



## ***Historical building adaptation to modern function***



Erasmus+

# Historical building adaptation to modern function

3 ECTS

SH

Sustainable Heritage

EC

Elective Courses



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3 ECTS

SH

Sustainable Heritage

EC

Elective Courses

- 01 Introduction to building adaptation
- 02 Typology: big to big & small to small adaptations
- 03 Typology: big to small & small to big adaptations
- 04 Programme: extensions
- 05 Programme: bubbles
- 06 Programme: other adaptations
- 07 Circulations: horizontal circulations**
- 08 Circulations: vertical circulations
- 09 Enclosure: protective enclosure
- 10 Enclosure: lightweight roofs, façades and finishings
- 11 Systems: climatization
- 12 Systems: fire protection, water supply and evacuation
- 13 Illumination: natural lighting
- 14 Illumination: artificial lighting
- 15 Illumination: lighting systems

# Historical building adaptation to modern function

3 ECTS



## LESSON 07: HORIZONTAL CIRCULATIONS

# CIRCULATIONS

The term "circulation" refers to the movement of people through, around and between buildings. Inside the buildings, the circulation spaces are spaces predominantly used for circulation, such as entrances, hallways and lobbies, corridors, stairs, breaks, etc.

The circulation spaces can be classified as those that facilitate horizontal circulation, such as corridors, and those that facilitate vertical circulation, such as stairs and ramps.

In architecture, circulation refers to the way people move and interact with a building. In public buildings, circulation are specially relevant, with circulation elements of great importance.

In particular, the routes of circulation are the routes that people take through and around buildings or urban places. Circulation is often considered as the "space between spaces", which has a connective function, but it can be much more than that. It is the concept that captures the experience of moving our bodies around a building, in three dimensions and in time.

CIRCULATIONS - HORIZONTAL CIRCULATIONS

## CIRCULATION ELEMENTS

### **HORIZONTAL CIRCULATIONS :**

PAVEMENT

WALKWAYS AND CORRIDORS

### **VERTICAL CIRCULATIONS:**

STAIRS

ESCALATORS

ELEVATORS, TRAVALATORS



## PAVEMENT

The pavement (of the Latin *pavimentum*), in architecture, is the horizontal base of a certain construction that serves as support for people, animals or any piece of furniture. A pavement can have different types of coating (wood, ceramics, natural stone, concrete, etc.).

When adapting a historical building, these are three of the factors considered in the pavement design.

- a) Specially in the case of ruins, pavement determines where the public is allowed to step in. It could also indicate a path or route.
- b) Pavement is the physical support for people, furniture and activities. The pavement should be resistant to weight and could need further specifications.
- c) The pavement is also part of the architectural aesthetics. Within historical buildings, the added floorings should respect the textures, materials and colours in the rooms, unless there are other intentions.

## Pavements 1

Santa María de Carracedo monastery, León, Spain.

Salvador Pérez Arroyo and Susana Mora Alonso-Muñoyerro



Exterior pavement



Interior pavement



Exterior pavement



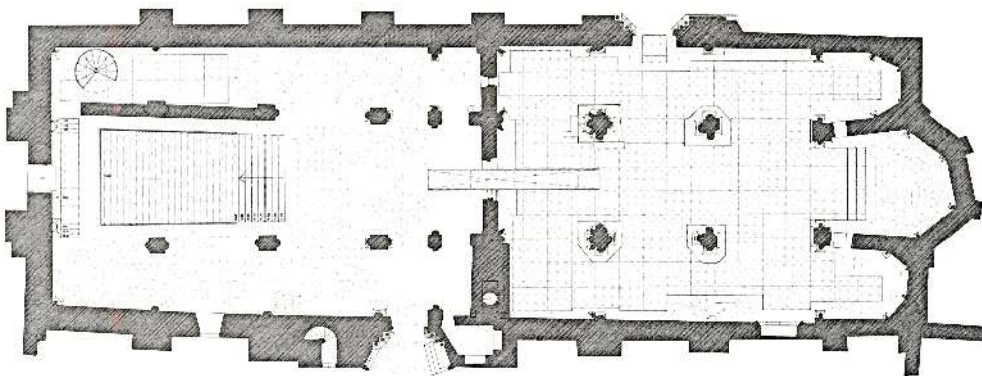
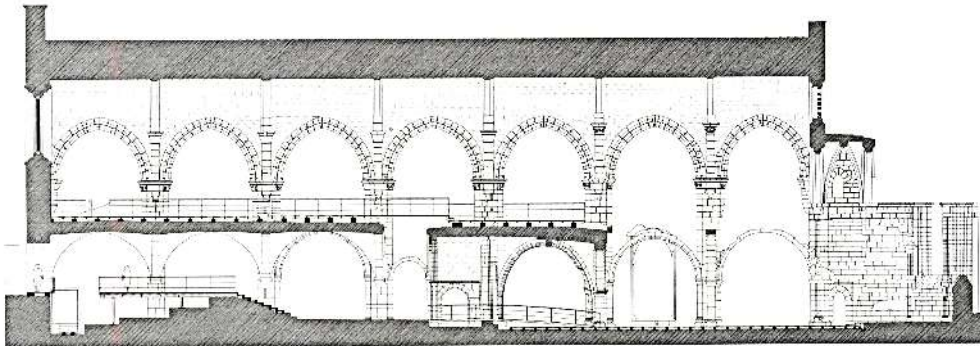
CIRCULATIONS - HORIZONTAL CIRCULATIONS

## Pavements 2

Santa Clara-a-Velha monastery restoration

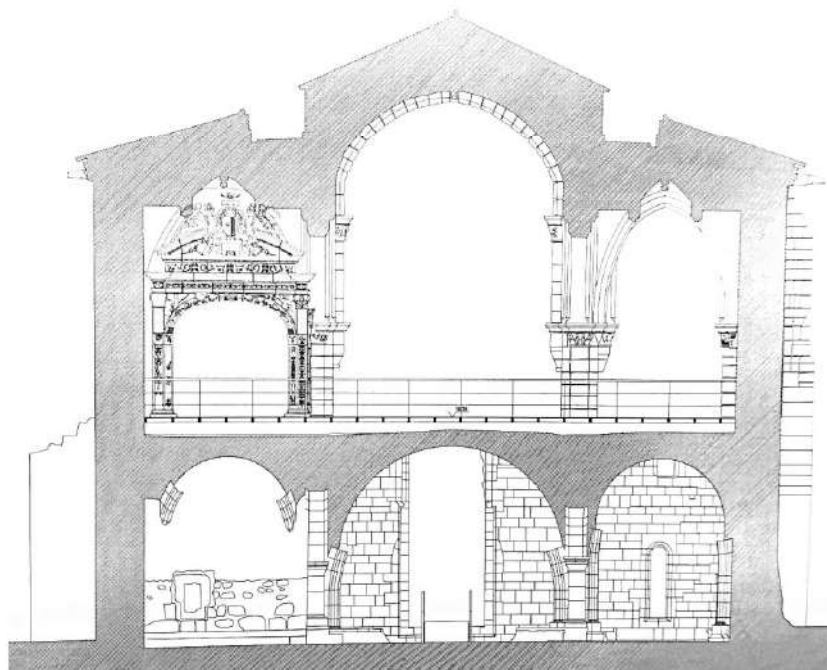
Coimbra, Portugal. 2004-08

Atelier15, Arquitectura LDA



Plan and section.

## CIRCULATIONS - HORIZONTAL CIRCULATIONS



Cross section B



New stone pavement



New stone pavement



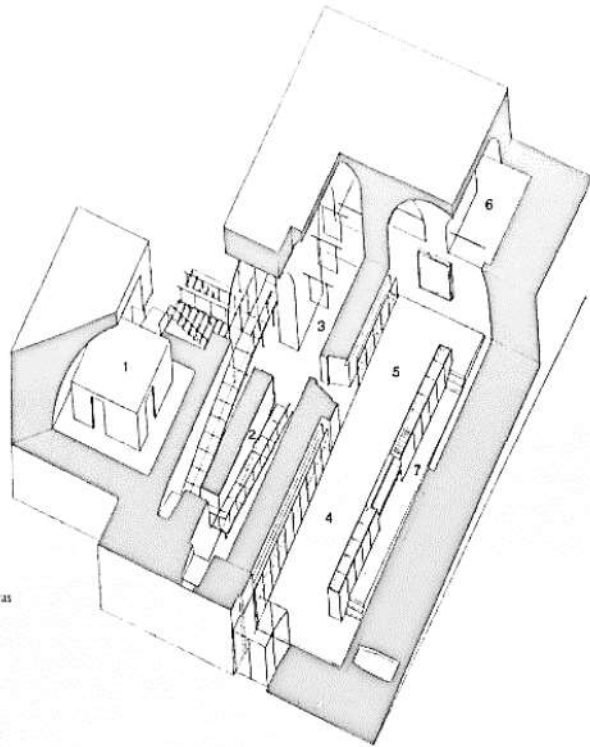
New floating floor

## Pavements 3

Montmajour Abbey

Arles, France.

Ruddy Ricciotti



Concrete pavement with perimeter lighting



Concrete pavement with perimeter lighting

CIRCULATIONS - HORIZONTAL CIRCULATIONS

## CIRCULATION ELEMENTS

HORIZONTAL CIRCULATIONS :

FLOORING

**WALKWAYS AND CORRIDORS**

MOBILE WALKWAY-TRAVELATOR

VERTICAL CIRCULATIONS:

STAIRS

ESCALATORS

ELEVATORS



# WALKWAYS

Walkway is the element that is used in the work to move from one place to another on the same level. It will be at least 60 cm wide and will have a safety railing. It's purpose is to connect isolated points or areas across a void, like a bridge, or to protect a valuable surface while enabling to visit it and contemplate the pavements.

Walkways are constructive elements supporting bending stress. Therefore, not only should be chosen its coating material, but also its structure, the distance between supports, the railings, etc.



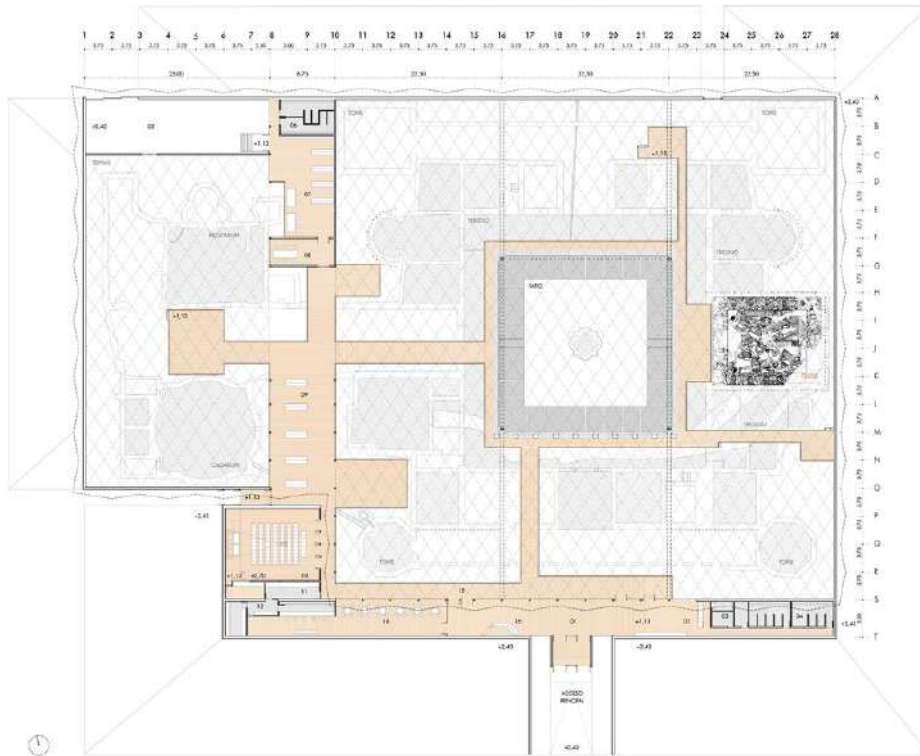
## CIRCULATIONS - HORIZONTAL CIRCULATIONS

### Walkways 1

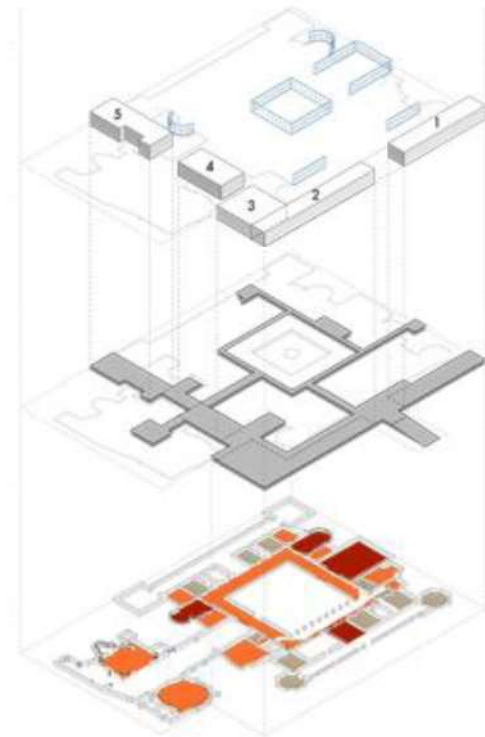
Roman Villa of La Olmeda

Palencia, 2000-2009

Paredes Pedrosa Architects

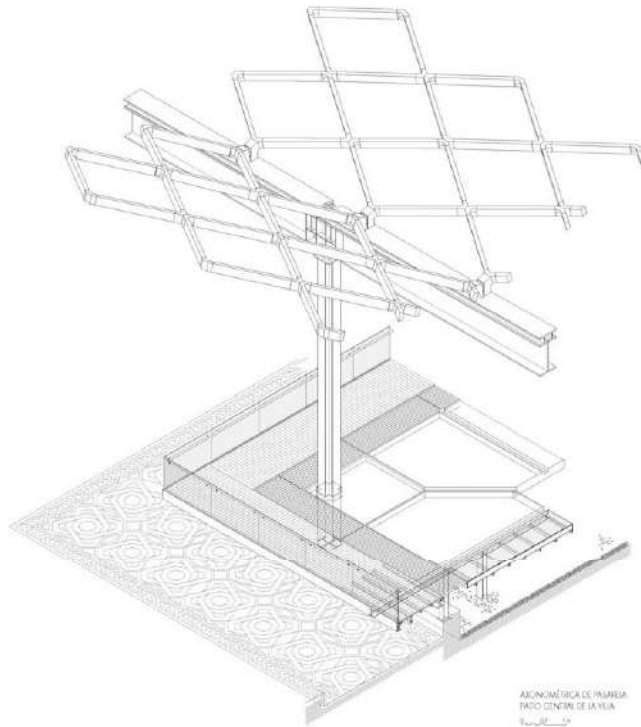


Walkways plan. The circulation resembles that of the roman Villa, around the patio and then toward the rooms.

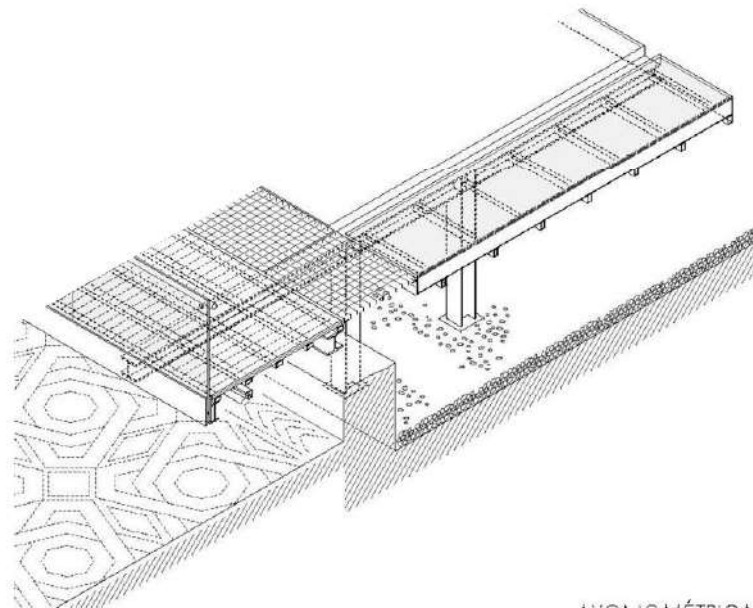


Intervention scheme. Rooms, walkways, programme

## CIRCULATIONS - HORIZONTAL CIRCULATIONS



Perspective of the constructive solution



Perspective of the runway constructive solution:  
steel beams structure, with wooden finishing and  
glass railways

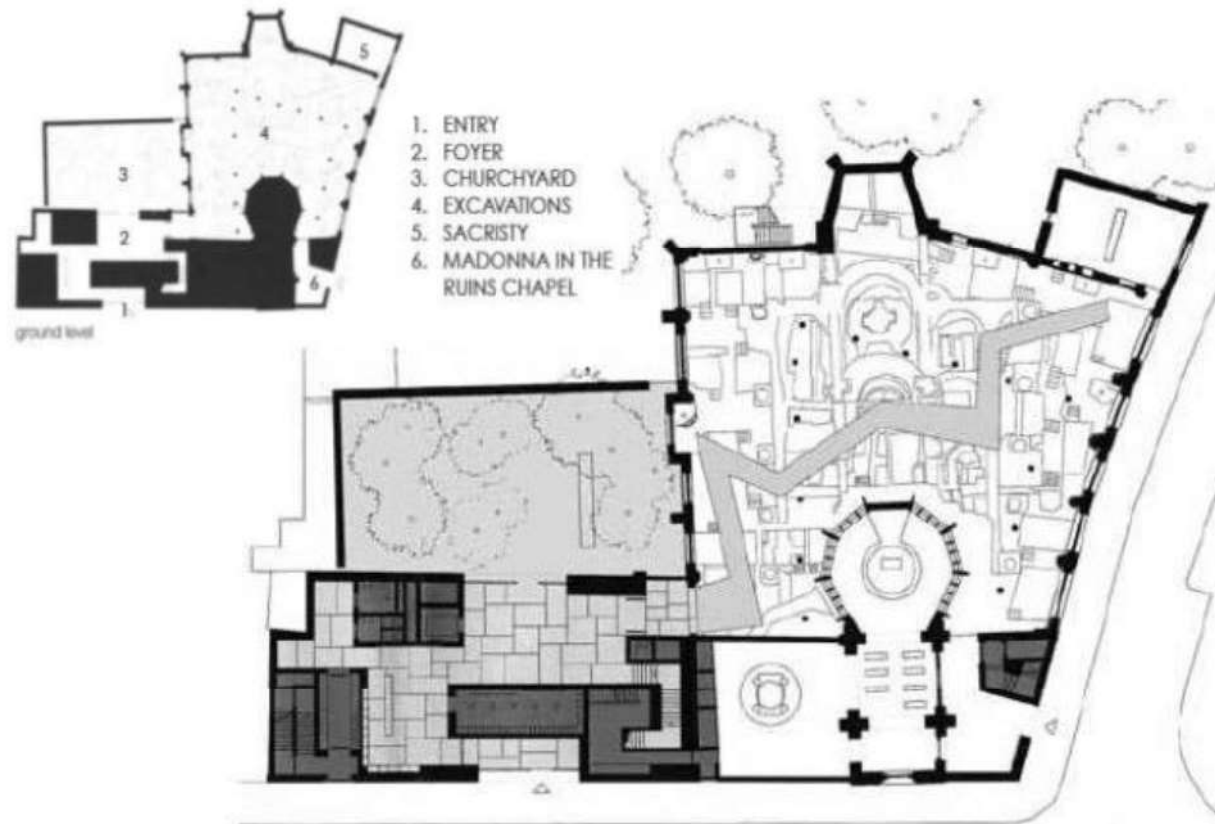
## CIRCULATIONS - HORIZONTAL CIRCULATIONS

### Walkways 2

Kolumba Museum.

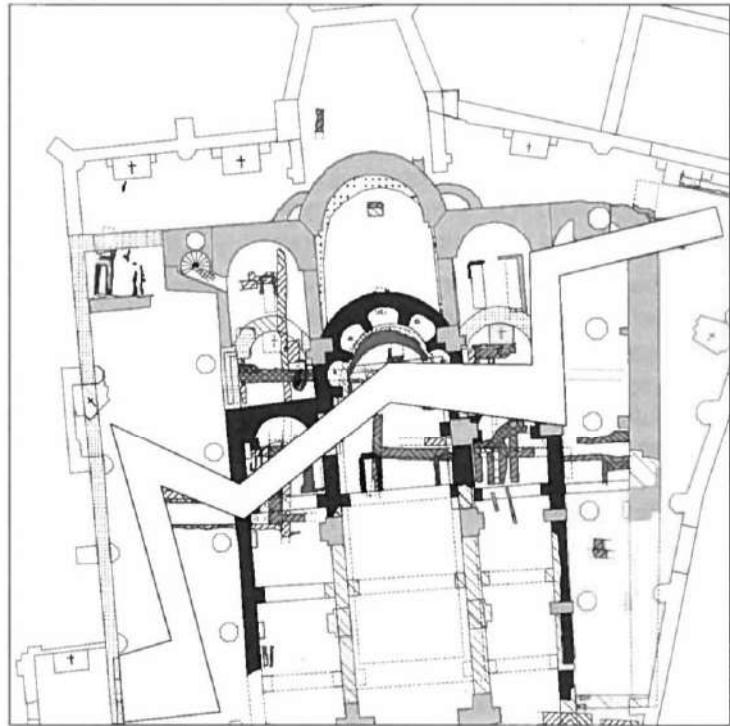
Cologne, Germany.

Peter Zumthor.





## CIRCULATIONS - HORIZONTAL CIRCULATIONS



- |  |  |
|--|--|
|  | Roman residential buildings, 2 <sup>nd</sup> / 3 <sup>rd</sup> centuries A.D.              |
|  | Late-Roman, 4 <sup>th</sup> and 5 <sup>th</sup> century A.D.                               |
|  | Building I Frankish apse attached to Roman House, ca. 700 A.D.                             |
|  | Building II Carolingian Hall Church, before 850 A.D.                                       |
|  | Building III Romanesque Church with three aisles, mid-11 <sup>th</sup> century             |
|  | Expansions, 12 <sup>th</sup> and 13 <sup>th</sup> centuries A.D.                           |
|  | Building IV Late-Romanesque Remodeling, 1 <sup>st</sup> half 13 <sup>th</sup> century A.D. |
|  | Building V Gothic Church with five aisles, ca. 1500 A.D.                                   |

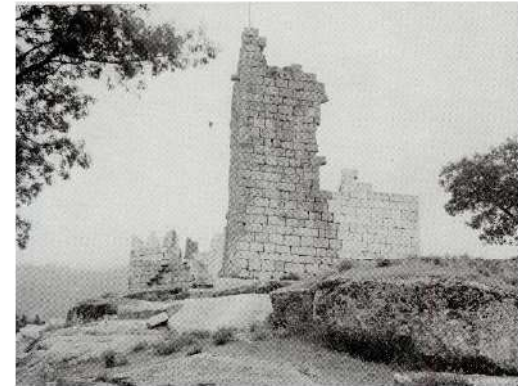
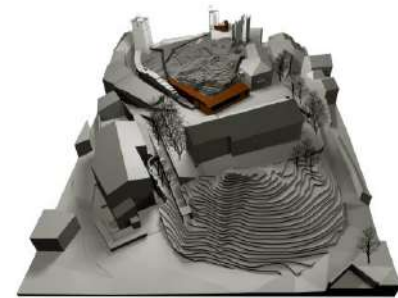
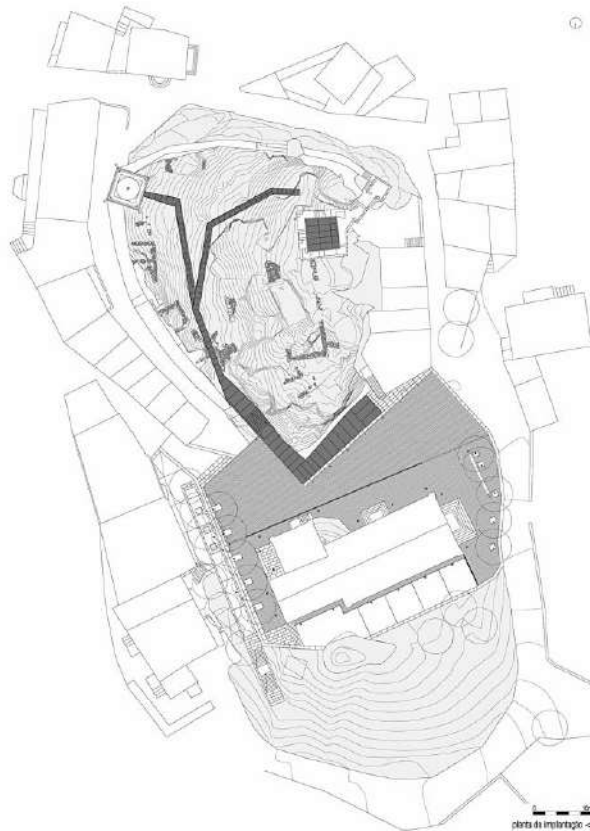


## CIRCULATIONS - HORIZONTAL CIRCULATIONS

### Walkways 3

Castle in Castelo Novo, Fundao, 2002-08

Luís Miguel Correia, Nelson Mota, Vanda Maldonado, Susana Constantino



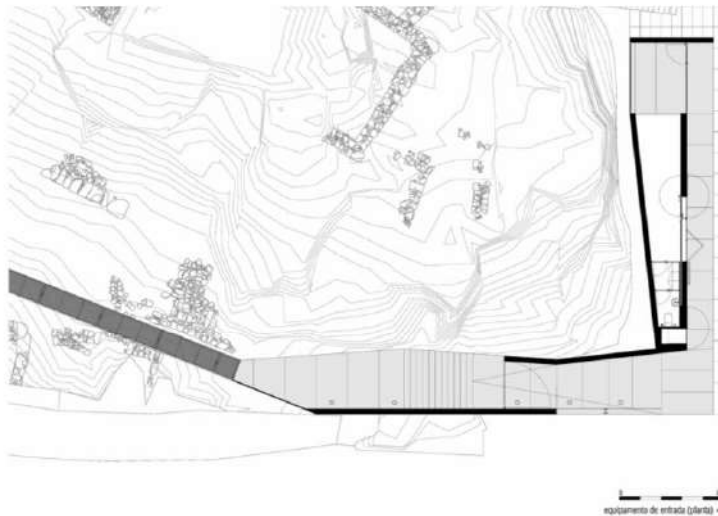
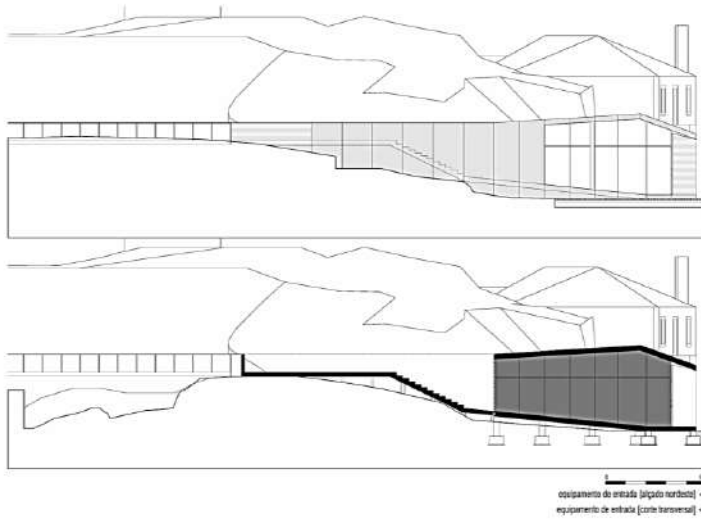
Previous state



Horizontal circulations: raised walkways



## CIRCULATIONS - HORIZONTAL CIRCULATIONS



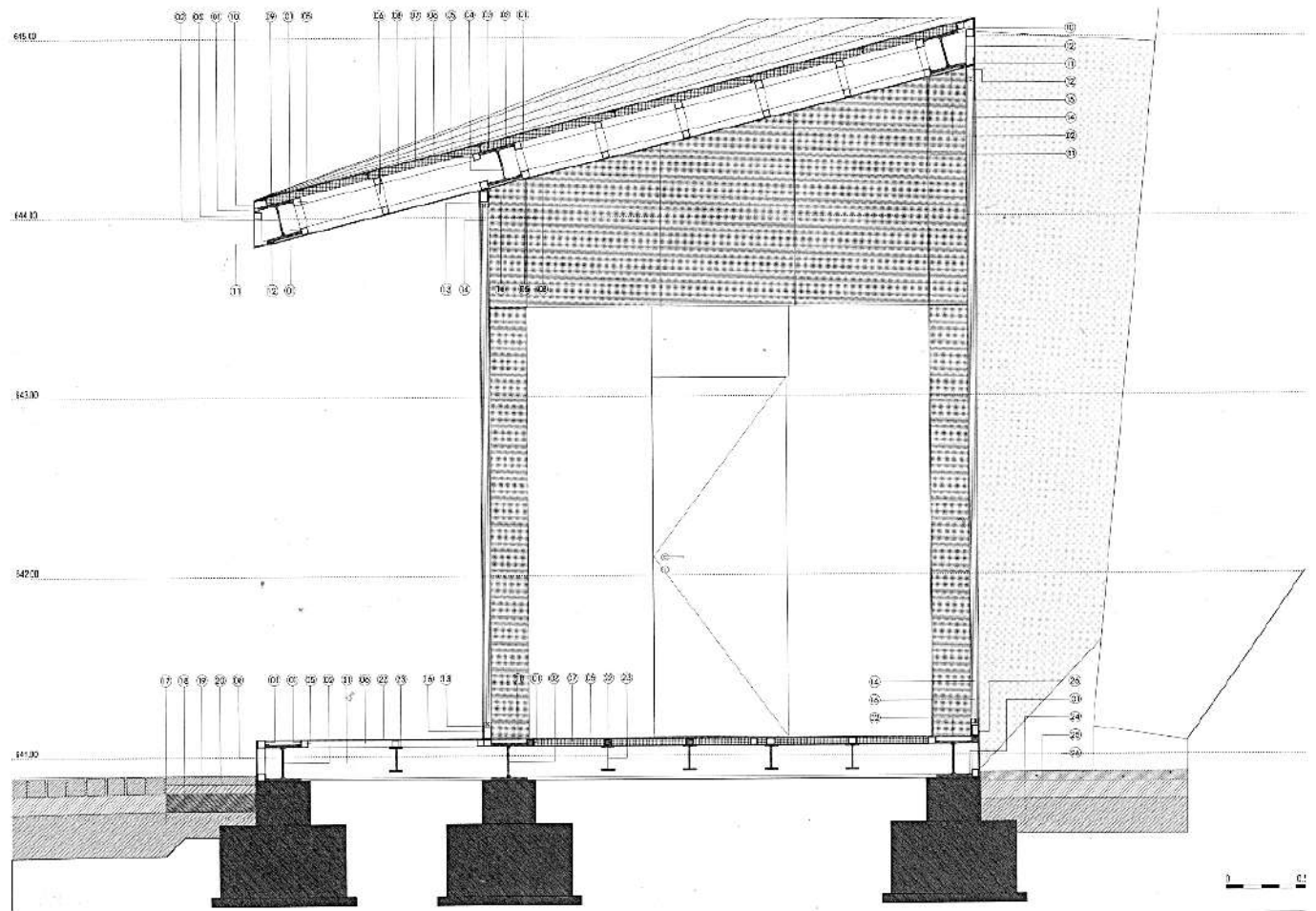
Raised walkways

Vertical circulations:

Staircase and threshold



## CIRCULATIONS - HORIZONTAL CIRCULATIONS



Raised steel walkway and pavilion

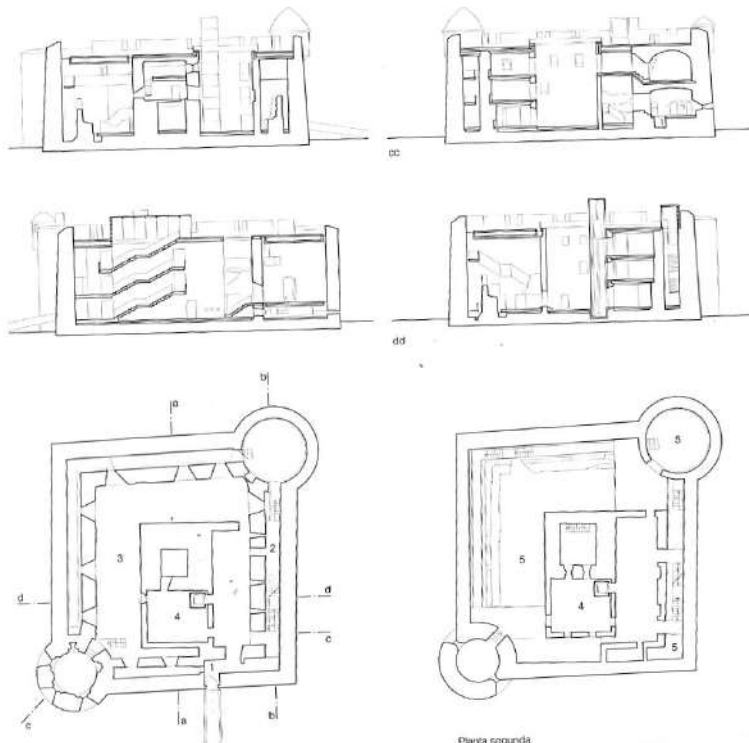
## CIRCULATIONS - HORIZONTAL CIRCULATIONS

### Walkways 4

Las Luz Castle. Conversion into the Sea Museum.

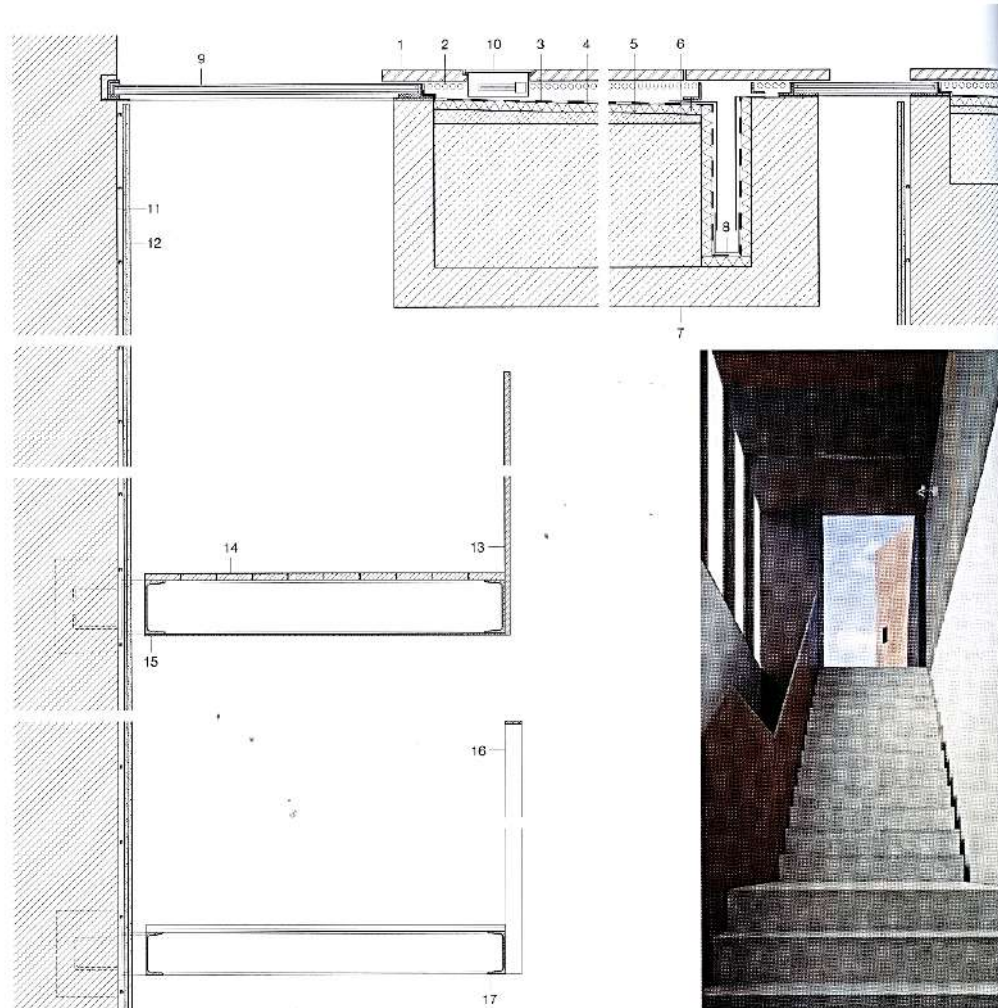
Las Palmas de Gran Canaria, España.

Nieto y Sobejano



Exhibition space, surrounded by elevated walkways. Stone pavements

## CIRCULATIONS - HORIZONTAL CIRCULATIONS



Metalic walkways. Skylights

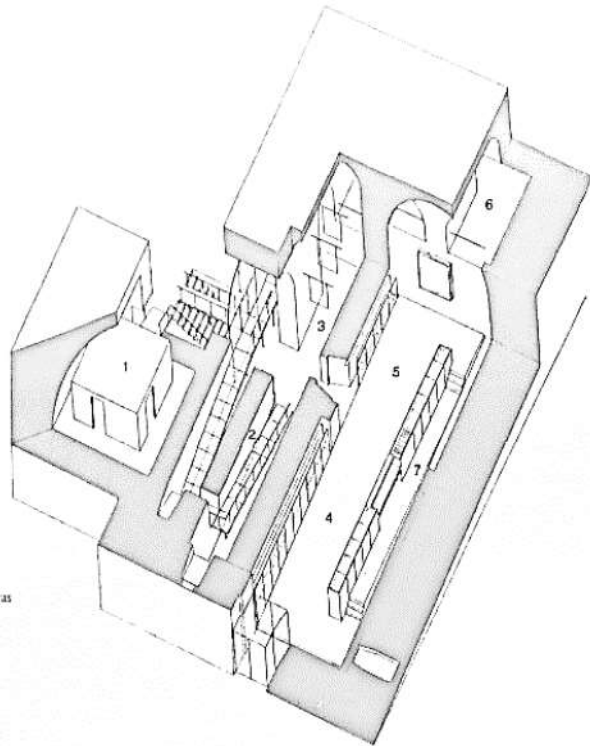


## Walkways 5

Montmajour Abbey

Arles, France.

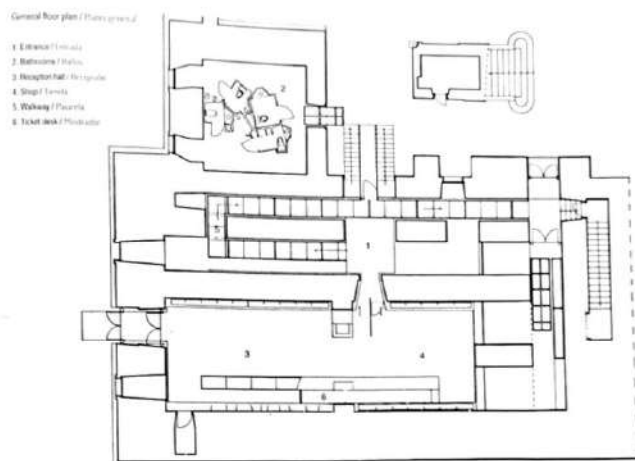
Ruddy Ricciotti



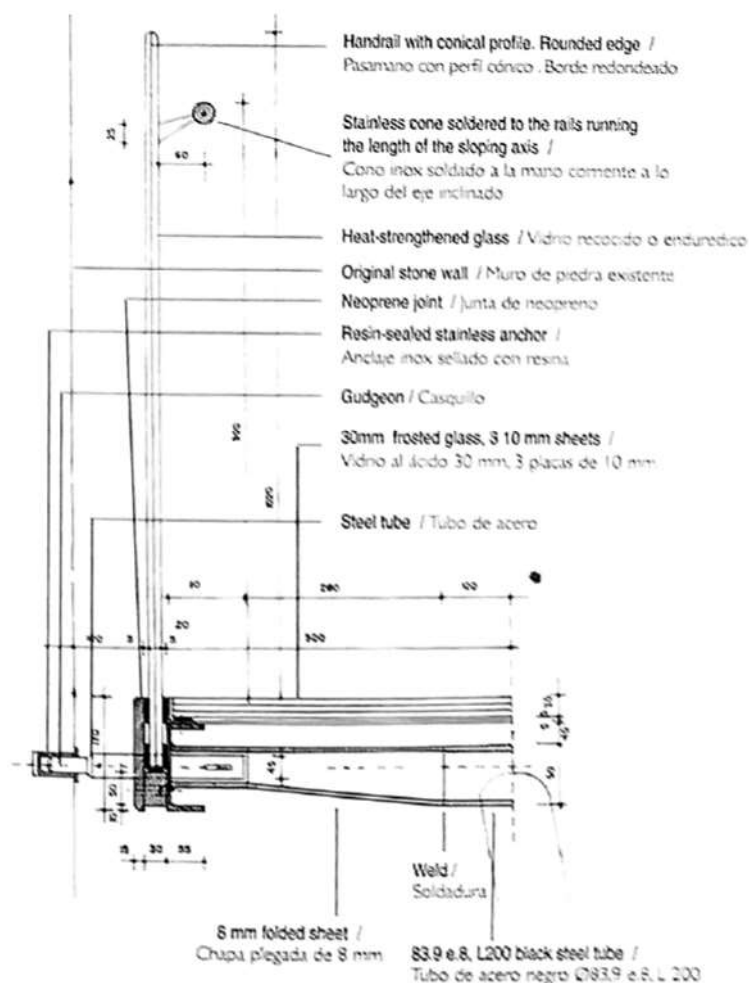
Metalic and glass walkway. The supporting elements are inclined in order to give a light-weight image..



## CIRCULATIONS - HORIZONTAL CIRCULATIONS



Walkway construction detail / Detalle constructivo de la pasarela

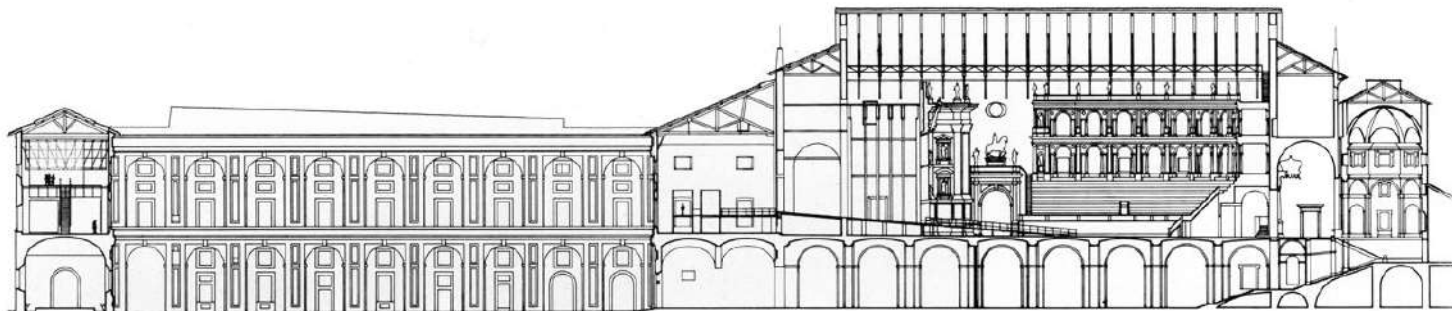
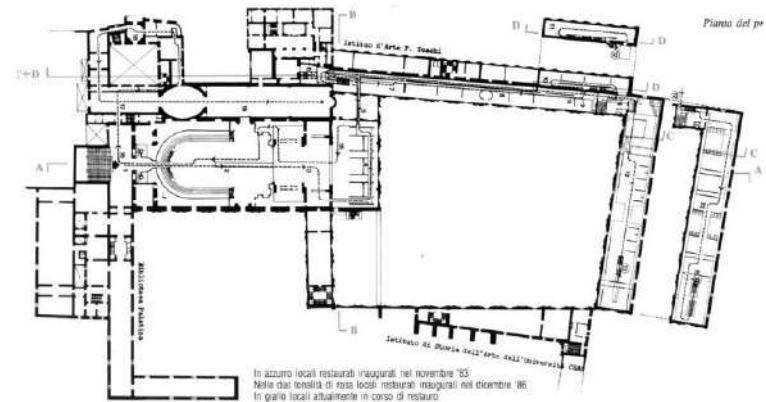


## CIRCULATIONS - HORIZONTAL CIRCULATIONS

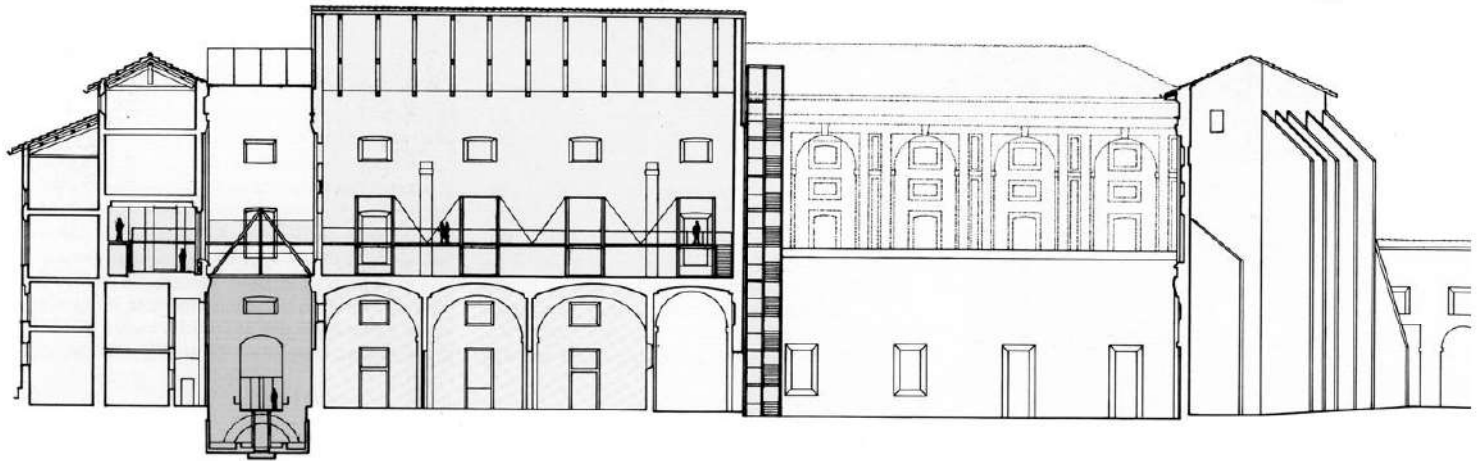
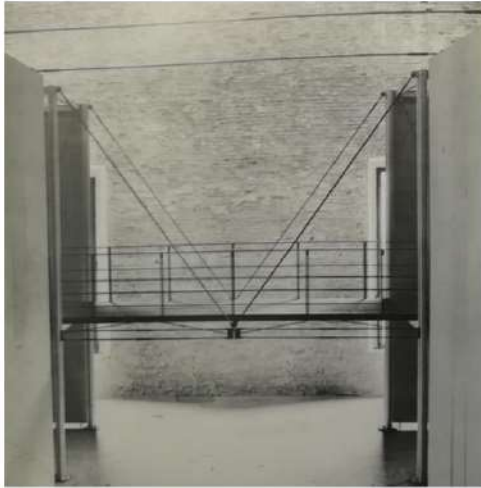
### Walkways 6

National Art Museum, former Palazzo della Pilotta. Parma, 1987

Guido Canali



## CIRCULATIONS - HORIZONTAL CIRCULATIONS

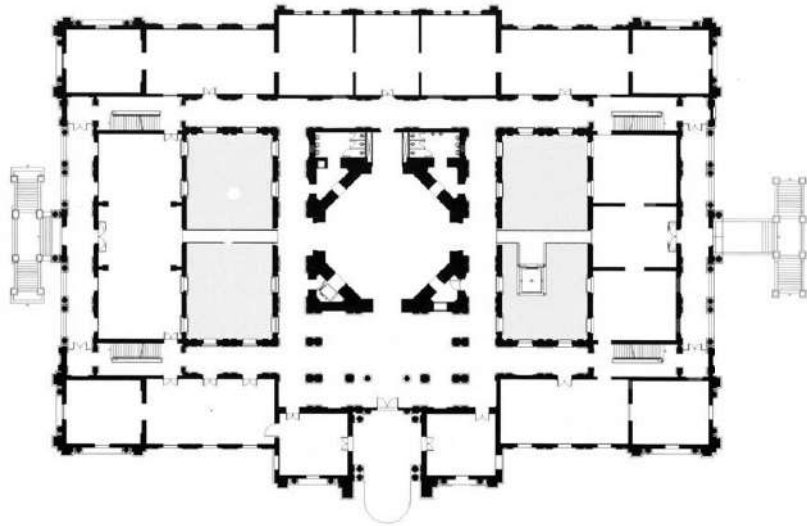
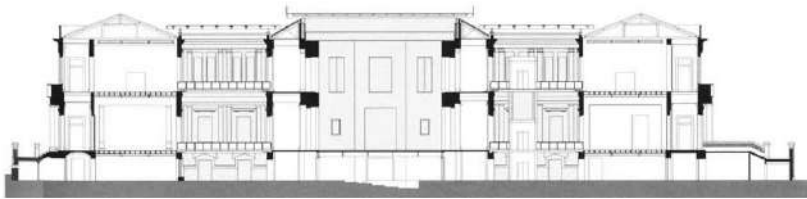


## CIRCULATIONS - HORIZONTAL CIRCULATIONS

### Walkways 7

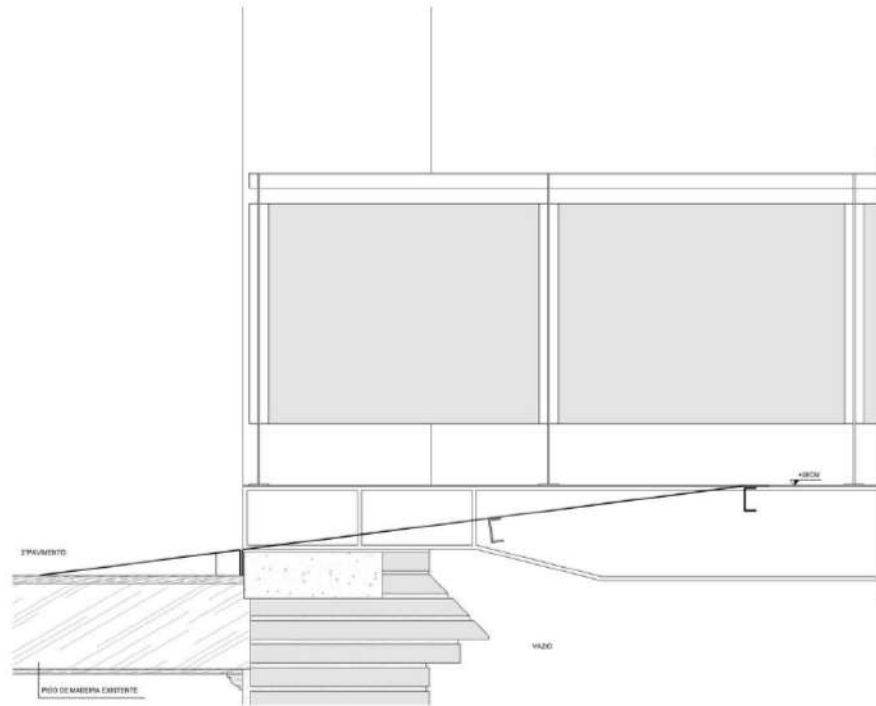
Renovation of the Brazilian National Pinacothèque. Sao Paolo, Brazil.

Paulo Mendes Da Rocha





## CIRCULATIONS - HORIZONTAL CIRCULATIONS

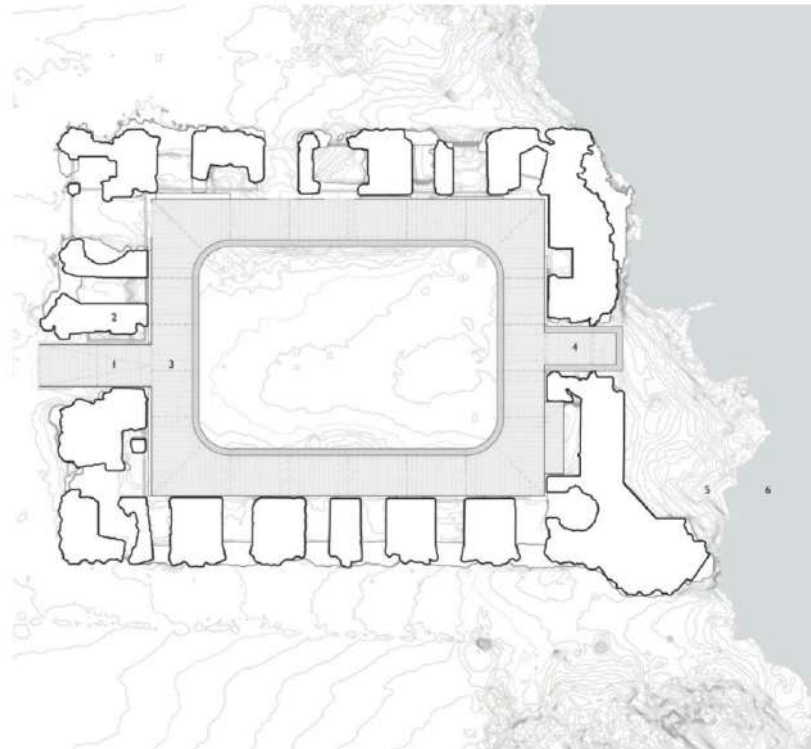


CIRCULATIONS - HORIZONTAL CIRCULATIONS

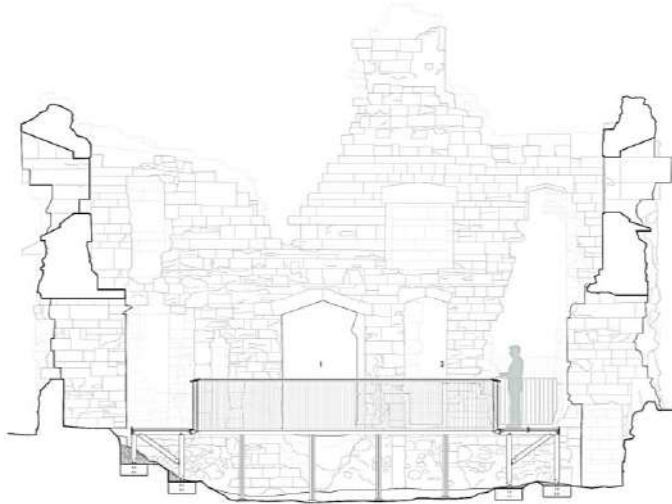
## Walkways 8

Ruins of Sandsfoot Castle. Weymouth, Dorset,  
England

Architects: Levitate

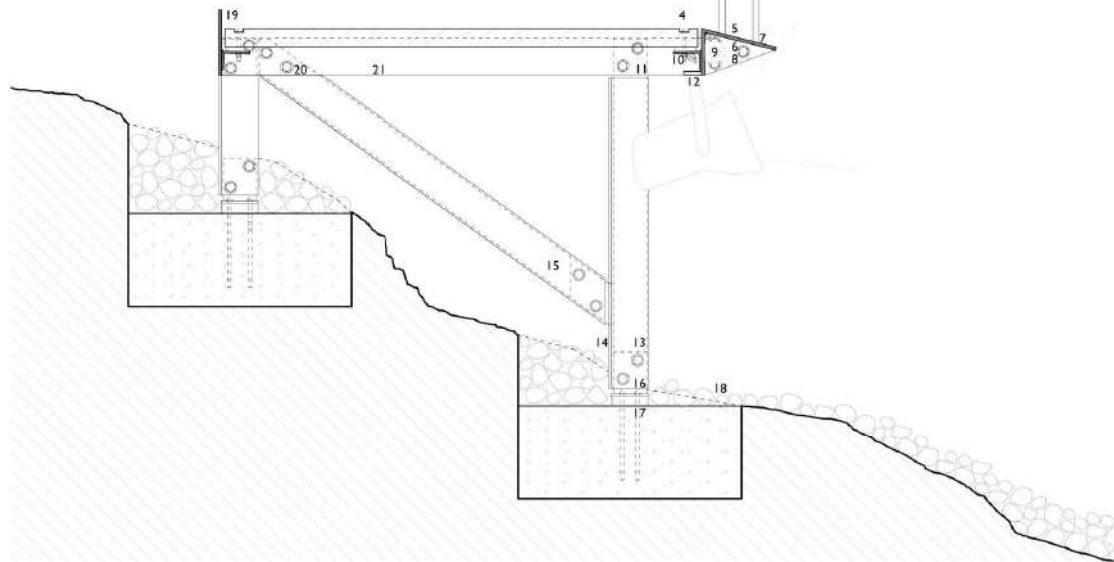


# CIRCULATIONS - HORIZONTAL CIRCULATIONS



DETAIL THROUGH WALKWAY, 1:10

- 1 oiled oak handrail bolted to steel plate
- 2 8mm plate welded to form handrail
- 3 16mm rods forming balustrade, staggered in plan, welded to walkway front edge beam and to handrail plate
- 4 oak boards bolted to angle below, packers beneath as necessary
- 5 8mm steel sloping plate welded to 8mm upright plate
- 6 edge profile bolted to horizontal beam
- 7 balusters welded to sloping plate
- 8 8mm plate vertical fins welded at 470mm centres to allow for fluorescent lighting
- 9 Encapsulate MT-K10 IP68 T5 fluorescent light with satin cover providing low level lighting
- 10 continuous angle welded to rear of front edge beam, note angle is set to slight fall in order to shed water
- 11 fitch connection between leg and horizontal beam
- 12 spot lights fixed to tab
- 13 leg formed from 3 no. 12mm thick plate welded continuously
- 14 8mm thick plate welded to rear of legs to stiffen
- 15 diagonal brace formed from 3 no. 12mm thick plates welded continuously, connected to front leg with fitch connection
- 16 base plate connects to bottom of leg with fitch connection
- 17 base plate fixes to concrete padstone or strip footing
- 18 gravel to cover existing ground
- 19 8mm plate forming back beam and kicker, with angle welded to side to receive timber boards
- 20 diagonal brace fitched into horizontal beam
- 21 horizontal beam beyond formed from 3 no. 12mm
- 22 interpretation board mounted on baluster
- 23 pair of balusters bend out of plane to support interpretation board
- 24 balusters beyond continue straight



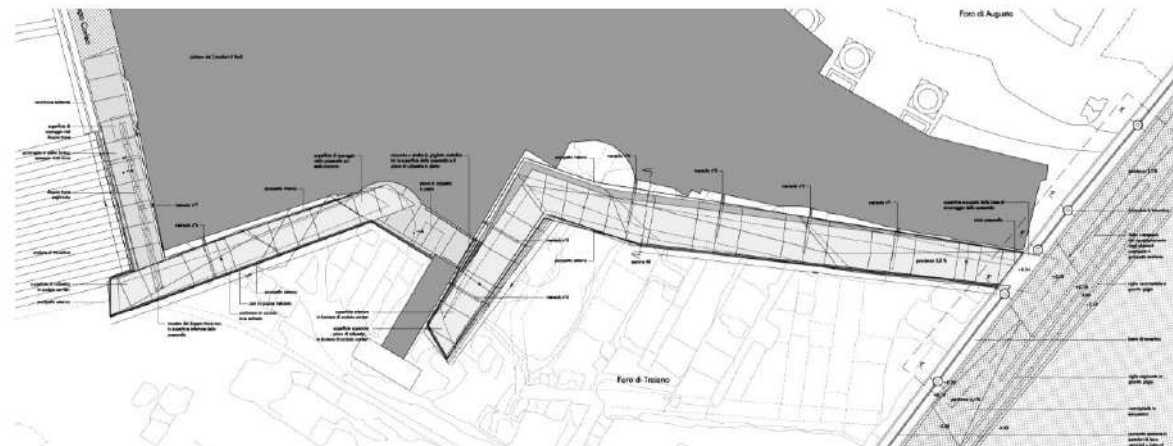
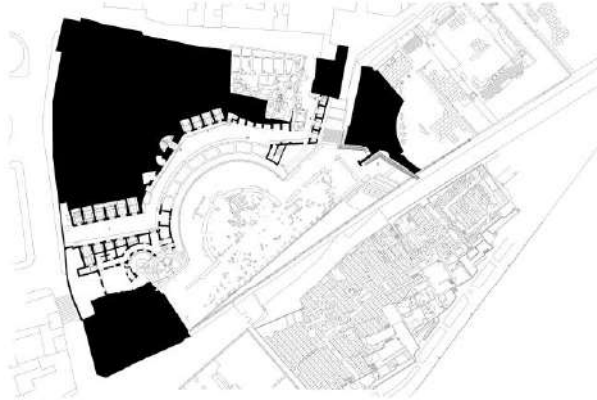


## CIRCULATIONS - HORIZONTAL CIRCULATIONS

### Walkways 9

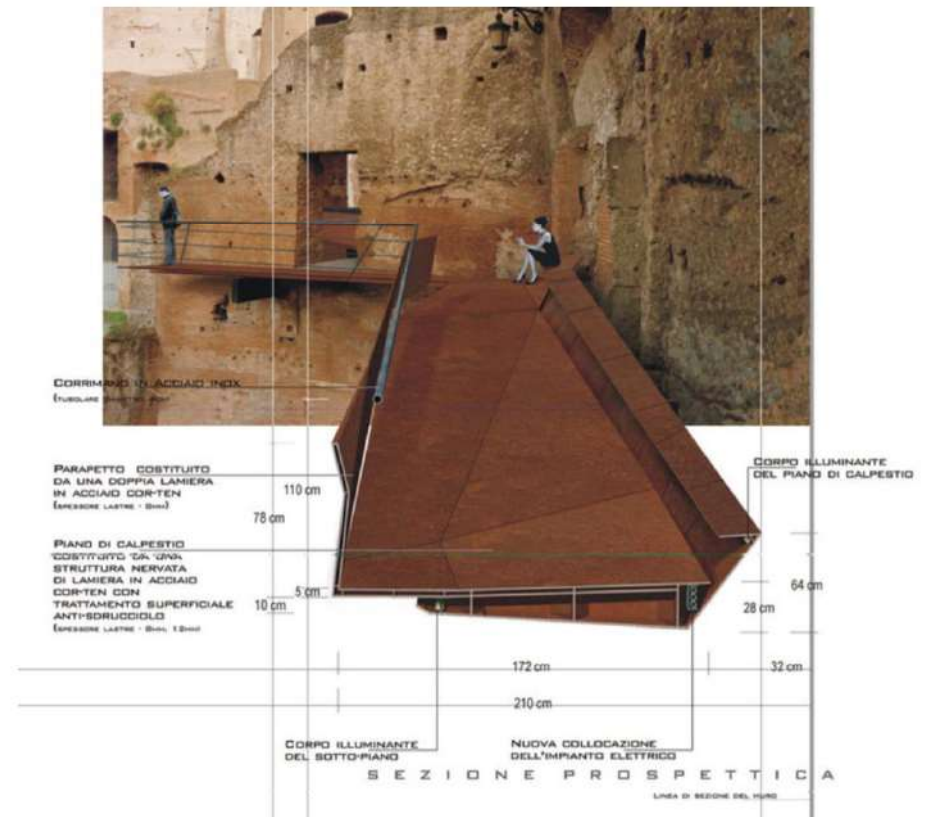
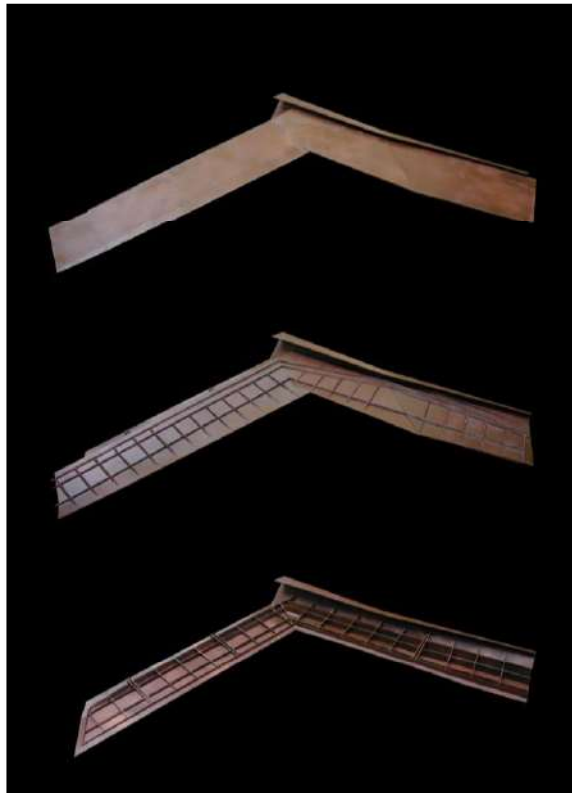
Pedestrian walkway of Campo Carleo to the Markets of Trajan. 1998-2004

Labics - Nemesi Studio





## CIRCULATIONS - HORIZONTAL CIRCULATIONS





**Project "SURE - Sustainable Urban Rehabilitation in Europe"  
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