe and vault.



Output

The software is able to generate the plan, profile, cross section in any PK and/or 3D of the structure or tunnel to be designed and these can be exported to:

- Be viewed in situ, 1:1 scale, in Augmented Reality
- Be entered in calculation software in Finite Elements
- Be printed in 3D, for architectural model



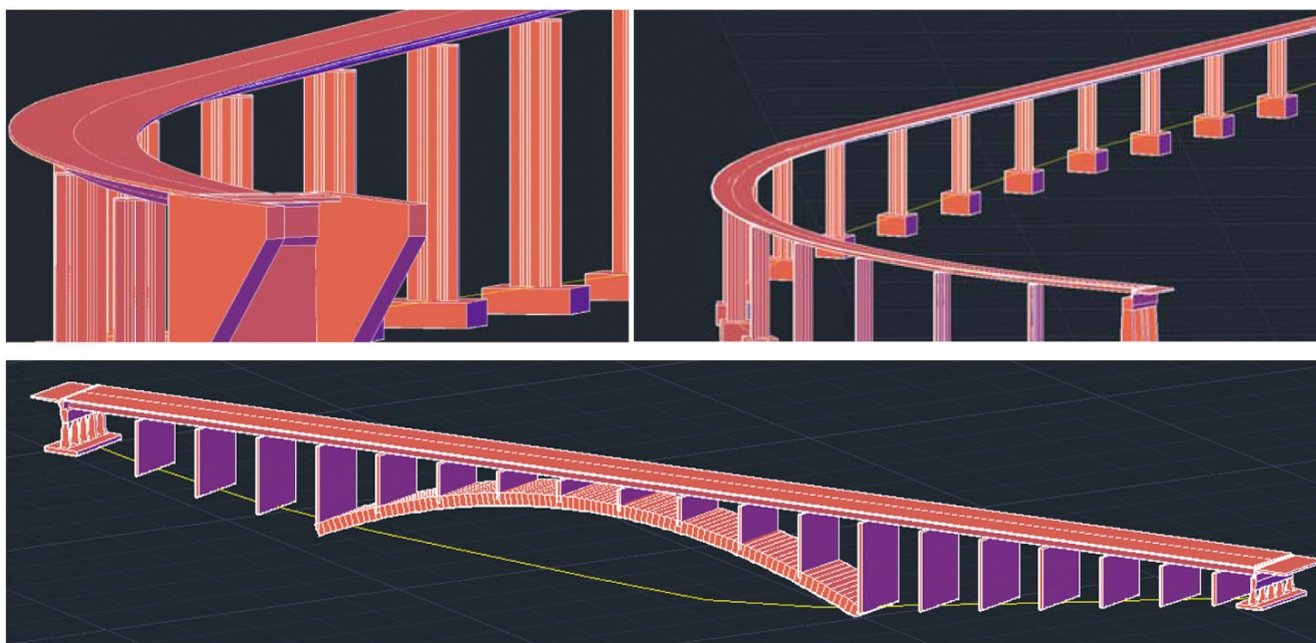
LA CAPACIDAD DE DITEL

Algunos ejemplos de DITEL

Para un mismo tramo de un eje de trazado se diseñaron hasta 10 tipologías de estructuras con diferentes tableros, pilas y estribos en 30 min, definiendo totalmente la planta, el alzado, la sección transversal en cualquier PK y la generación del 3D.

Se diseñó un tramo de túnel en 3D, de 10 km de longitud, en menos de 3 min.

Se proyectó un viaducto con arco inferior en 3D, se realizó su maqueta mediante una impresora 3D, y se exportó en Realidad Aumentada para verlo in situ, en menos de 15 min.



DITEL is addressed to:

The software DITEL is of great interest for:

Public administrations or companies in charge of carrying out infrastructures investment studies. They can make great use of the Augmented Reality export-function for onsite visualization.



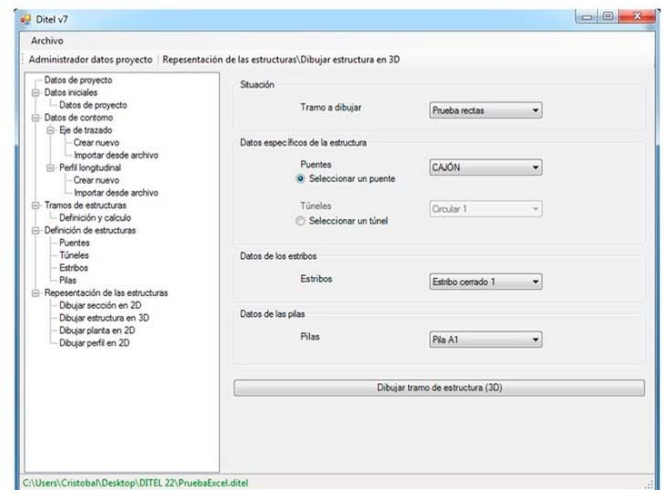
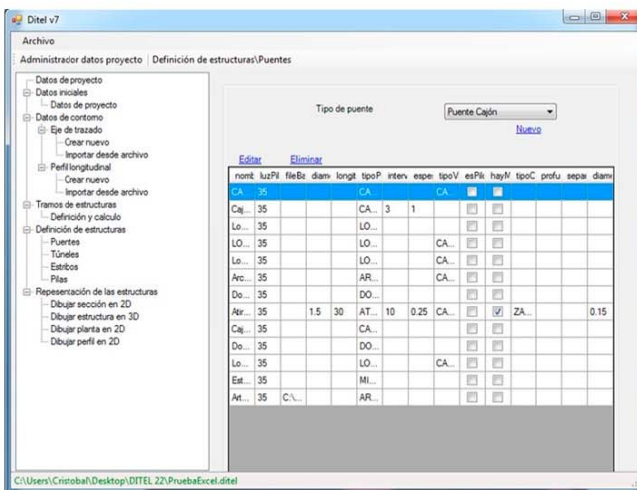
Private companies in the field of infrastructures construction, since it is a very useful tool for onsite works layout.

Consultancy companies and calculation engineers. 3D models can be exported in finite elements for calculation software.

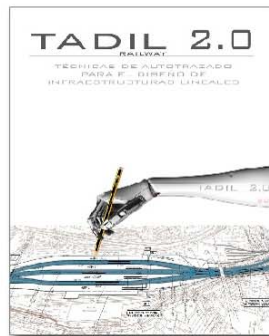
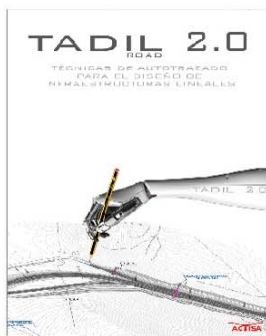
THE INTERFACE

The interface is designed to be user-friendly. It is just a menu to be completed from top to bottom.

Firstly, we need to enter some general data; secondly, the plan axis and longitudinal profile. then, we define the stretch where to place the structure. Once these data are entered, we create the wished typologies of decks, piers abutments and/or tunnels, finally calculate and design it.



Complementary software:



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