CONSTRUCTION INHERITANCE

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HANDY GUIDE

European experiences in rehabilitation: Six case studies

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SPAIN

1 Name of the Building

Banco Español de Crédito or Palacio de la Equitativa

2 Name of the Building

The monumental building of the **Banco Español de Crédito** (also called **Palacio de la Equitativa**) is a building located in a trapezoidal floor-plan plot in the junction of the Alcalá (number 14) and Sevilla (numbers 3 and 5) streets of Madrid (Spain). It was built at the end of the nineteenth century. The work was designed and executed between 1887 and 1891 by the Spanish architect José Grases Riera, fellow student of Gaudí, author of landmarks in the Madrilenian architecture such as the Teatro Lírico nowadays seat of the General Council of the Judiciary, the Longoria palace headquarter of the SGAE (Spanish Society of Authors, Composers and Publishers) or the monument to Alfonso XII in the Retiro Park.

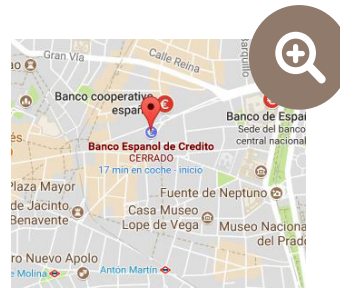
3 Date of the construction

1887-1891

4 City and country

Madrid, Spain

5 Google maps localization



6 State of the art before and after the renovation

Before the renovation

During the renovation

7 Type of trades involved

- Plasterers
- Glaziers
- Marble-workers
- Locksmiths
- Cabinetmakers

8 Elements restored

Interior design elements restored:

- Railings
- Lattices
- Bars
- Bronze and brass capitals
- Stained glass windows
- Doors

Exterior elements restored:

- Trusses
- Balconies' forge
- Roof

9 Materials used

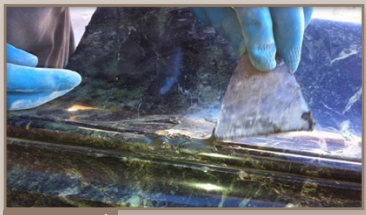
- Stone / Marble / Slate
- Glass
- Bronze and brass
- Iron
- Plaster
- Wood

10 Rehabilitation process

STEP I Removal of installations and unique elements, previous to the demolition


Plaster


Skylight


Stonework


Metalwork


Facade


Classification


Mansard

Truss

STEP 2 Demolition y excavation

Excavation

Demolition

STEP 3 Foundations and stabilization of historical façades


Historical facade


Foundations

Further information on

1 Name of the Building

Grafschafter Castle

2 Name of the Building

The Grafschafter Castle is considered the germ cell of the city of Moers. The city is about 5 km west of the Rhine. North of the castle, the centre of the city has been formed with administration, commerce and trade. To the south is a small park.

The first building of the castle was built around 1200. This was a square tower of tufa, that is volcanic rock, which could be found mainly in the Eifel. The material probably comes from the former Roman camp in Asciburgium. The edge length of the massive Romanesque tower was around seven meters. It is impossible to make a definite statement about its height, since there is nothing left of the tower today except for the foundation walls and the ground floor. These remains can be found in the courtyard, where they are still a few meters deep in the ground. In the course of the 13th century, the owners poured an annular hill around the tower, which was necessary because of the muddy ground to build further buildings. From the 15th to the 19th century, the castle was extended and rebuilt. The castle was successively owned by the Counts de Moers, the Dutch (Oranien), the Spaniards, the English, the French and the Prussians. Since 1905 the castle has been owned by the city of Moers. The last renovation took place from 1998 – 2005. A new passenger elevator was added.

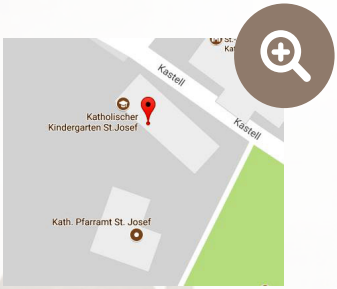
3 Date of the construction

About 1200, permanent extension and extensions until approx. 1820

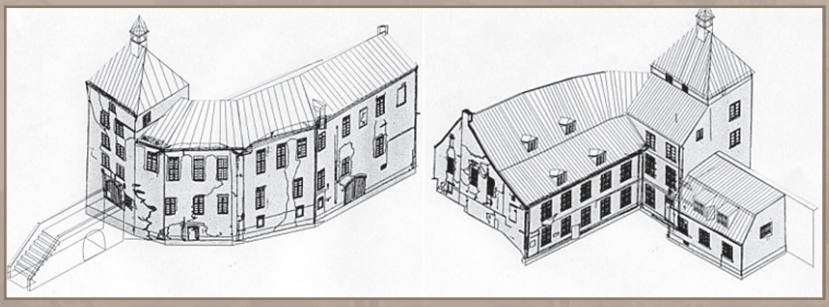
4 City and country

Moers, Germany

5 Google maps localization



6 State of the art before and after the renovation



Before the renovation (left: North-West, right: South-East)

During the renovation
(in front of the southern façade)

Entrance tower and Western facade
(ivy already removed)

7 Type of trades involved

- Bricklayer
- Plasterer
- Painter
- Roofing contractor
- Plumber
- Insulator

8 Elements restored

Interior design elements restored:

- Windows
- Masonry
- Plaster

Exterior elements restored:

- Masonry
- Plaster
- Painting
- Insulation
- Roofing
- Plumbing
- Metalworking

9 Materials used

- Field fired bricks
- Trass mortar, lime mortar
- Clay roof tiles
- Zinc
- Mineral color
- Bitumen

10 Rehabilitation process

STEP I Renewal of the seals, draining the basement masonry

Draining the masonry

Excavation of the masonry

Wet masonry

Cleaning and repairing of broken stones

Excavated foundations

Stored, excavated natural stones

STEP 2 Removing the old plaster on the eastern facade, applying a new lime plaster, painting the facade with a diffusible whitewashing; Renewing the joints of the entrance tower

Removing old plaster

Renewing the joints
(pausing colleagues)

New lime plaster with repaired
thunderbold protection

Renewing the joints
(pausing colleagues)

Renewed gutter

Changed course of the drainpipe

Metalwork (iron window grilles) and painting (wooden window frame)

Repaired crack in the facade

STEP 3 Repair of the west facade and the north side of the entrance tower

Removing the birch in the masonry

Removing plants in the masonry

Remains of the original square tower

Original walls and foundations integrated in the elevator shaft

Original walls and foundations integrated in the elevator shaft

Extension with elevator shaft on the south side

Further information on

ITALY

1 Name of the Building

Palace Calò – Carducci Bari (Italy)

2 Name of the Building

THE PALACE CALÒ CARDUCCI is situated in the Old town of Bari near the important Mercantile Square and the street from this leads to the famous Basilica of San Nicola. It is overlooking the square of the Jesuits, to the left of the Baroque church of Jesus, of this it constitutes a fifth lateral.

The property is subject to constraint of protection under the Legislative Decree no.42/2004, D.M.29/03/1977 with the name "Building(Calò-Carducci Palace)". The building as a result of restoration work, led by the Garibaldi Ltd. , and directed by the architect Beppe Fragasso , has found its " original facade " , thanks to the restoration of urable loggia entrance, located on the main facade . The materials of which the artifact was made were respected and integrated.

The stone surfaces now seem perfectly cleaned and restored, with the "undo-redo" method, where necessary, restoring the facing its original continuity and readability. The windows and shutters echo the design and original material, they fit perfectly within the Old Town.

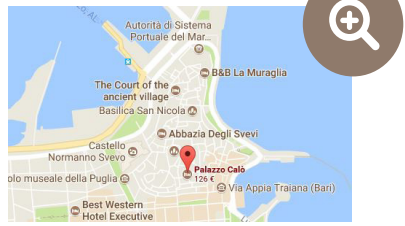
3 Date of the construction

Beginning of the eighteenth century

4 City and country

Bari, Italy

5 Google maps localization



6 State of the art before and after the renovation

The building, before the restoration works , appeared in a state of complete abandonment. The phenomena of deterioration concerned every element of the structure,bearing walls in a poor state of preservation at elevated structures with obvious large crack patterns and release phenomena of material ejection. Such structures, after a continuous exposure to meteoric phenomena , given the absence in certain spaces of coverages , cause collapse, they had been subjected to soaking, with consequent impoverishment of the masonry core. The old wooden floors were deteriorated, partially or totally collapsed.

Before the renovation

During the renovation

After the renovation

7 Type of trades involved

- Superfluous demolition
- Works of consolidation of foundations
- Walls of new construction works
- New floors in reinforced concrete
- New metal slabs
- Decorations of restoration
- New fixtures
- Interior design

8 Elements restored

Interior design elements restored:

- Railings
- Lattices
- Bars
- Doors

Exterior elements restored:

- Trusses
- Balconies' forge
- Roof

9 Materials used

- Stone and local tuff
- Colored mortar paste
- Wood (windows and shutters)
- Wood (integration original wooden floors)
- Milk of lime and lands superventilate
- Lime water
- Earth colors and acrylic resins
- Plastic domes " igloo " (ventilated crawl space)
- Hydraulic limes
- Reinforcing bars and hot-dip galvanized steel
- New wooden floors
- Floors in brick - concrete
- Beams in iron
- Concrete
- Corrugated sheet
- Lintels Steel
- Epoxy resins
- Metal rods
- Flagstones for paving

Excavated foundations

Stored, excavated natural stones

STEP 2 Removing the old plaster on the eastern facade, applying a new lime plaster, painting the facade with a diffusible whitewashing; Renewing the joints of the entrance tower

Removing old plaster

Renewing the joints
(pausing colleagues)

New lime plaster with repaired
thunderbold protection

Renewing the joints
(pausing colleagues)

Renewed gutter

Changed course of the drainpipe

Metalwork (iron window grilles) and painting (wooden window frame)

Repaired crack in the facade

STEP 3 Repair of the west facade and the north side of the entrance tower

Removing the birch in the masonry

Removing plants in the masonry

Remains of the original square tower

Original walls and foundations integrated in the elevator shaft

Original walls and foundations integrated in the elevator shaft

Extension with elevator shaft on the south side

Further information on

1 Name of the Building

Abbey of Paix Dieu – Water Mill

2 Name of the Building

The monastic mill was built in 1665. It had two levels and was divided into two parts and distinct functions: the milling and the miller's lodging.

The current mechanism of the wheel, identically restored, and the consolidated metal wheel date from the nineteenth century.

The building was abandoned in the years 1950 and get gradually deteriorated (infiltrations of water in the roof and then in the masonry) and was in the state of ruin in the early 2000s.

In 2011, restoration works began and has been completed in 2013. Architects wanted to maintain the original appearance of the building, both interior and exterior. The main changes inside the building are related to light supply and contains some modern elements (metallic).

Located at the entrance of the "Centre des métiers du Patrimoine", the building is now the welcome point of the "House of Tourism Hesbaye-Meuse" (on the ground floor) and the 1st floor is divided into offices and is the headquarter of the "Heritage Days" team.

3 Date of the construction

1664

4 City and country

Amay, Belgium

5 Google maps localization

6 State of the art before and after the renovation

Before the renovation

After the renovation

7 Type of trades involved

- Archeologist and architect
- Bricklayer
- Carpenter
- Roofer
- Stone-worker
- Plasterer
- Electrician
- Plumber

8 Elements restored

Interior design elements restored:

- Stairs
- Walls
- Floors
- Mechanism of the wheel (mill)
- Half-timbering walls

Exterior elements restored:

- Walls
- Roof
- Windows
- Wheel

9 Materials used

- Stone (lime and sand)
- Glass
- Bricks
- Lime mortar
- Plaster (lime)
- Wood
- Natural slates
- Steel (for modern elements)

STEP 1 Removal and dismantling of the Mill's Wheel

STEP 2 Steel stairs installation

STEP 3 working site installation (lavatory, heating)

STEP 4 The structure : from dismantling to the installation of the new structure

STEP 5 Roofing with natural slates

STEP 6 Plastering with lime

STEP 7 Woodworks

STEP 8 Dry mud on half-timbering wall

Further information on

FRANCE

1 Name of the Building

Old farmhouse with extension in a farm building

2 Name of the Building

The building is framahouse In the heath of a small and typical burgundy village. The building is composed by stone basement, stone wall with traditional mortar, traditional chestnut tree frame and ceramic tiles. The renovation work consisted in the rehabilitation of a roof in a farmhouse in order to create rooms and bathrooms where once there was the attic space.

3 Date of the construction

2nd half of the du 17th century

4 City and country

Asnan, Burgundy, France

5 Google maps localization

6 State of the art before and after the renovation

Before the renovation

After the renovation

7 Type of trades involved

- Masonry
- Stone work
- Roof restauration
- Plumbing

8 Elements restored

Structural elements restored:

- Roof
- Frame
- Balconies (ridge tile)
- Ceramic finials

9 Materials used

- Ceramic tiles
- Traditional mortar
- Wood
- Ceramic
- Stone

10 Rehabilitation process

STEP 1 Scaffold setting up

STEP 2 Roof deconstruction

Choice and cleaning of the tiles in order to use it again in a second time

Taking out and removal of the tiles

Removal and storage of the ridge tile and removal of the damaged battens and chevrons

STEP 3 Replacement of the framing elements

Replacement of the chevrons

Consolidation of the frame elements

STEP 4 Setting of the skylight

Copy of the existing skylight and matching of the frame elements to fit the skylight

STEP 5 Implementation of the thermal insulation from outside

Laying of a thin 12 coats insulating

Support battens

STEP 6 Resetting the tiles

Mixing of old and nex tiles and realization of the middle corner of the mansard roof

Realization of copper valleys and hips

Set up of the new ceramic finials

Realization of traditional lime encounters

Further information on

1 Name of the Building

Private housing building in Mouraria

2 Name of the Building

The building in question is integrated in the historic centre of Lisbon, in one of its oldest neighbourhoods: Mouraria.

Mouraria is one of the most traditional neighbourhoods of Lisbon, which owes its name to the fact that D. Afonso Henriques (1st king of Portugal), after the conquest of Lisbon, having confined a city zone for Muslims.

It was also in this neighbourhood that remained the Moors, after the Christian reconquest, as well as Jews.

Nowadays we find in Mouraria several rehabilitation interventions in private buildings and we are going to show you one example:

It is an old building with 2 floors and a mansard - corresponding to 4 apartments, that has been built in 1906, in a "gaioleiro" structure with a facade covered with tile, foundations established by foundations filled with tough stone masonry, with a width almost double walls supporting and height necessary to find solid ground and interior walls of partition - with an average thickness of 0.08 m.

With inadequate clamping, the side walls of the locking systems are sometimes achieved via metal turnbuckles.

The floors are wood, with structure made of beams, based directly on the walls, with a few centimetres of delivery and arranged toward the lower range.

The bottom casing of the floor (ceilings of the floors) is generally constituted by liners of wood or plaster on wood lath.

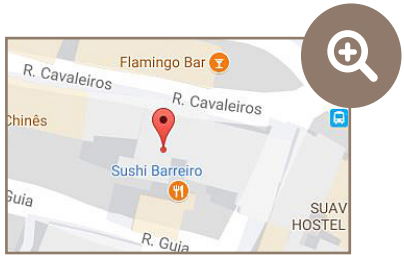
3 Date of the construction

1906

4 City and country

Lisboa, Portugal

5 Google maps localization



6 State of the art before and after the renovation

Description of the nature of work stage:
Rehabilitation of the wood flooring

Main facade of the building

Before the renovation

After the renovation

7 Type of trades involved

- Masonry
- Carpentry

8 Elements restored

- Floor
- Beams

9 Materials used

- Mortar
- Wood
- Wooden beams
- Burned oil mixed with consistent paste or Xylophagous product
- Varnish

PROCESS I Removal of the existing flooring (Pine wood)

Step I Removing the ancient flooring without reutilization

Step 2 Removing the waste, with bags, in small amounts

PROCESS 2 Analysis of the structure of existing wooden beam and floor levelling analysis

Step I Removing the ancient flooring without reutilization

Step 2 Check the possibility of removal of the materials in bad condition
(May be required to support the ceiling the lower floor)

Step 3 Check the necessity of floor levelling

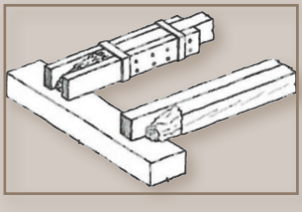
PROCESS 3 Treatment of existing materials, strengthening of the support beams and floor levelling

Step 1 Treatment of wood beams with burned oil mixed with consistent paste

Step 2 Splices of the old beams deteriorated to strengthen the structure

Step 3 Levelling the ground

Splices (Empalme): fixing of new pieces of wood to antique pieces.



PROCESS 4 Placement of the new floor

Step I Settlement of the new floor (Nordic pine) and treatment of wood knots

Step 2 Sanding wood, to create a smooth finish on the floor

Step 3 Cover pores

Step 4 Varnishing (two or three layers)

Further information on