

# Form and tectonicity of the works of Simón Vélez

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11th World Bamboo Congress, Xalapa, México - Agosto de 2018



Prototype of ZERI pavilion, Manizales, Colombia





Colombian architect: Simón Vélez



# Caldas, Colombia 1979-1999



PAVILION A



PAVILION B



PAVILION C

House of "Hacienda las Mercedes". Km 41, Caldas. 1987-1988



Restaurant. Pensilvania, Caldas. 1993



Pototype of the ZERI pavilion  
Manizales, Caldas.1999

# Architecture-structure relationship

## Points about concepts

The analysis of the relationship between architecture and structure is made taking into account the concepts:

- Form
- Tectonics and tectonicity

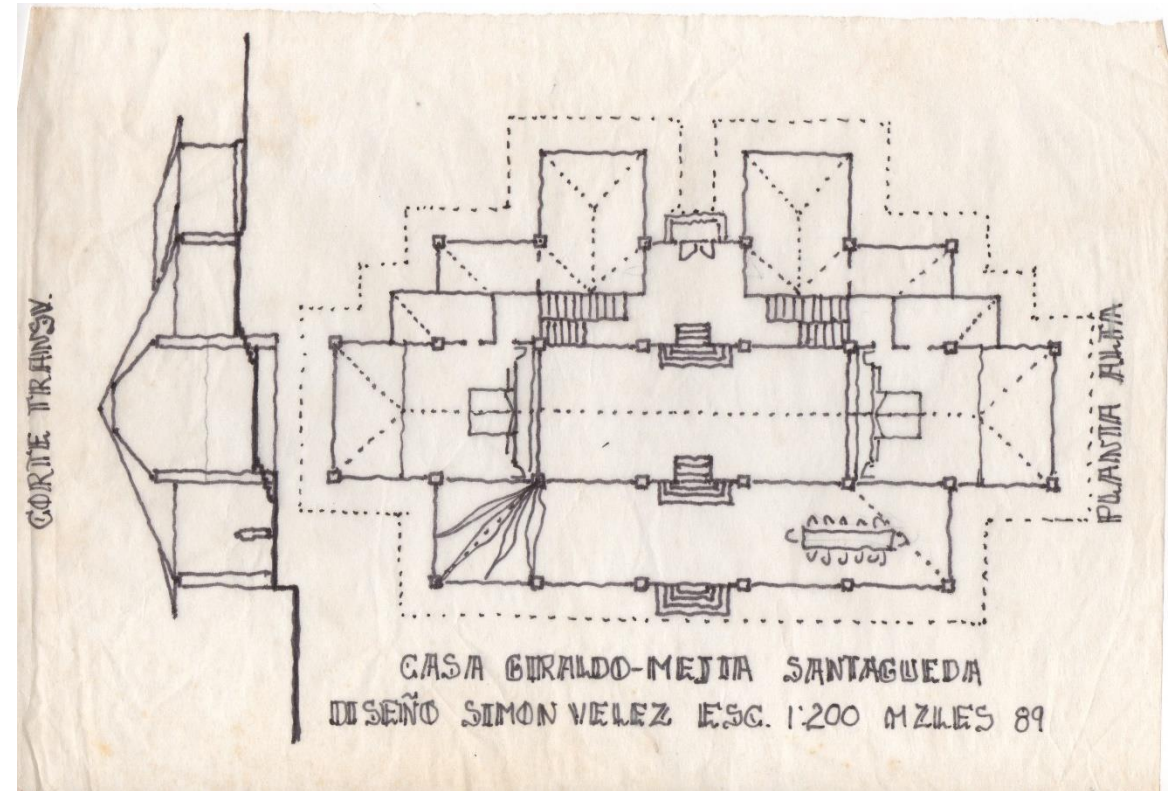
## Aspects studied

1. Structure geometry
2. Joints
3. Protection by design

In order to observe what characteristics are common to them, and in which aspects differences are presented.

# Form

- Form as the essential internal constitution of an object
- The arrangement and order of the parts, meaning associated with the structure
- “The form understood as a structure and as a manifestation of order” (Hermida, 2011).



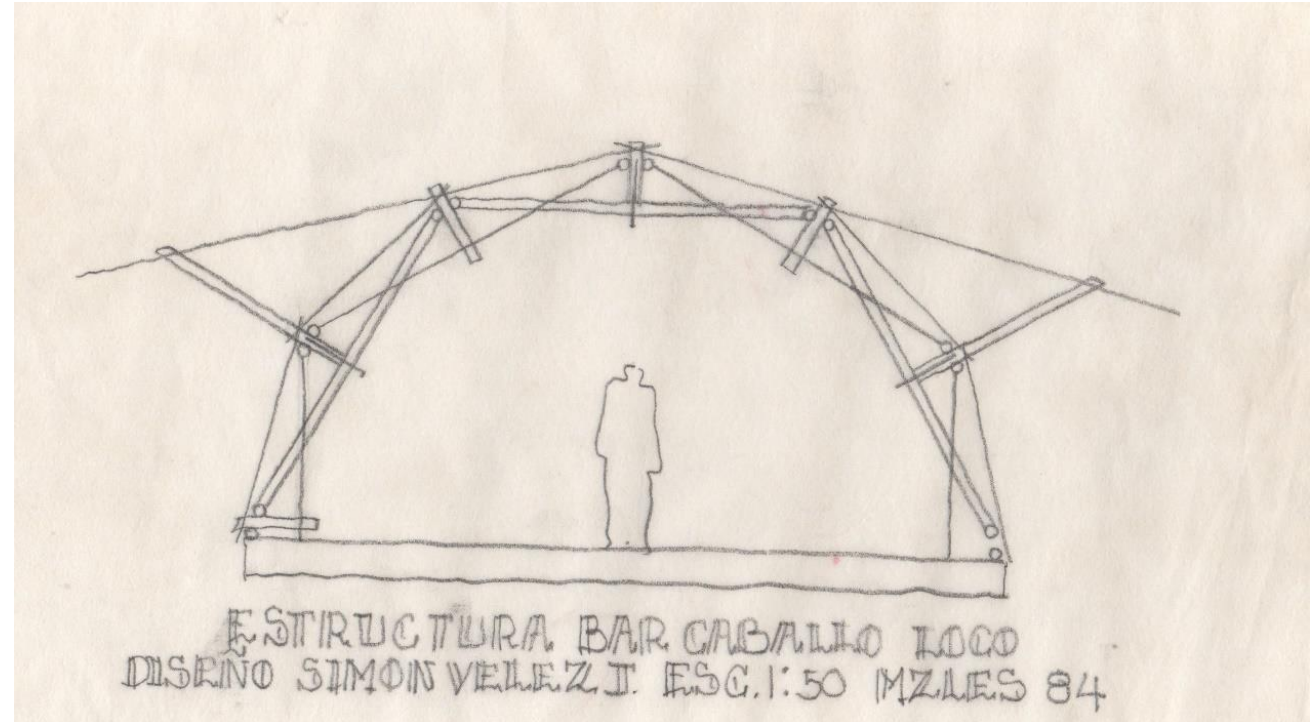
Giraldo – Mejía House (Project). Floor plan and cross section. 1989  
Source: personal file of the architect



# Tectonics

"*tectonic* architecture is understood as that in which the force of gravity is transmitted in a syncopated manner, in a structural system with knots, with joints, and where the construction is articulated. It is the bony, woody, light architecture. The one that stands on the ground as if rising on tiptoe. It is the architecture that defends itself from light, that has to keep watching its gaps in order to control the light that floods it. It's the architecture of the shell. That of the abacus. It is, to summarize, the architecture of the cabin."

(Campo Baeza, 2009)

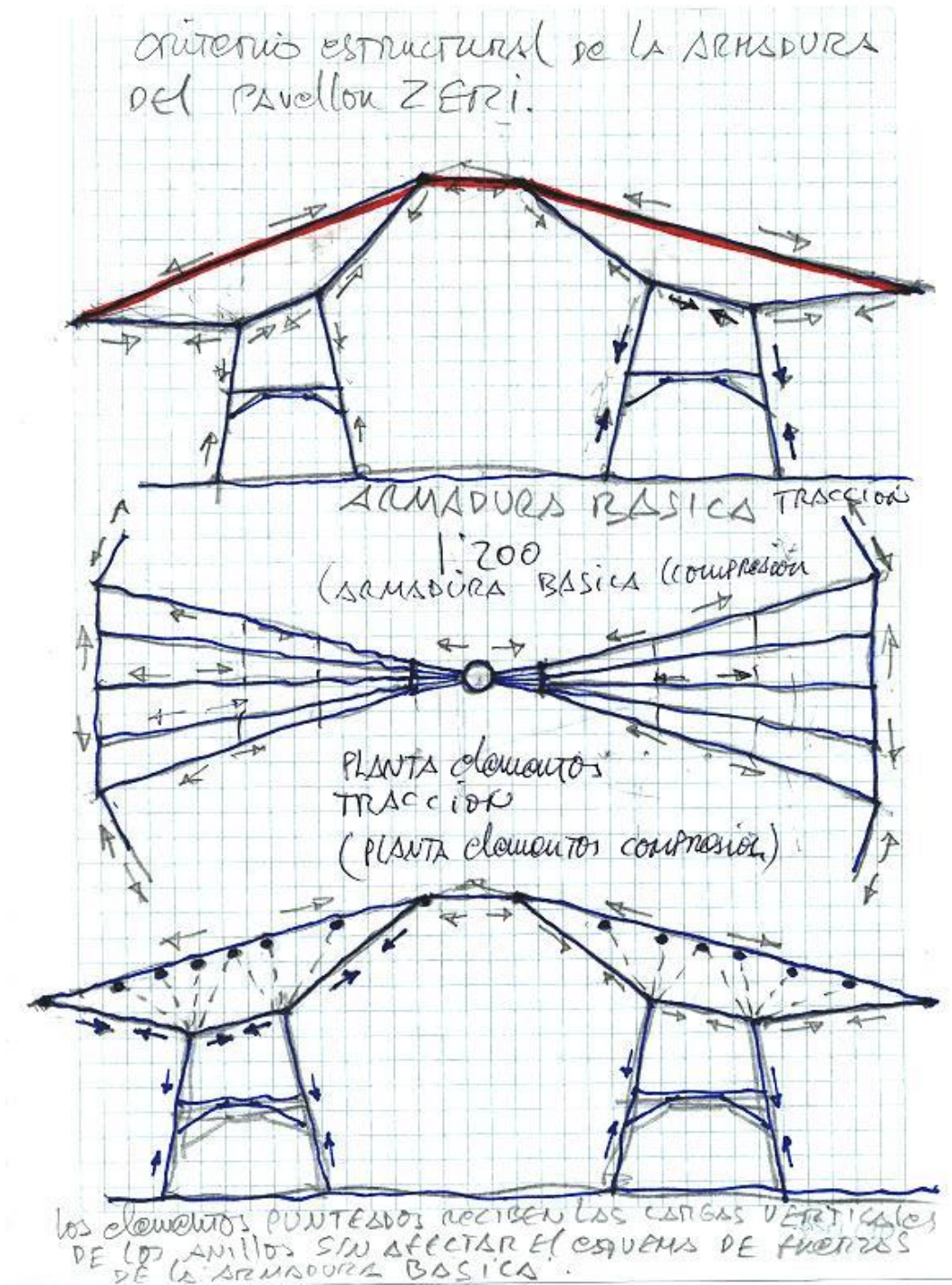


Bar (Project). Cross section. 1984  
Source: personal file of the architect

# Tectonicity

It is "a condition of the architectural form that brings an order to the material - prior to architecture - of which architecture is nurtured" (Helio Piñón, 2007).

In other words it is that constructive logic that is evident in a work when the designer conceived the idea as a structural and architectural unit, in which the constructive aspect defines and orders the form.





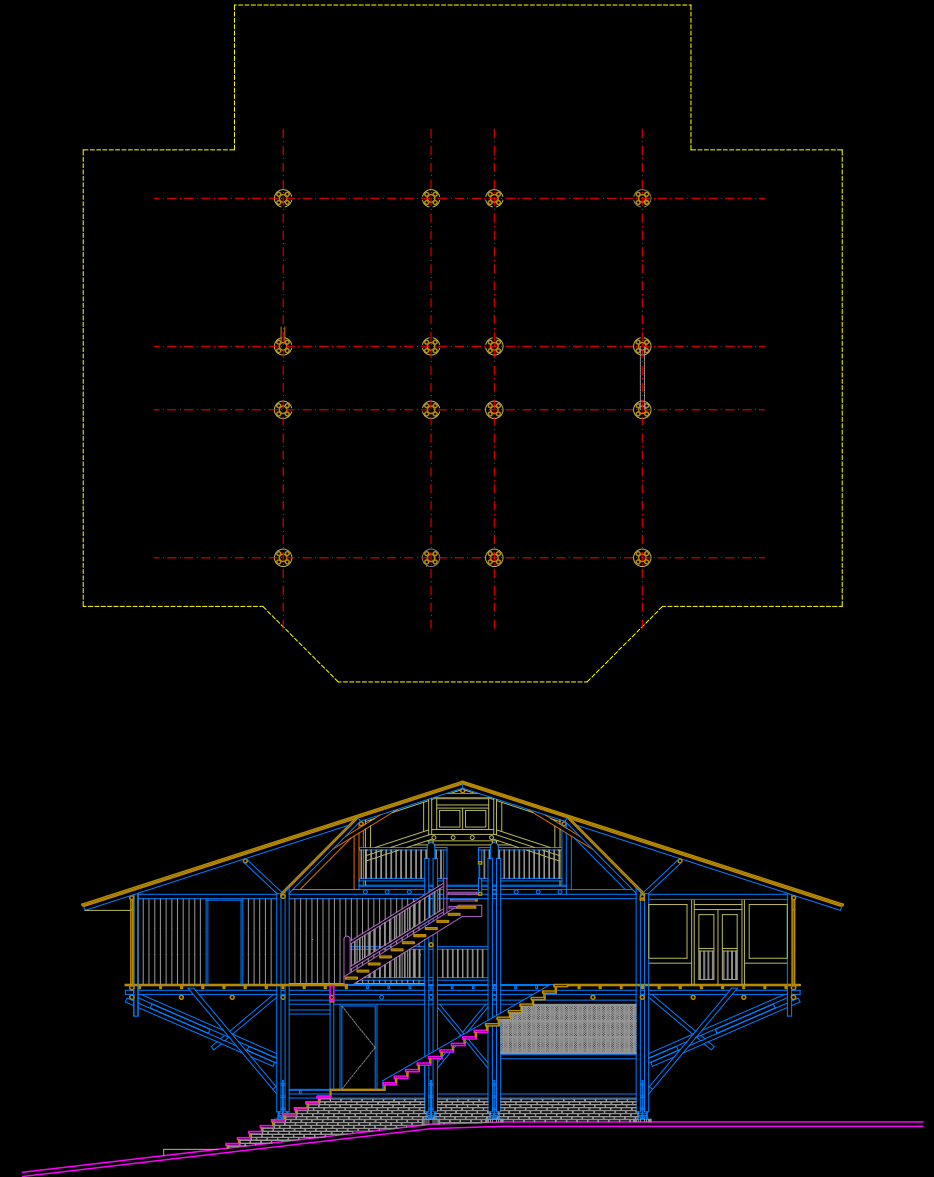
# Geometry of the structure

The expression of the structural skeleton as an ordering principle.

The spatial order is generated by the layout of the structure, which is modulated taking into account the possibilities offered by the material used.

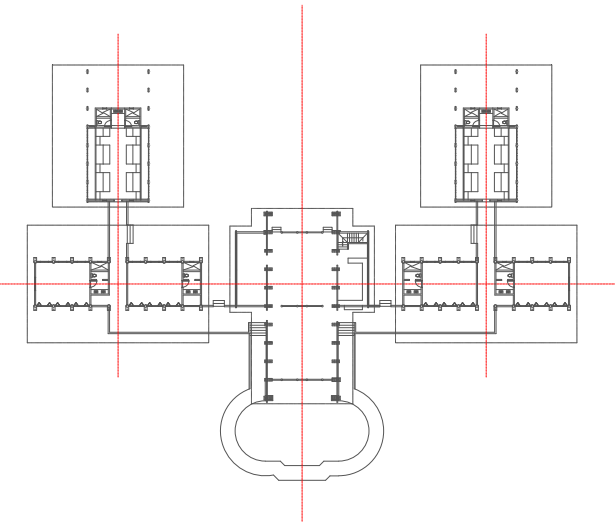
The structure of the roof generates the organization of the other elements that, when they reach ground, maintain a rhythm with constant intervals.

Simple architectural floorplans with orthogonal or of regular geometric figures disposition, worrying more about the detail of the tectonic elements that make up the structure.

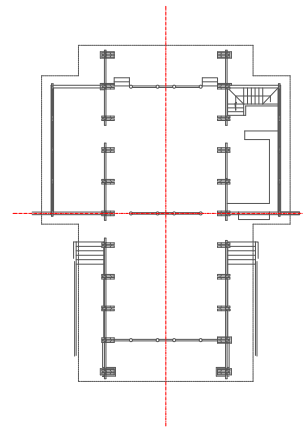


# Floorplans

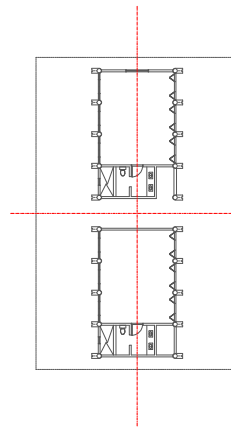
Ramírez (1991) speaking about the works made in the 1970s and referring to a quote by Galaor Carbonell states: "Already at that time he has assumed a symmetrical arrangement, of classical compositional type, which refers to the Palladian villas. Galaor Carbonell draws attention to the way he "uses symmetry as a way of relieving the structure and the functional zoning of the construction, projecting it as a seated and diaphanous image, whose conceptual clarity prevails over the transitory, temporary and circumstantial nature of the materials and some concepts of popular architecture, through the majesty implicit in the principle of symmetry."



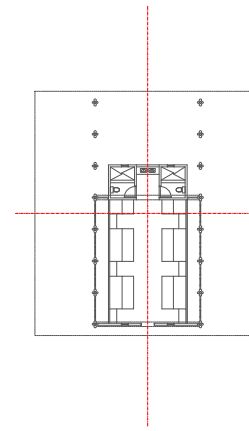
House Las Mercedes



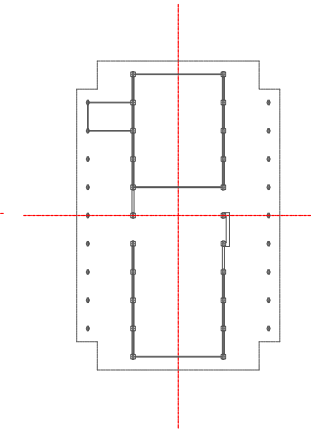
Pavilion A  
Las Mercedes



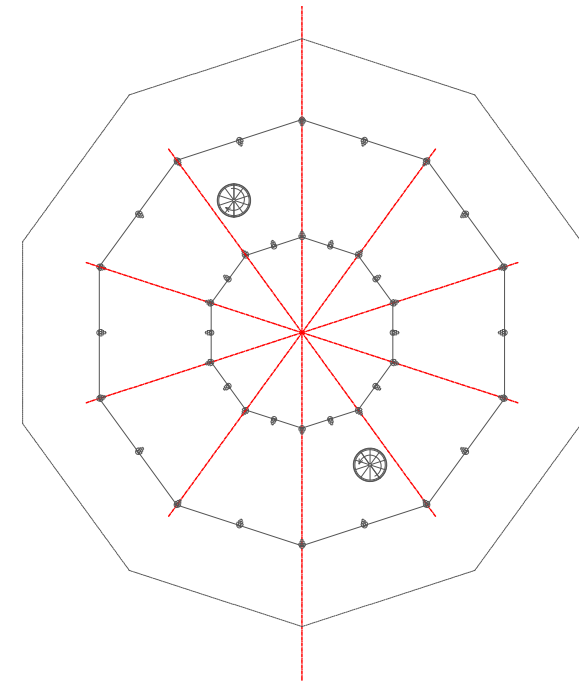
Pavilion B  
Las Mercedes



Pavilion C  
Las Mercedes



Restaurant



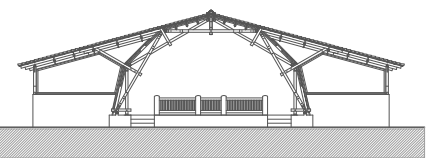
Prototype of ZERI Pavilion



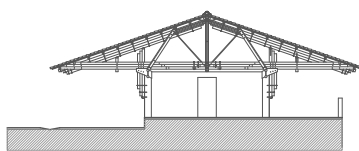
# Cross section/elevation

From that simple order that is perceived in the floorplans, a display of elements is generated that at first sight are difficult to understand, but when analyzing them they also reflect a geometric order that responds to the efficient transmission of the loads to the ground.

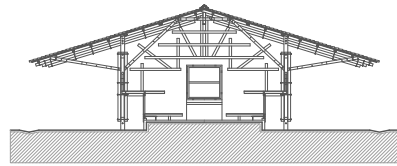
Ramirez (1991, 10) refers to this topic, citing observations made by Daniell Barbaro in his Treaty on Architecture, about the vitrubian trilogy - *firmitas, utilitas, venustas* -: "To the floorplan would correspond order and kindness, to the cross section, beauty, character and meaning. In this sense, the attention of Vélez on the cross section, translates more the intention of his work focused on the structural aspects, the tectonics of the work itself."



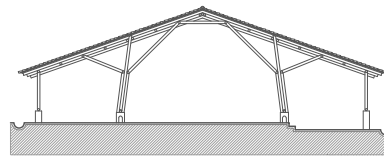
Pavilion A  
Las Mercedes



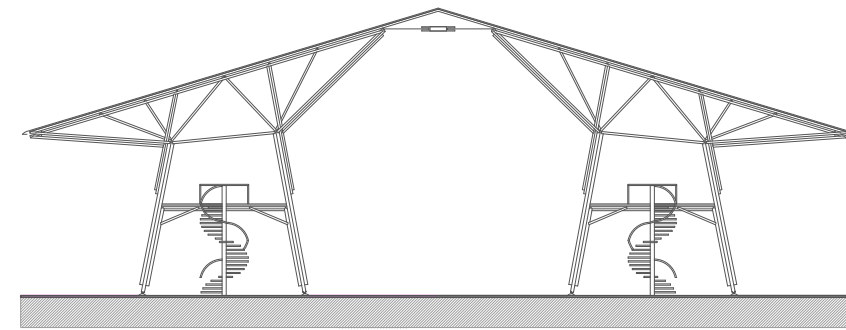
Pavilion B  
Las Mercedes



Pavilion C  
Las Mercedes



Restaurant



Prototype of ZERI Pavilion

# Joints

Traditional materials: Wood and bamboo.

These natural materials together with canes, were those used to raise **tectonics** architecture before the use of Steel.

Bolted joints have been the common denominator in the structures designed by Vélez. In the beginning, using woods such as round mangroves (*Rhizophora mangle*) or sawn *sapán* (*Clathrotropis brachypetala*), and later incorporating bamboo and other natural materials. According to Semper (Frampton 1999), **"The most significant basic tectonic element was the joint or knot"**.



Joint detail. Salazar-Gutierrez House. 1983



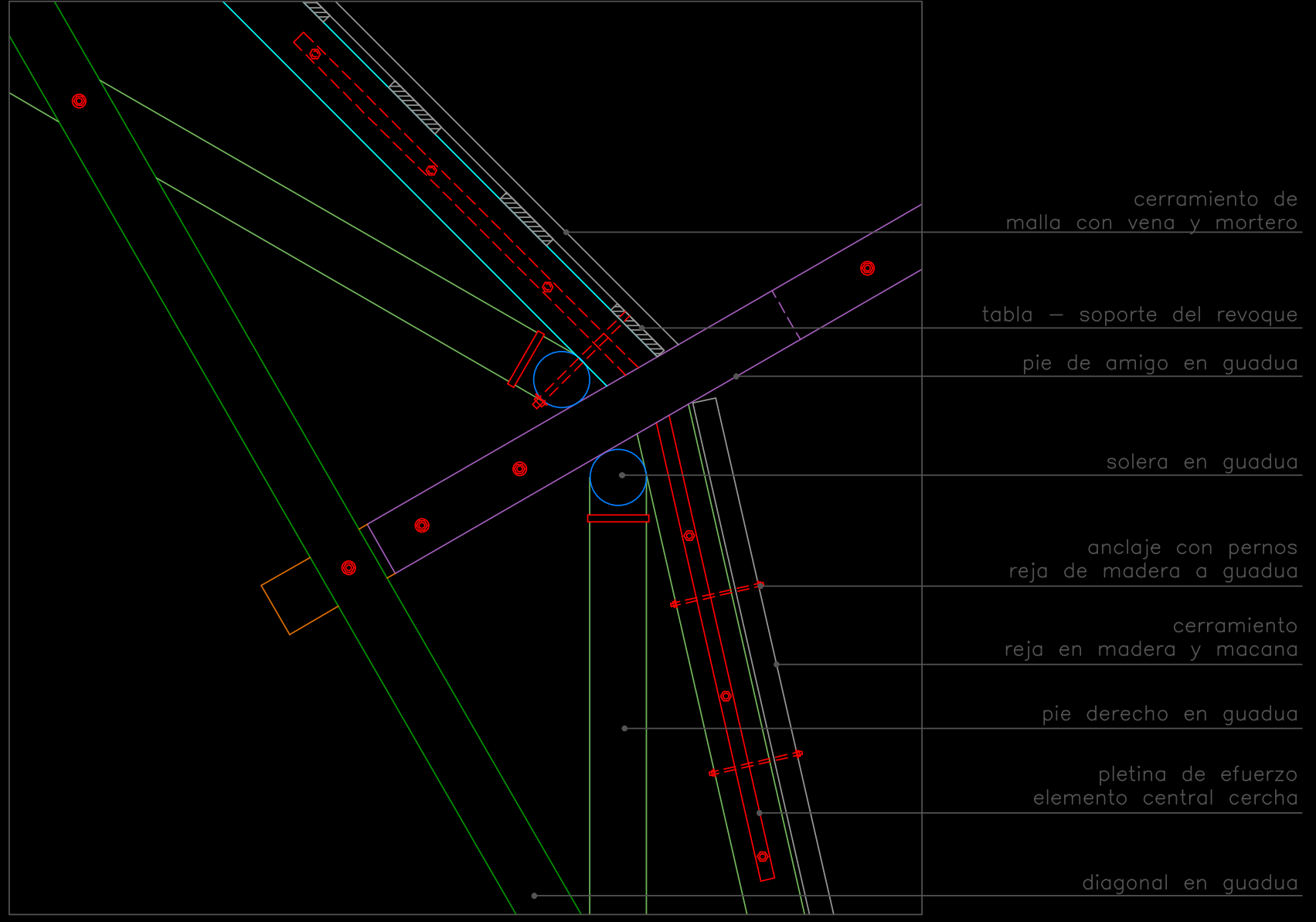
Joint detail. Estación Uribe. 1979

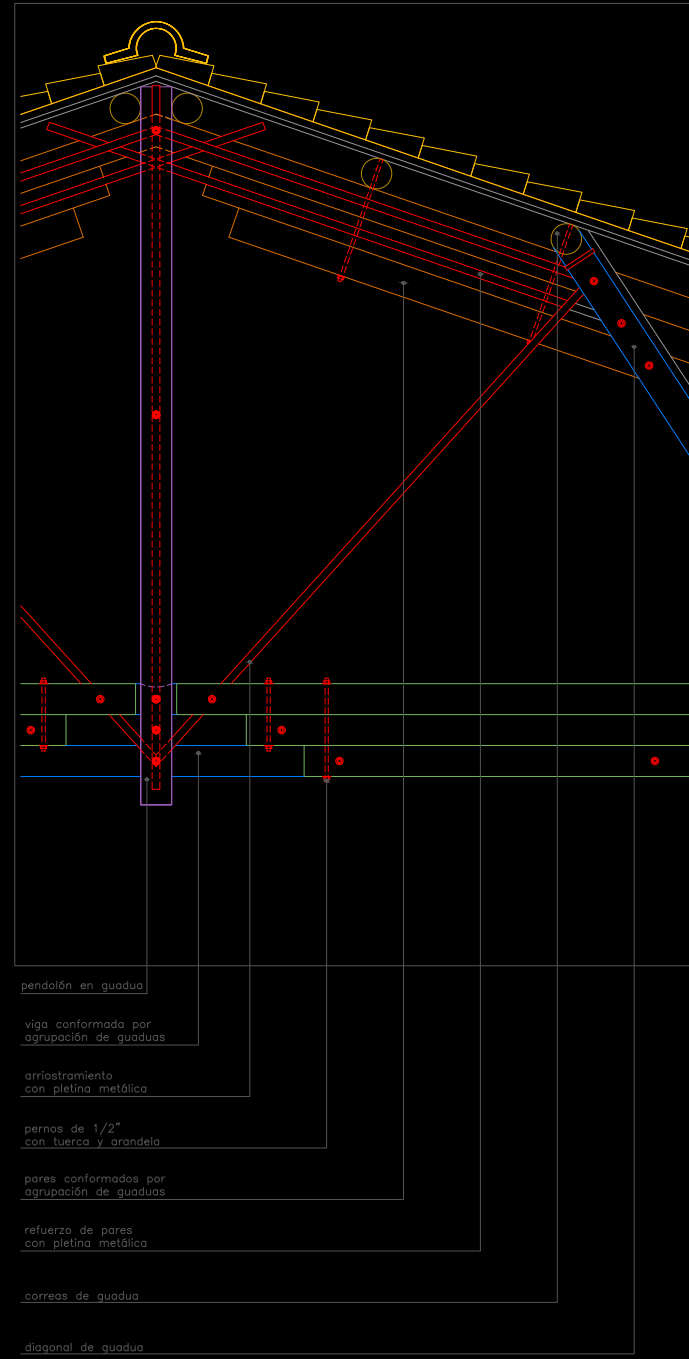


Joint detail. ZERI pavilion. 2000

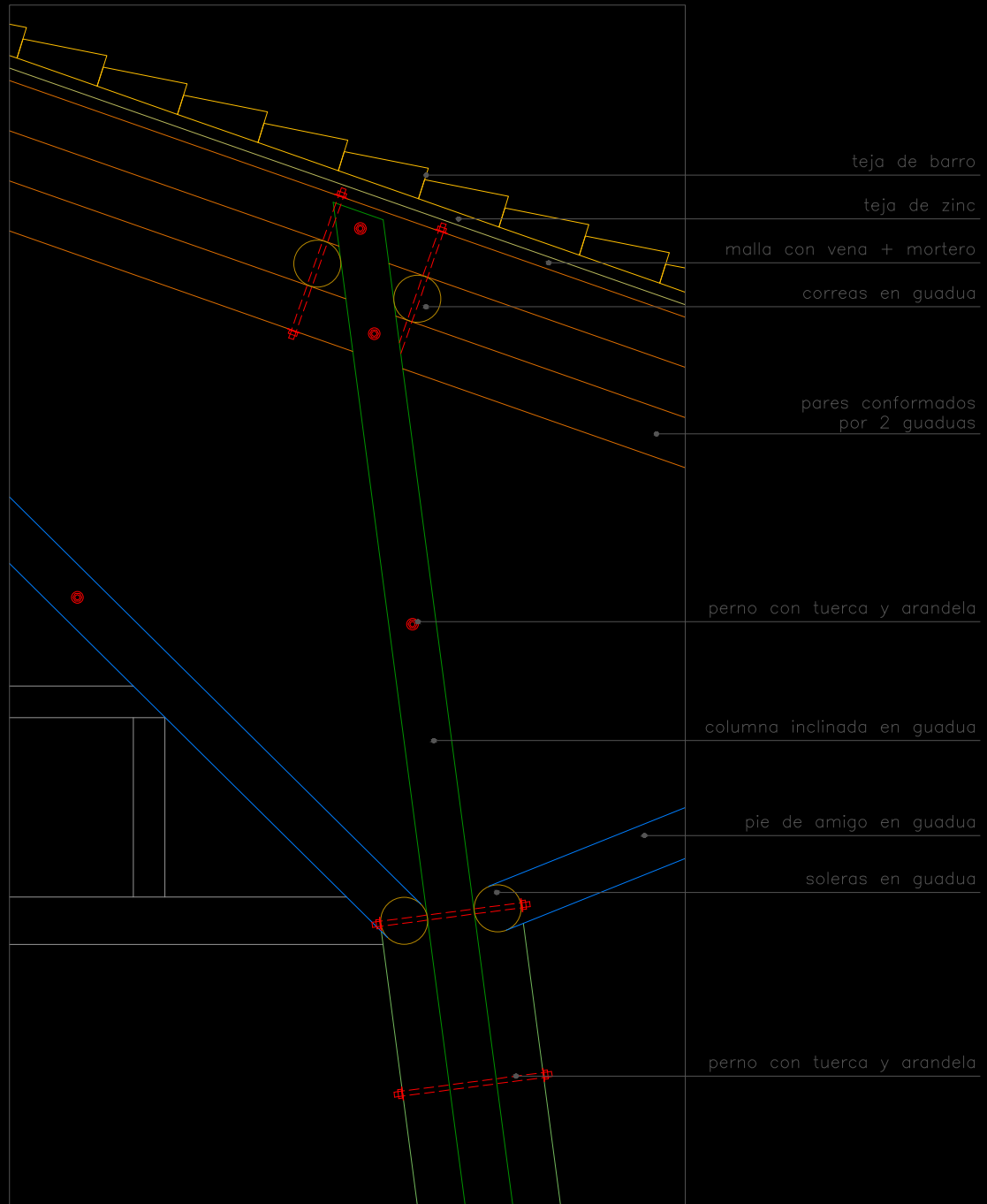


Pavilion A – Las Mercedes , 1987-1988

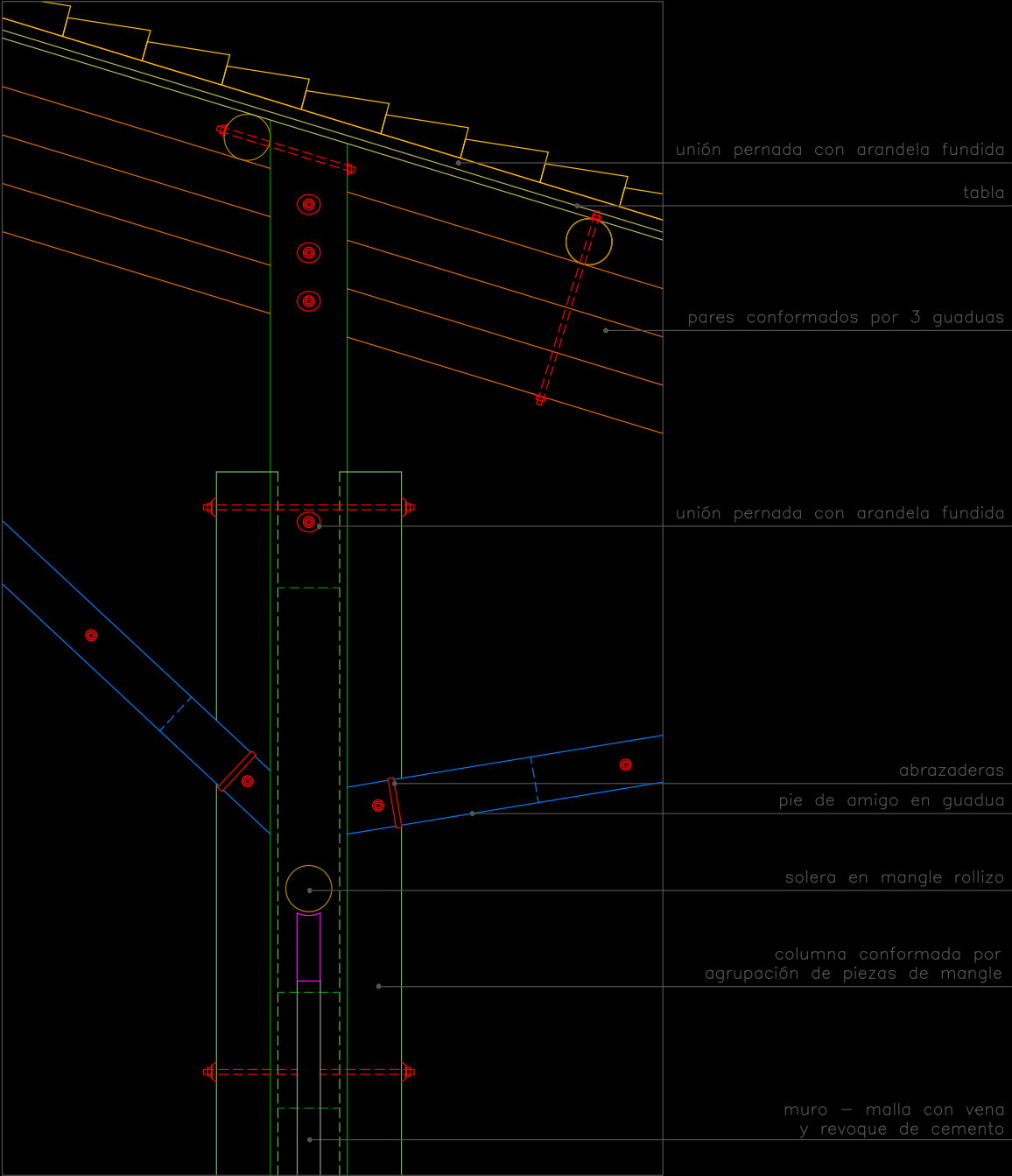


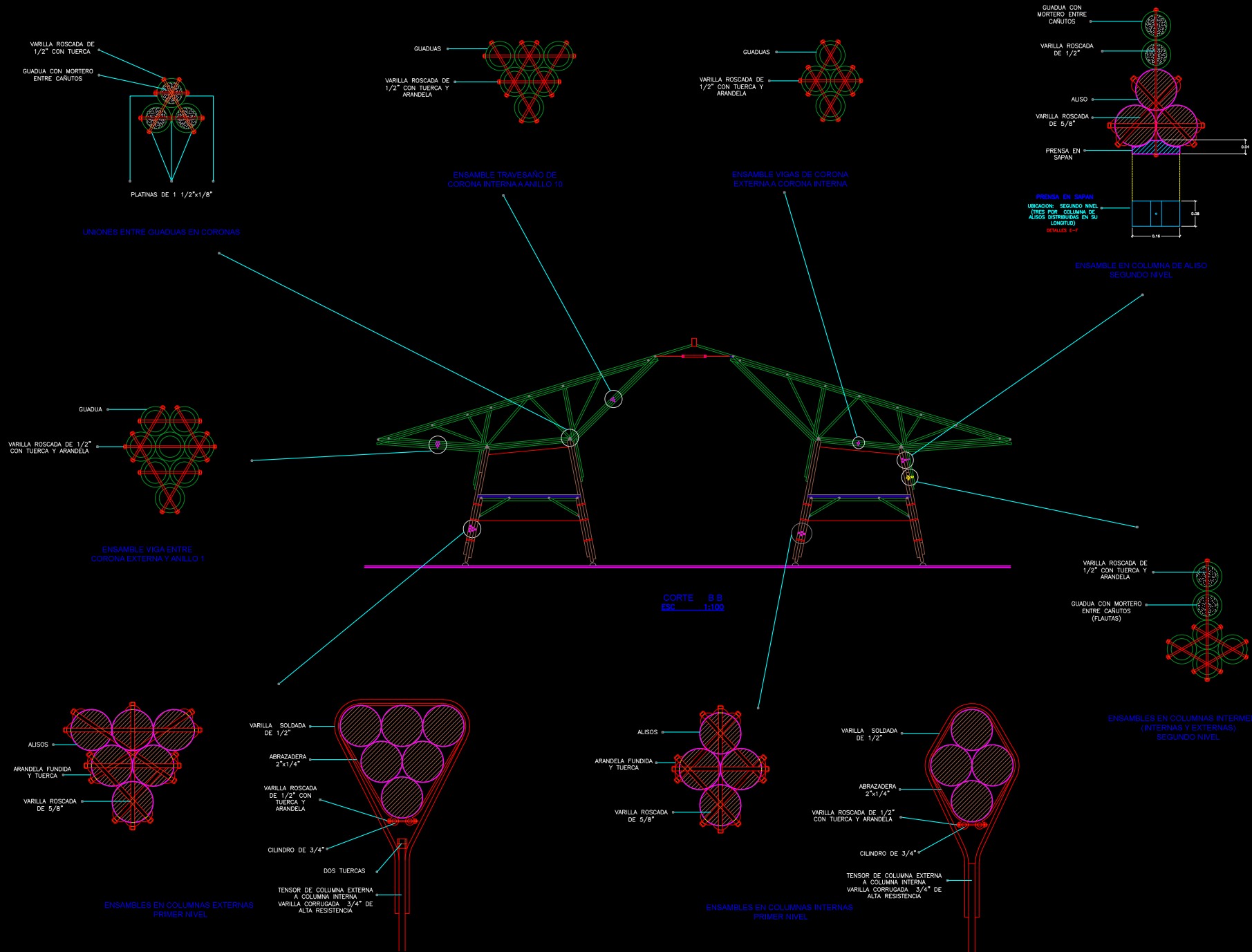






Pavilion C – Las Mercedes . 1987-1988







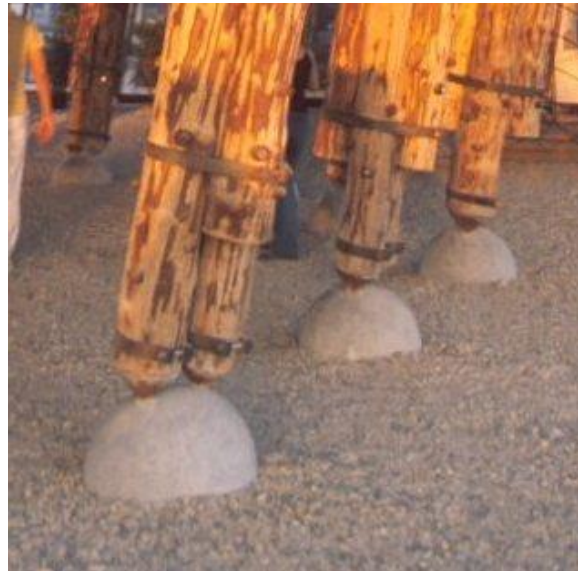
# Protection by design: bases & roof

## Bases

- Formal expression varies between one work to another.
- Materials and techniques are usually the same.
- Transition between the reinforced concrete foundation and Wood or bamboo structure.



Base detail. Restaurant. 1993



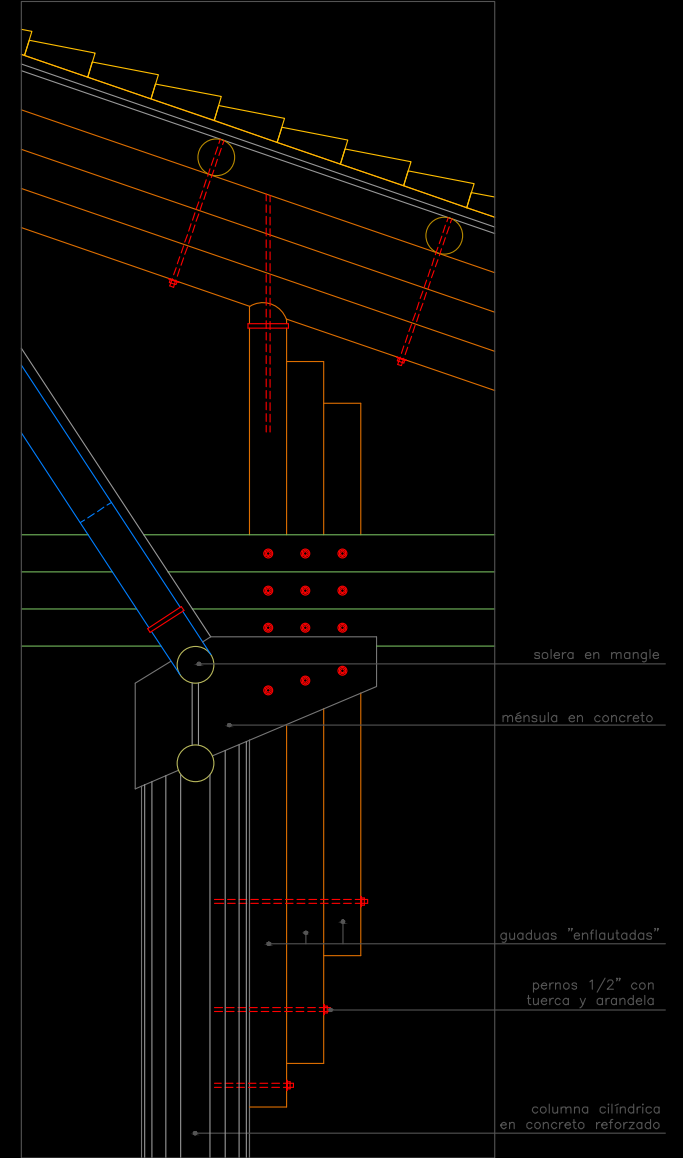
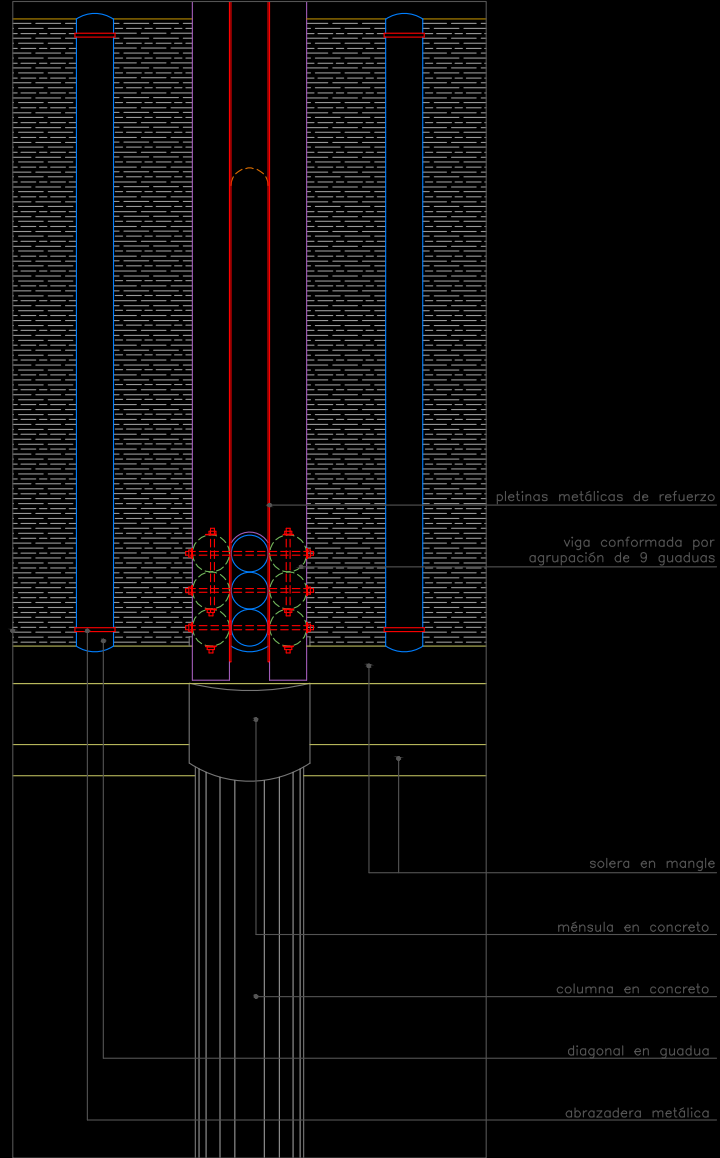
Base detail. ZERI pavilion. 2000



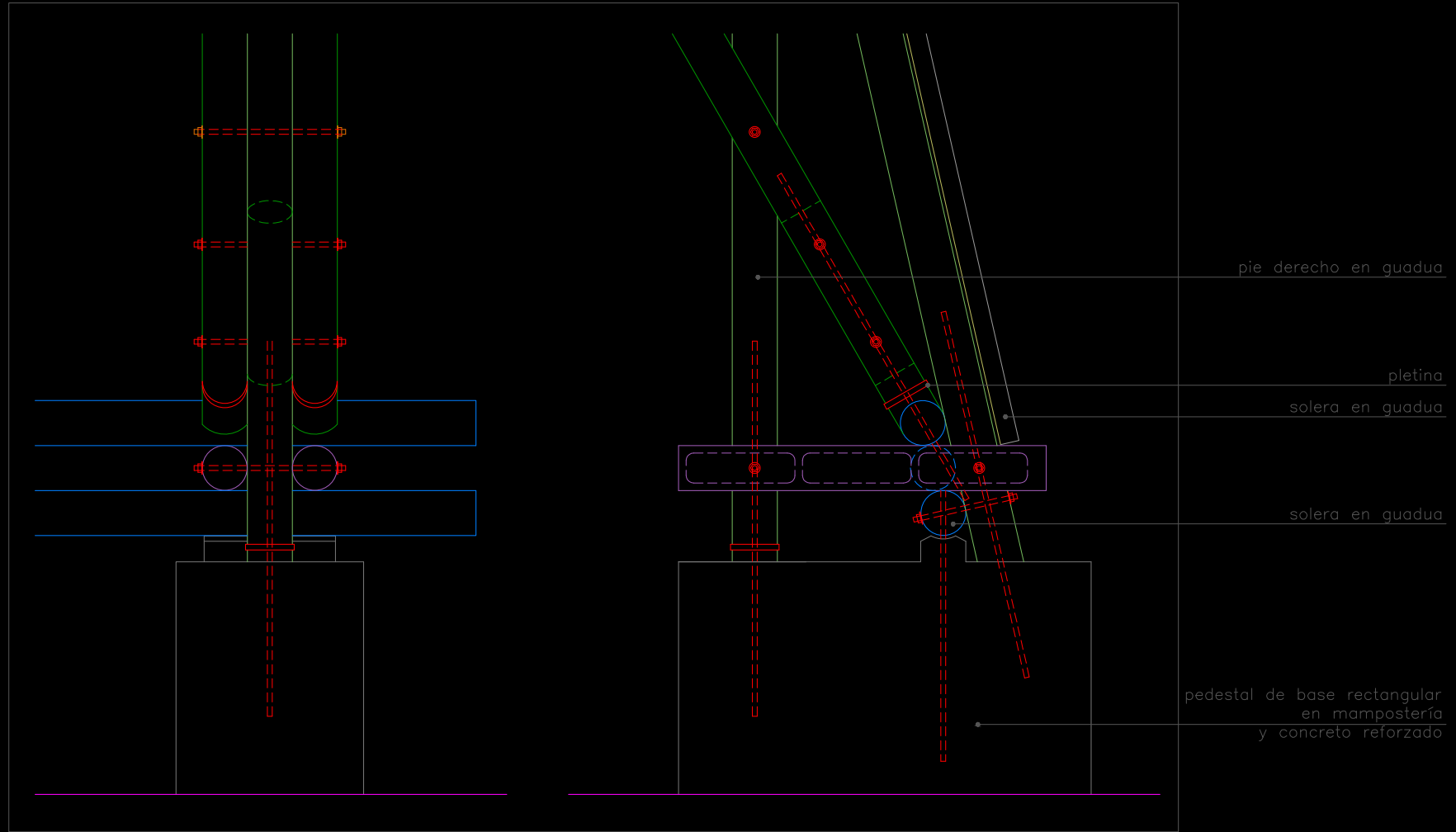
Base detail. Salazar-Gutiérrez House. 1983

# Bases

Pavilion B – Las Mercedes. 1987-1988



Pavilion A – Las Mercedes . 1987-1988







Base detail. Restaurant. 1993



Base detail. Pavilion A - Las Mercedes. 1987-1988



Base detail. Pavilion C – Las Mercedes.  
1987.1988



Base detail. ZERI Pavilion. 2000

# Protection by design: bases & roof

## Roof

- Protective system of the structure.
- Protagonist in the Works of Vélez.



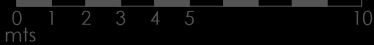
Pavilion C, Las Mercedes. 1987-1988



Restaurant. 1993



Factory Hall. 1993





# Conclusions

- Indivisible relationship between architecture and structure and the development of the joints
- The ordering principle of the work is established by the structure
- The architect is always trying to improve in all aspects but especially in the “protection by design”, which is the key to the durability and stability of the structures
- The structures analyzed are between 20 and 30 years old and despite the fact that in some cases the elements that compose them have some deterioration, they are still standing. It is considered that one of the aspects that have a greater impact on their conservation, is protection by design.

# Gracias

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