



INVENTORY AND SURVEY OF HISTORICAL BUILDINGS

INVENTORY – TRADITIONAL METHODS



Erasmus+

SURVEY OF HISTORICAL BUILDINGS

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graph TD; A[SURVEY OF HISTORICAL BUILDINGS] --> B[KNOWLAGE REVIEW]; A --> C[INVENTORY]; A --> D[IN SITU TESTS]; A --> E[LABORATORY TESTS]
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*KNOWLAGE
REVIEW*

INVENTORY

IN SITU TESTS

LABORATORY TESTS

SURVEY OF HISTORICAL BUILDINGS

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*KNOWLAGE
REVIEW*

INVENTORY

IN SITU TESTS

LABORATORY TESTS

INVENTORY METHODS

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graph TD; A[INVENTORY METHODS] --> B[TRADITIONAL METHODS]; A --> C[MODERN METHODS]; B --- B_list["• measure tape, folding rule<br>• laser measure<br>• photogrammetry<br>• geodetic methods"]; C --- C_list["• 3D scanning<br>• spherical photos<br>• drone photos<br>• thermal camera"];
```

TRADITIONAL METHODS

- measure tape, folding rule
- laser measure
- photogrammetry
- geodetic methods

MODERN METHODS

- 3D scanning
- spherical photos
- drone photos
- thermal camera

INVENTORY METHODS

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graph TD; A[INVENTORY METHODS] --> B[TRADITIONAL METHODS]; A --> C[MODERN METHODS]; B --- D["• measure tape, folding rule<br>• laser measure<br>• photogrammetry<br>• geodetic methods"]; C --- E["• 3D scanning<br>• spherical photos<br>• drone photos<br>• thermal camera"]
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TRADITIONAL METHODS

- measure tape, folding rule
- laser measure
- photogrammetry
- geodetic methods

MODERN METHODS

- 3D scanning
- spherical photos
- drone photos
- thermal camera

METHODOLOGY FOR PERFORMING MEASUREMENTS

TRADITIONAL METHODS

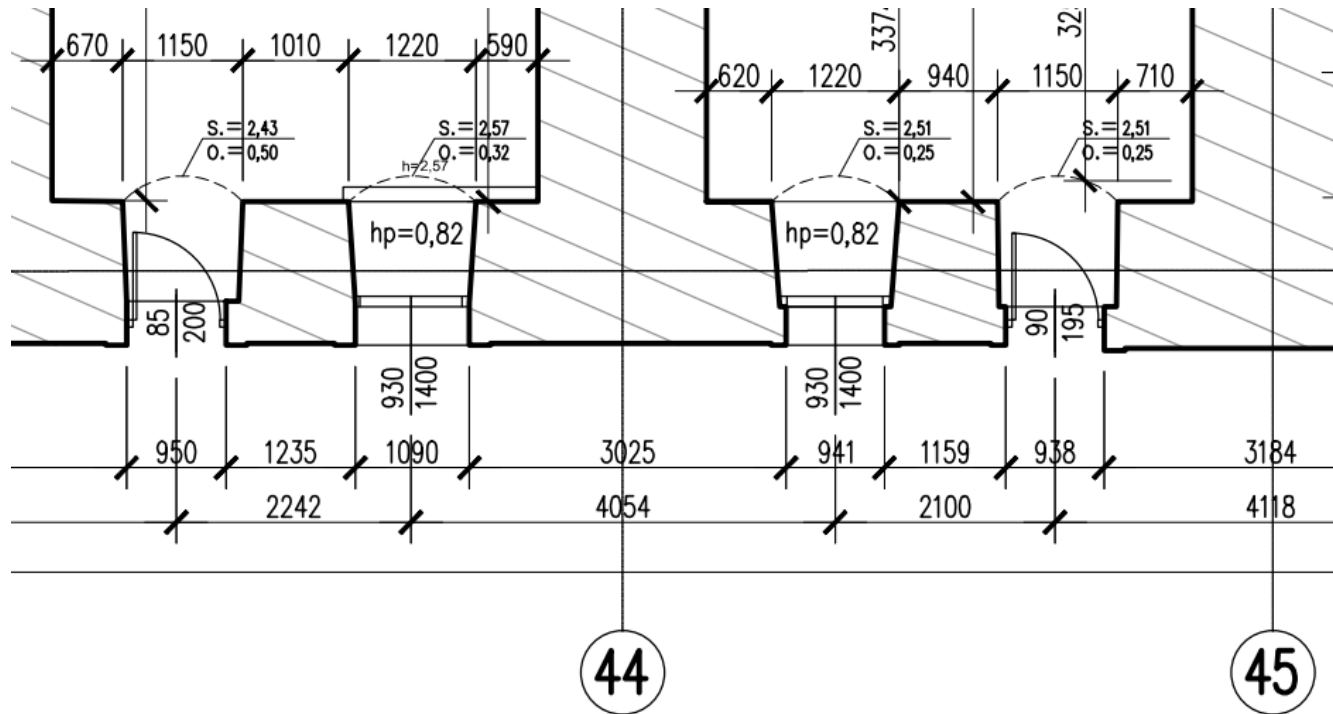
- For making traditional measurements, tapes, scoops and laser rangefinders are used. The obtained information should be converted into drawing documentation using traditional and computer methods.
- Inventory begins with a field vision, then a measurement sketch is prepared.
- To create horizontal projections, measurements are taken from all walls of the rooms and their elements, including details.
- Measurements should be made at one height. To avoid measurement errors, the so-called "String record", that is, successively read dimensions from the characteristic points on the wall.
- Long walls should be measured twice and the floor level should be set relative to the reference point adopted for the given object or its fragment.
- The thickness of the walls should be measured in places where the full dimension can be obtained directly or it can be made in sections.
- When performing measurements of horizontal projections, dimensions are given in the light of all openings and recesses, the height of window sills, vaults.
- Door and window openings should be measured both in the light of the opening and the frame.

METHODOLOGY FOR PERFORMING MEASUREMENTS

In the traditional inventory taking, it is extremely important to coordinate the projections of all floors with the use of communication divisions and openings. Dimensions should be given only if they have been measured directly and not on the calculation.

METHODOLOGY FOR PERFORMING MEASUREMENTS

TRADITIONAL METHODS



METHODOLOGY FOR PERFORMING MEASUREMENTS

TRADITIONAL METHODS. Advantages and disadvantages.

- The traditional method is extremely time-consuming and requires a lot of work, and also does not always give the opportunity to accurately measure items due to their unavailability.
- Measurements performed in a manual manner do not give the possibility of mapping the geometry of projections, therefore this method is recommended only for simple objects.
- There is also a high risk of measuring error by the measuring person.
- An advantage of the traditional measurement method is the possibility of making a detailed analysis of the structure under construction.

METHODOLOGY FOR PERFORMING MEASUREMENTS

TRADITIONAL METHODS



PHOTOGRAMMETRY

Photogrammetry is an accurate technique for making an inventory of objects. The effect of the photogrammetric study is inventoried vector drawings. This method is extremely helpful in the technical documentation of the façade and external contour of the building.

Photogrammetry allows first of all for precise capture of surfaces decorated with details, which makes it useful in the case of historic buildings.

Elevation views made on the basis of this method can be used as a basis for creating chronological stratification at further stages of research, while in the case of restoration and restoration works, they can be used in the inventory of damage.

Basically, converting a photogrammetric technique into inventory drawings is very time-consuming. The pictures should be drawn each time. Inventory created in the photogrammetry method can also function as plans, because their implementation is consistent with the scale of the object.

PHOTOGRAMMETRY

Photogrammetry, like traditional photography, consists in taking pictures with the difference that in the presented pictures there are no geometry disturbances caused by the perspective. Thanks to photogrammetry, it is possible to cover hard-to-reach elements with measurements, because image registration takes place without physical contact with the building.

Photogrammetry is a technique for making measurements, recreating shapes, sizes and mutual relations between the location of objects in a given area on the basis of photogrammetry photographs called photograms.

The image recorded using the photogrammetric method reflects much more information than traditional measurements would have. Therefore, this material is an extremely valuable archival material, especially in the case of historic buildings.

PHOTOGRAMMETRY

To create a photogrammetric study, the object should be photographed from at least two points. This allows a mathematical reproduction of the position and orientation of each of these photographs in space, and it is also possible to see the object image spatially. In combination with the geodetic determination of the coordinates of points reproduced in photographs, it is possible to embed the received three-dimensional images in space.

PHOTOGRAMMETRY

PHOTOGRAMMETRY Raw ortho picture

A rectified elevation view consisting of a dozen or so pictures after the process of processing selected images has been completed.

Image without processing and retouching.



Source: <http://www.wrogeo.pl/pl/fotogrametria/>

PHOTOGRAMMETRY

PHOTOGRAMMETRY Ortho correction

Elevation after leveling the color levels - the color close to the original.

Unnecessary details were removed, i.e. window frames and doors, as well as details that did not form part of the façade. Empty places completed uniform color.



Source: <http://www.wrogeo.pl/pl/fotogrametria/>

PHOTOGRAMMETRY

PHOTOGRAMMETRY Generated image final

Elevation view with a section frame,
scale 1:25



Source: <http://www.wrogeo.pl/pl/fotogrametria/>

PHOTOGRAMMETRY

PHOTOGRAMMETRY

Line drawing

In order to obtain a full elevation inventory
A vector layer should be created.

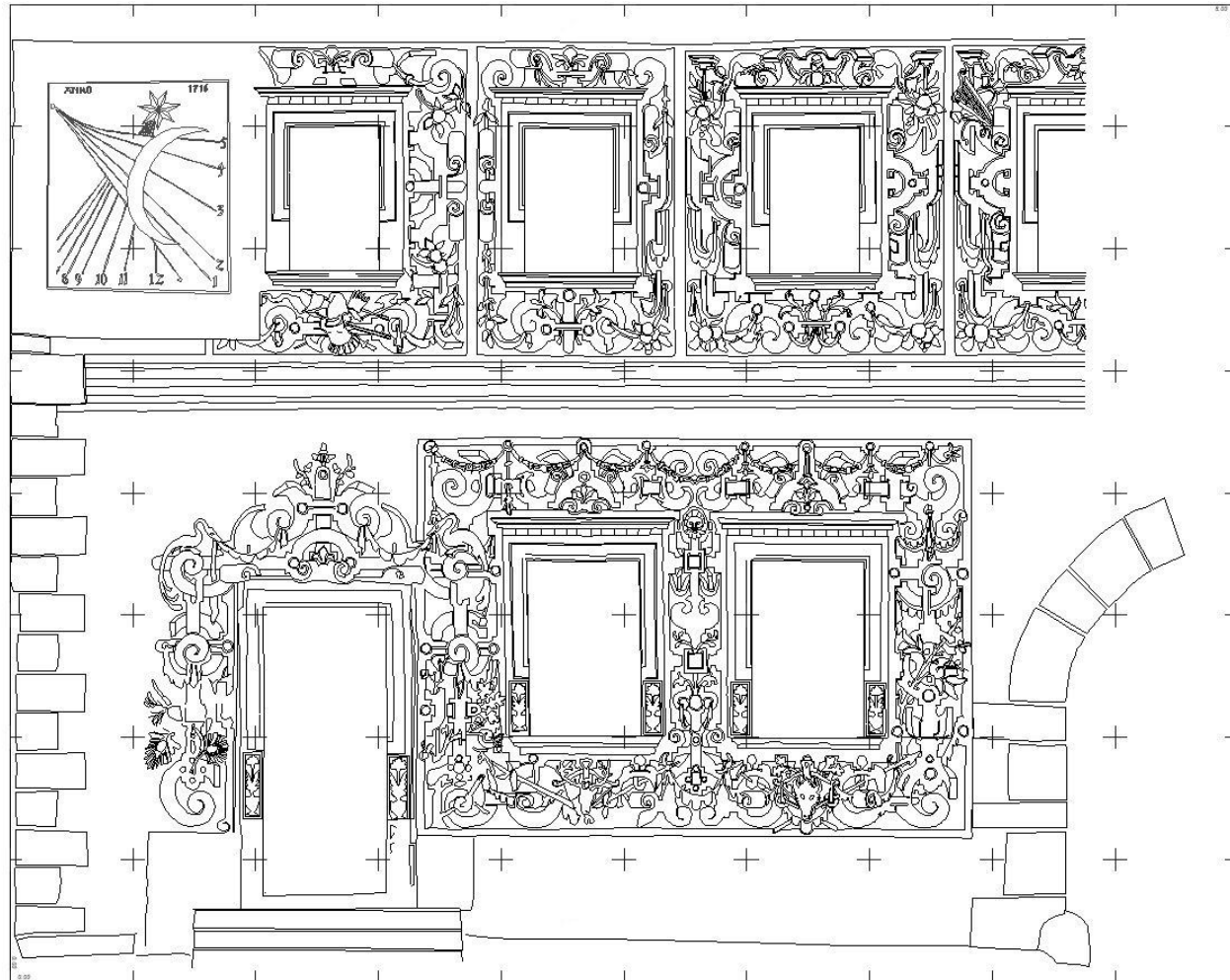


Source: <http://www.wrogeo.pl/pl/fotogrametria/>

PHOTOGRAMMETRY

PHOTOGRAMMETRY Line drawing

Elevation view with a section frame,
scale 1:25



Source: <http://www.wrogeo.pl/pl/fotogrametria/>

PHOTOGRAMMETRY

PHOTOGRAMMETRY Hybrid development

Elevation view with a section frame,
scale 1:25

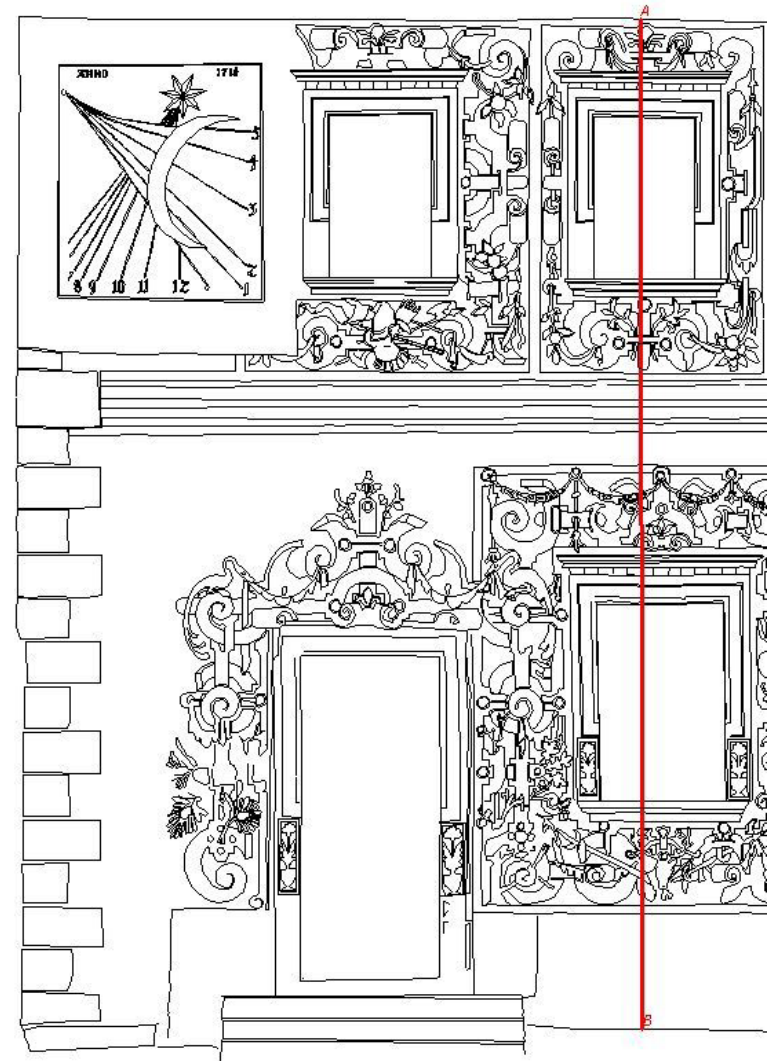
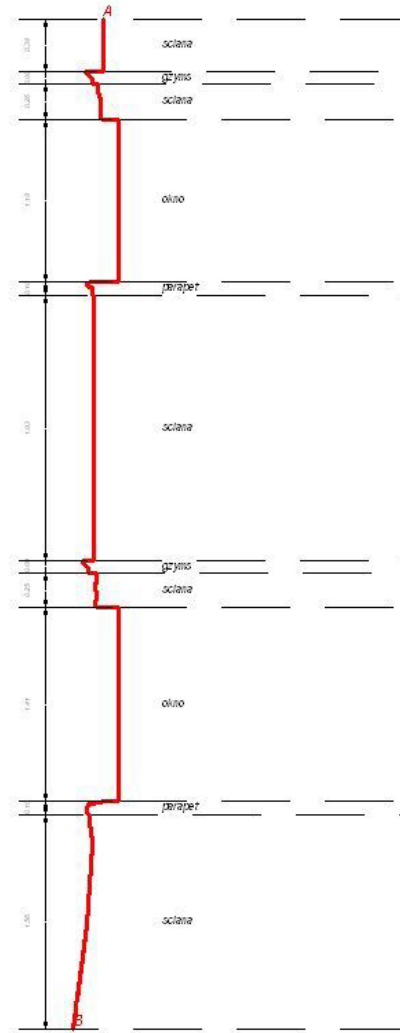


Source: <http://www.wrogeo.pl/pl/fotogrametria/>

PHOTOGRAMMETRY

PHOTOGRAMMETRY Section drawing

The cross-section of the façade is made according to the given line.



Source: <http://www.wrogeo.pl/pl/fotogrametria/>



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