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FONDAZIONE FLAMINIA RAVENNA

Sustainable Urban Rehabilitation in Europe

# *Methodological approach to conservation*

Erasmus+

Sustainable Urban Rehabilitation in Europe

3rd Semester

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# Methodological Approach to Conservation: Physical Approach

**2 ECTS**

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**SURE**
SUSTAINABLE URBAN REHABILITATION IN EUROPE

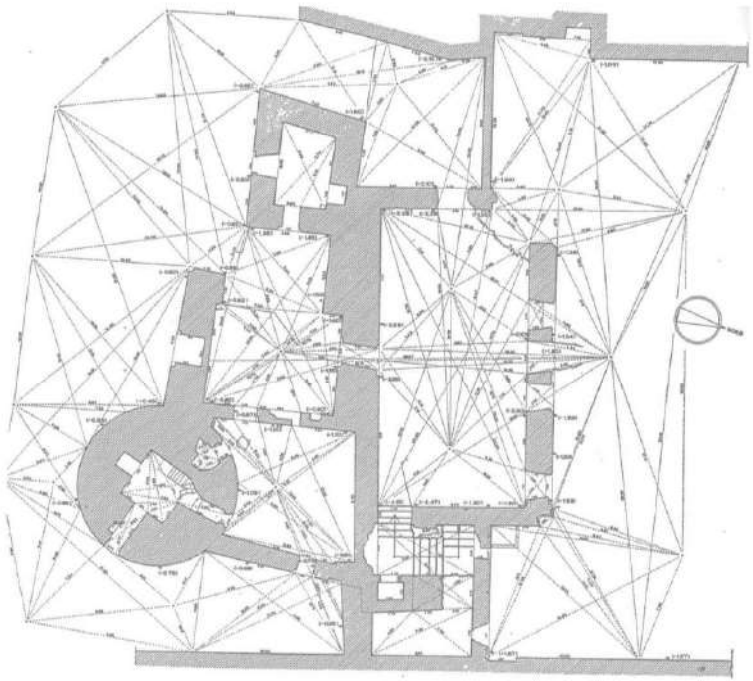
UNIVERSIDAD POLITÉCNICA DE MADRID

Sustainable Urban Rehabilitation in Europe

# Methodological Approach to Conservation: Physical Approach

1. Introduction to Methodological Approach
2. **Geometrical Survey**
3. Geometrical Survey: traditional method
4. Geometrical Survey: new tools
5. Material Survey.
6. Mechanical Survey.
7. Damage maps I: degradation problems
8. Degradation types.
9. Damage maps II: fissure and crack problems
10. Damage maps III: moisture problems
11. Damage tests on masonry constructions I
12. Damage tests on masonry constructions II
13. Survey, maps and tests on wooden contruction.
14. Archaeology.
15. Stratigraphy.

# Methodological Approach to Conservation: Physical Approach



# LESSON 02. GEOMETRICAL SURVEY

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ARCHITECTURAL SURVEY.

## DATA GATHERING:

**- Geometrical survey**

- Constructive systems survey (*rilievo materico*).

- Statigraphy. Phases.

- Mecanical and constructive survey (*rilievo mecanico*)

- Map of damages.

- Damages monitoring.

ARCHITECTURAL SURVEY.

# SURVEY

*rilievo* in Italian,

*levantamiento* in Spanish

*relevé* in French,

*survey* in English,

*Bauforshungen* in German.

# ARCHITECTURAL SURVEY.

## Definition

According to the most advanced interpretations it should be understood by **architectural survey** the primal form of knowledge of preexisting architecture and therefore, the set of operations, measurements and analysis necessary to understand and document the architectural good in its complete configuration, even referred to the context urban and territorial, in its dimensional and metric characteristics, in its historical complexity, in its structural and constructive characteristics, as well as in the formal and functional.

In short, survey can be a tool to portray the state of a monument in a certain time of its constructive history. Therefore, the study of successive surveys would allow us to determine and understand the **constructive and projectual evolution of the historical building**.

In addition to the practical purpose of the conservation of Architectonic Property, the survey must also be considered a necessary and significant contribution for the knowledge of the historical-artistic heritage itself. This is, **to consider the survey as an end** and not only as a mean for a subsequent restoration.

Architectural Survey charter

«Il rilievo dei beni architettonici per la conservazione» congress,held in Naples in April 1999

ARCHITECTURAL SURVEY.

## Aim of the survey

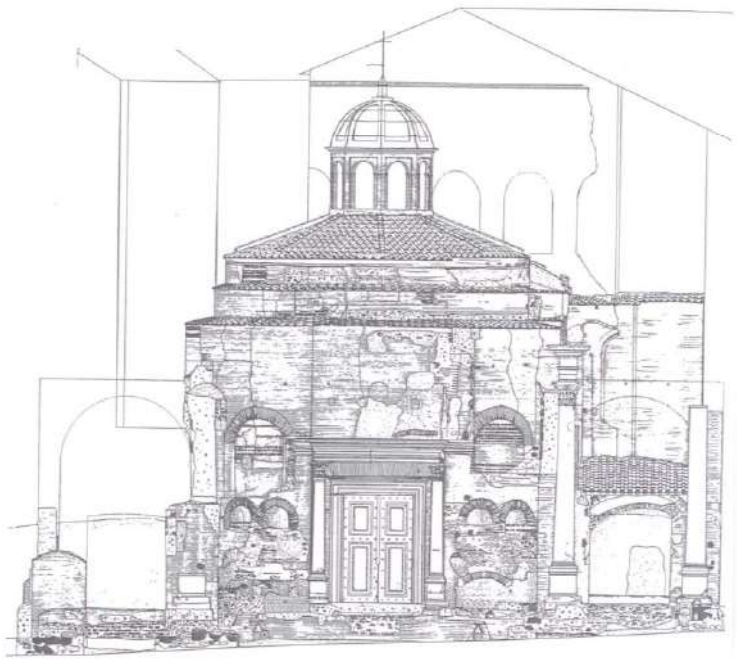
A good general survey carried out on an architectural cultural asset, should essentially allow:

1) **Geometric definition:** The knowledge, accurate, reliable and critically purified, of the configuration morphological and dimensional of the object, in its current physical state.
2) **Technical definition:** The technical, technological and material knowledge of the object, which helps understand both their constructive modalities and their current conditions of alteration and degradation.
3) **Thematic survey:** The possibility of an agile thematic edition of the surveying planimetry, to deepen the historical knowledge of the object as first document of itself, which can only be deciphered thanks to careful survey and direct observation task.
4) **Historical observations** coming from both a preliminary approximation documented and planned on the object (prior critical understanding), indispensable for conducting a good survey, such as observations unpublished, fruit of direct and frequent contact with the monument.

ARCHITECTURAL SURVEY.

**Architectural survey as a discipline,**

that uses all the sciences and all the techniques that can contribute to the reading, measurement and analysis of architecture in Its morphological, material, and structural aspects, patents or hidden



Approach to detail By G. Carbonara

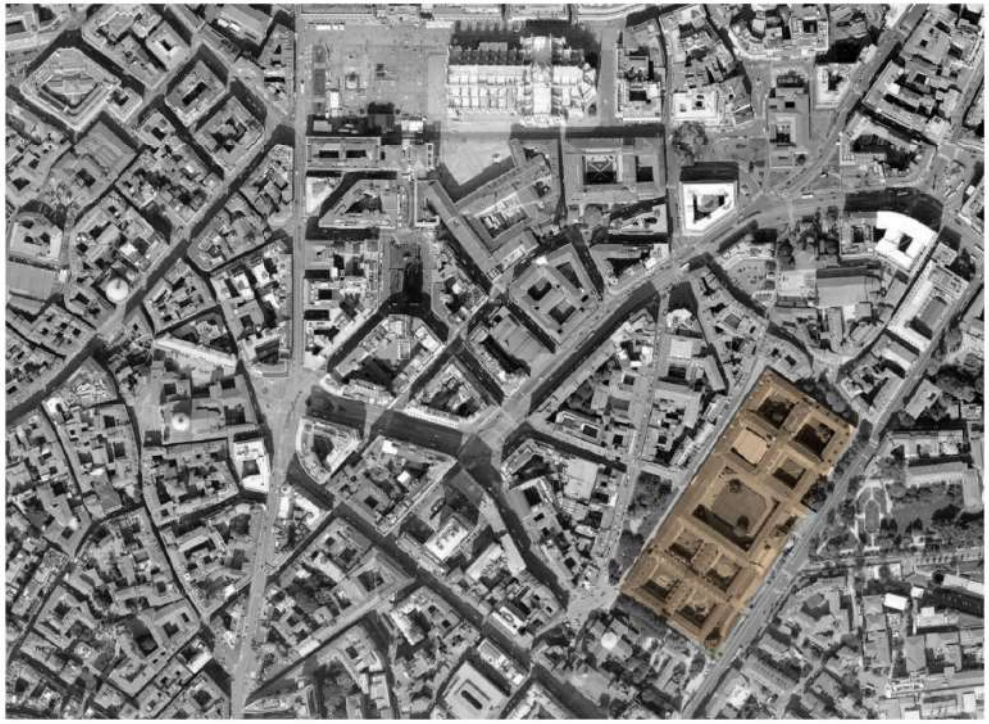
ARCHITECTURAL SURVEY.

**Every architectural organism is in relation with the environment.**

What is any architectural body living in a constant relationship with the environmental context, in its uprising This relationship must be taken into account.

Approach from the further to the close context:

Futher context



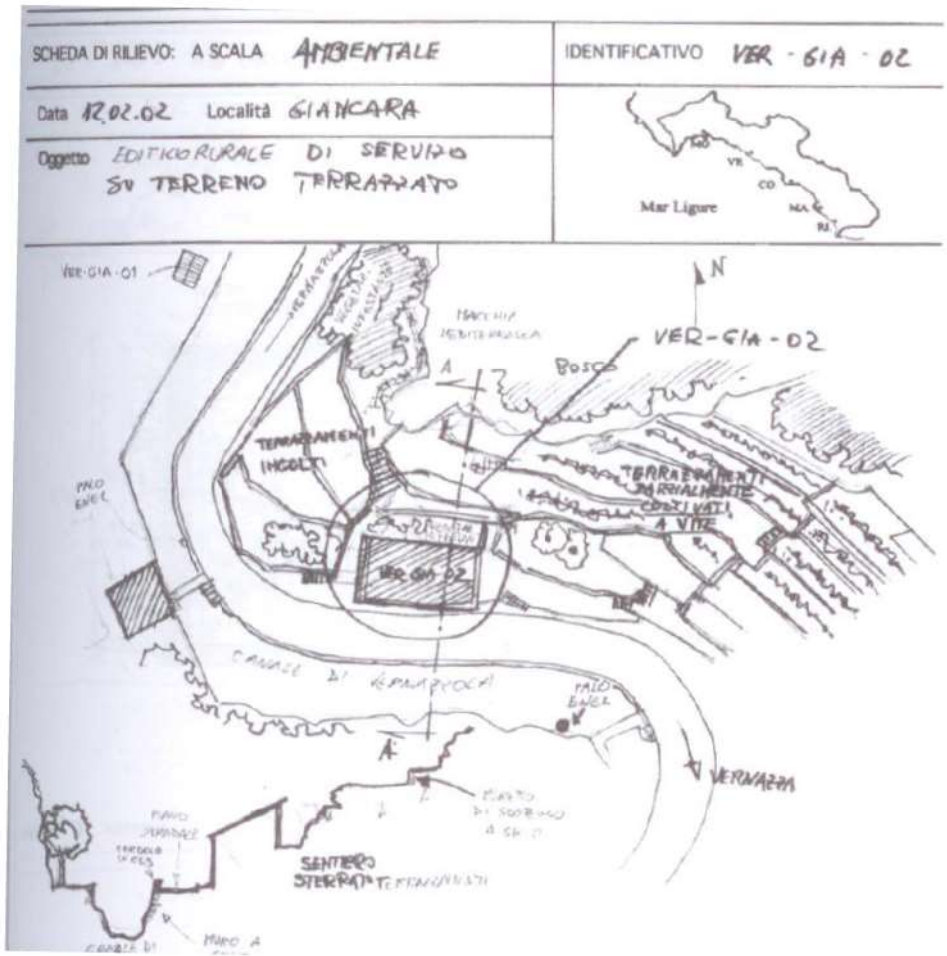
ARCHITECTURAL SURVEY

ARCHITECTURAL SURVEY.

**Relation with the environment.**

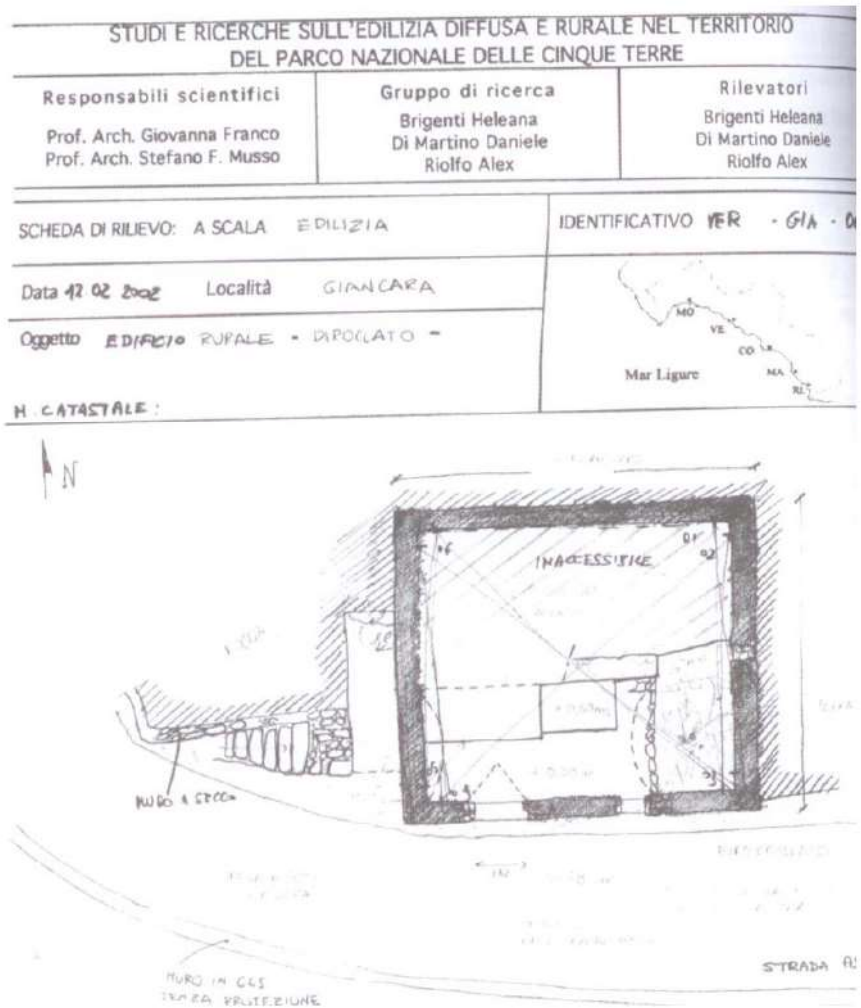
To approach:
designing the context.

The method is
important; not so much
the technology used.



ARCHITECTURAL SURVEY.

**Relation with the environment.**


STUDI E RICERCHE SULL'EDILIZIA DIFFUSA E RURALE NEL TERRITORIO
DEL PARCO NAZIONALE DELLE CINQUE TERRE

| Responsabili scientifici | Gruppo di ricerca | Rilevatori |
|---|---|---|
| Prof. Arch. Giovanna Franco<br>Prof. Arch. Stefano F. Musso | Brigenti Heleana<br>Di Martino Daniele<br>Riolfo Alex | Brigenti Heleana<br>Di Martino Daniele<br>Riolfo Alex |

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STRADA

To approach:

the close context.

# ARCHITECTURAL SURVEY.

## REGULATORY CRITERIA FOR THE SURVEY

In the programming and realization of the architectural survey, the following criteria must be taken into account:

a) Foresee the general scope, which can often require a project, a direction of the works and a final evaluation, according to the level of difficulty of the building.

b) Contextually consider both metric and technical research, as well as bibliographic, archival and iconographic research.

c) It is necessary to refer the location of the architectural body with respect to the National Cartographic System and the local reference adopted for the 1: 500 scale survey, if any, of the historical center to which it belongs.

d) The information obtained in the surveys can be considered as a partial component of a broader territorial database, so the surveys must be done in a computerized format.

e) The measurement systems and methods, as well as their tolerance, will be appropriate to the scale of representation and the expected contents.

f) The content of the representation must be related to the scale planned or adopted for the restitution and for the purpose of the investigation.

g) Consistent procedures should be established, as clearly as possible, for the realization of the direct, topographic and photogrammetric survey. The use of methods and techniques of various types should be referred to the general project of the investigation.

# ARCHITECTURAL SURVEY.

## THE SURVEY AS AN OPEN SYSTEM OF KNOWLEDGE.

In general it is necessary to foresee:

- The realization of the general, or basic, uprising, and of the thematic survey, covering the totality of the architectural organism and its significant themes, in everything concerning its value and its conservation; as well as the survey, differentiated by types, of decorative elements and permanent furniture.
- The development of a sufficiently extensive measurements campaign to properly define the geometric model of the architectural body and represent it in all its parts.
- The reference of all measurements to a single system, conveniently preselected.
- Representations in variable scales, according to the dimension of the object, its characteristics and the objectives of the survey.
- That all the graphic elaborations are provided with a graphic scale.
- Ensure that the measures have a general accuracy compatible, on the one hand, with the error of the graphics and with the purpose of the survey and, on the other, with the possibilities offered by the computer tools.
- Adopt all the necessary precautions to guarantee the metric stability of graphic representations.
- To carry out an exhaustive and scientifically adequate photographic documentation, in addition to bibliographic, archival and iconographic investigations that are suitable for the purpose sought.

# ARCHITECTURAL SURVEY.

## THEMATIC SURVEY

The survey may vary from one building to another, depending on its characteristics; However, the general scheme can be the following:

a) Architectural survey, including dedication to different uses.
b) Survey of the structure and the corresponding table.
c) Survey of the architectural elements of value and typological relevance, with formation of the corresponding inventory.
d) survey of pavements and roofs.
e) survey of the walls and the coverings, with their constituent materials, as well as their states and degrees of conservation.
f) Table and inventory of constituent elements.
g) Survey of the facilities with the inventory of their utility. and on the basis of the contributions of the documentary investigation
h) The chronology of the construction phases.

# GEOMETRICAL SURVEY

# MEASURE METHODS

The measurement systems can be grouped according to the complexity of the instruments used.

A. **Direct or simple methods**

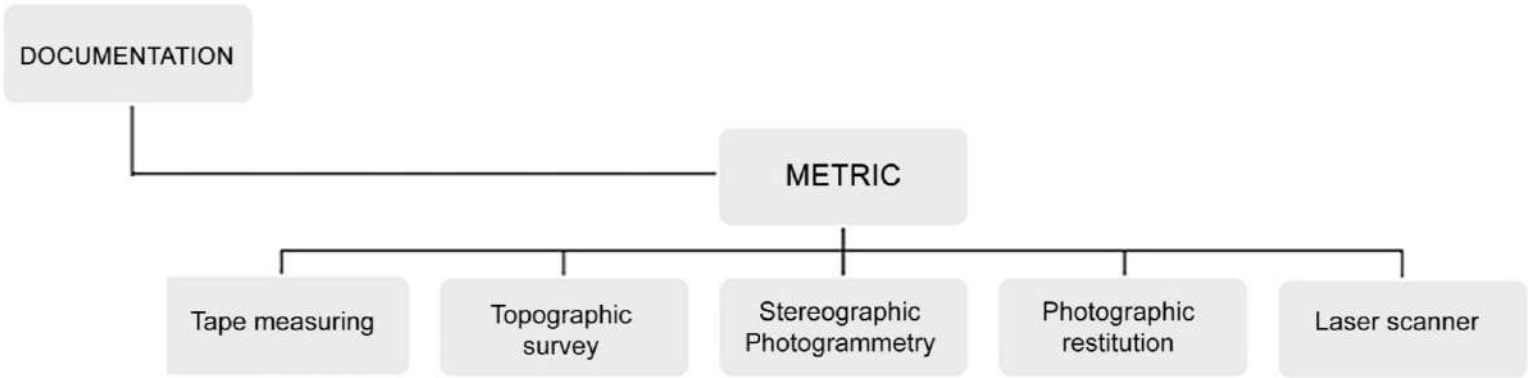
B. Topographic methods

C. Photographic methods

D. Photogrammetric methods

# MEASURE METHODS

The measurement systems can be grouped according to the complexity of the instruments used.



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