



GENERAL BUILDING ENGINEERING

WALLS IN HISTORICAL BUILDINGS



Erasmus+

MASONRY CONSTRUCTIONS

Wall structures are characterized by the fact that they are made of small elements, currently called wall elements. They may be stone elements, ceramic fired or from raw clay (brick, hollow bricks), light concrete (blocks, blocks), from cellular concrete (aerated concrete blocks). [6]



Fig. A stone wall. [2]

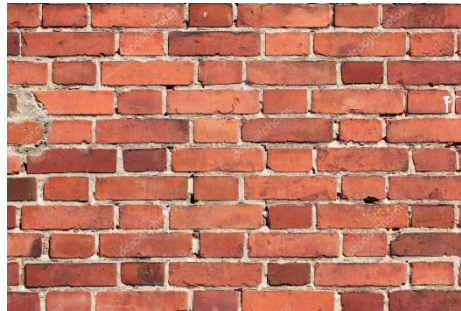


Fig. Brick wall. [2]



Fig. Brick wall. [2]

Building materials

The historic buildings used, among others: [8]

- Limestone (white and gray-white).
- Sandstone (yellow, gray, pink).
- Granite (gray, pink).
- Basalt (black).
- Bog turf (dark brown).
- Serpentinite (green).
- Marble.



Fig. The soddy ore. [1]



Fig. Serpentinite. [1]

TYPES OF HISTORIC STONE WALLS

We divide the stone walls into: [8]

- „Wild walls”.
- Walls made of broken sorted stone.
- Walls made of layered stone.
- Stone walls.
- Megalithic walls.
- Cyclops walls.
- Walls with blows.

„WILD WALL”

Walls made of unworked field stones or broken, unsorted stones, laid on mortar or dry. [8]



Fig. An example of a wild wall. [3]

WALLS WITH BROKEN SORTED STONE

Walls made of broken, sorted stones obtained from quarries or by fragmentation and grinding of erratic stones. [8]



Fig. An example of a masonry wall made of sorted stone. [5]

SURFACES OF LAYERED STONE

Wall with a shape similar to irregular slabs, laid in a flat slab or in sloping rows, so-called "Opus spicatum" or fish bone. [8]



Fig. An example of a wall made of broken stone. [2]

RIVER STONE WALLS

Stacked with stones similar in shape to a rectangle. [8]



Fig. An example of a stone wall made of stone. [2]

MEGALITHIC WALLS

Prehistoric walls made of large scale dry stone blocks. [8]



Fig. An example of a megalithic stone wall. [2]

CYKLOP WALLS

Walls whose elements or their facing surfaces are made of cut and matched elements in the shape of irregular polygons. [8]



Fig. An example of a wall made of a cyclopean stone. [3]

WALLS WITH BLOWS

Layered in the head, cart and head and carriage layout. An alternative way of arranging blows of varying heights is formed by mosaic walls. The walls of blows with dimensions in the face close to a square laid in layers or in mosaics are called dice walls. [8]



Fig. Example of squared wall. [2]

EXAMPLES OF STONE WALLS



Thirteenth-century defense walls of Strzegom from broken basalt. [5]



Będzin's defensive walls, made of limestone. [5]

Examples of traditional bricks



Clay brick - a darker color obtained thanks to the admixture of ash in the mass of baked brick. [8]



Brick zendrówka - ceramic brick burnt to the glass transition limit. Its surface is shiny and darker than ordinary brick. [8]

Rodzaje wątków ceglanych

Średniowieczne: [8]

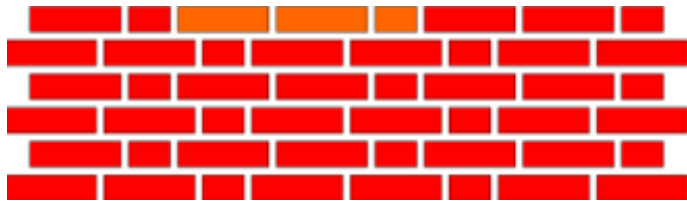
1. Wątek dwu i wielowozówkowy.
2. Wątek jednowozówkowy.

Nowożytne:[8]

1. Wątek holenderski.
2. Wątek główkowo – wozówkowy.
3. Wątek główkowy.
4. Wątek wozówkowy.

Multi-lane wall linkage

In the layers of the wall there are alternating single brick heads and two or more surfaces - a typical bond for the XII century walls in the 13th century [8]



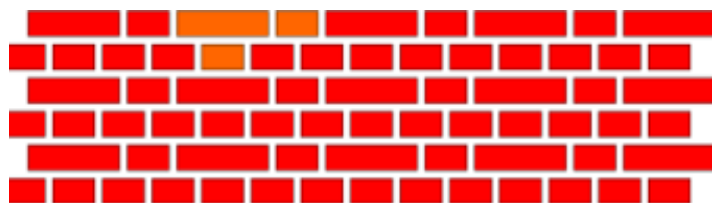
One-lane bond of the wall

The layers of the wall alternate heads and carts - the binding occurred from the late 13th century to the middle of the 16th century. [8]



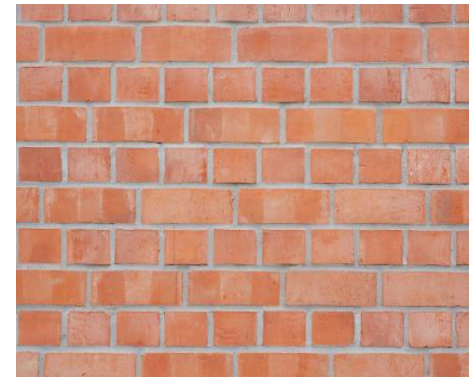
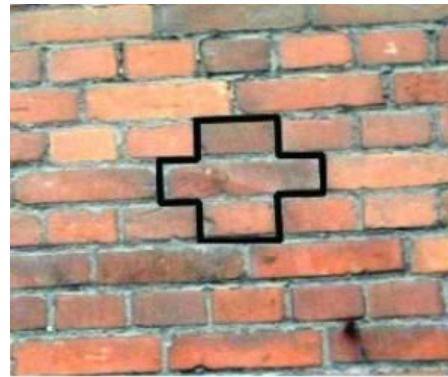
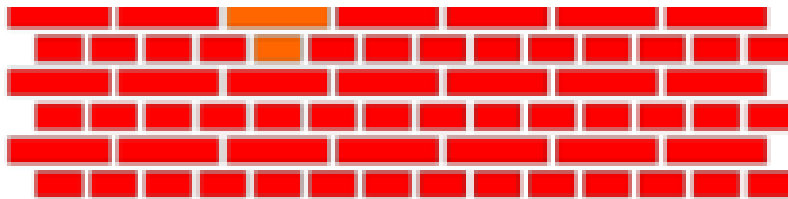
Dutch thread in a brick wall

The head layer follows the layer of heads and carts. [8]



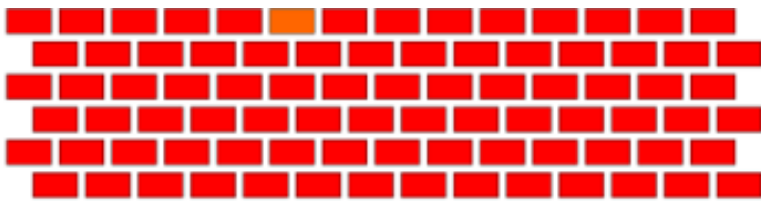
Cross-bonding of bricks

The wall consists of successive layers of heads and carts. This thread is divided into two systems: anvil and cross. In the latter, in subsequent layers, the joints are usually shifted by $\frac{1}{2}$ brick. [8]



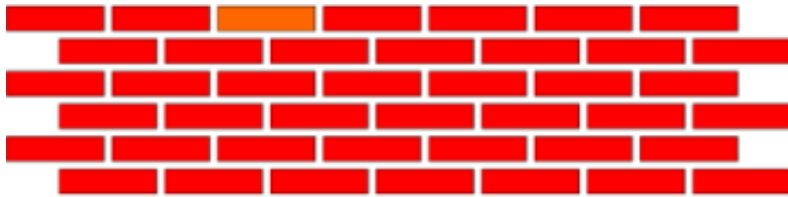
Head binding of bricks

The face of the wall composed of heads only. [8]



Brick bonding

The face of the wall composed of only bigger surface. [8]



EXAMPLES OF BRICK WALLS



Fig. The walls of the Malbork castle. [4]



Fig. Royal Castle in Warsaw. [1]

Bibliografia

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Help in collecting materials: Eng. Paweł Foryś

Preparation of the lecture: MSc. Eng. Bartosz Szostak



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