Walls

The tasks:

- choose the right types of the walls
- plan the rhythm of the works
- choose the most economical method for the works

The type of the walls?

- **Definition 1:** Wall: The loadbearing structure, that transmits the load of the building to the foundation.

- **The types:**

  1.) **Load bearing walls** – internal, external

  2.) **Non bearing walls** – internal, external

- **What is right order of the works?**

What is the wall ?

Choosing a kind of walls depends on:

- the function of the building (width, thermal insulation…)
- the stress in the structure
- the schedule and the cost of the building
- the structure of the building

Performance of the wall:

- strength – load bearing capacity
- thermal insulation capacity
- acoustic requirements
- water uptake / frost resistance
- fire resistance
- vapour transport capacity
- durability
- accuracy

Types of bricks

- *mudbrick (claymud)*

- *ceramic brick*

- *ceramic block*

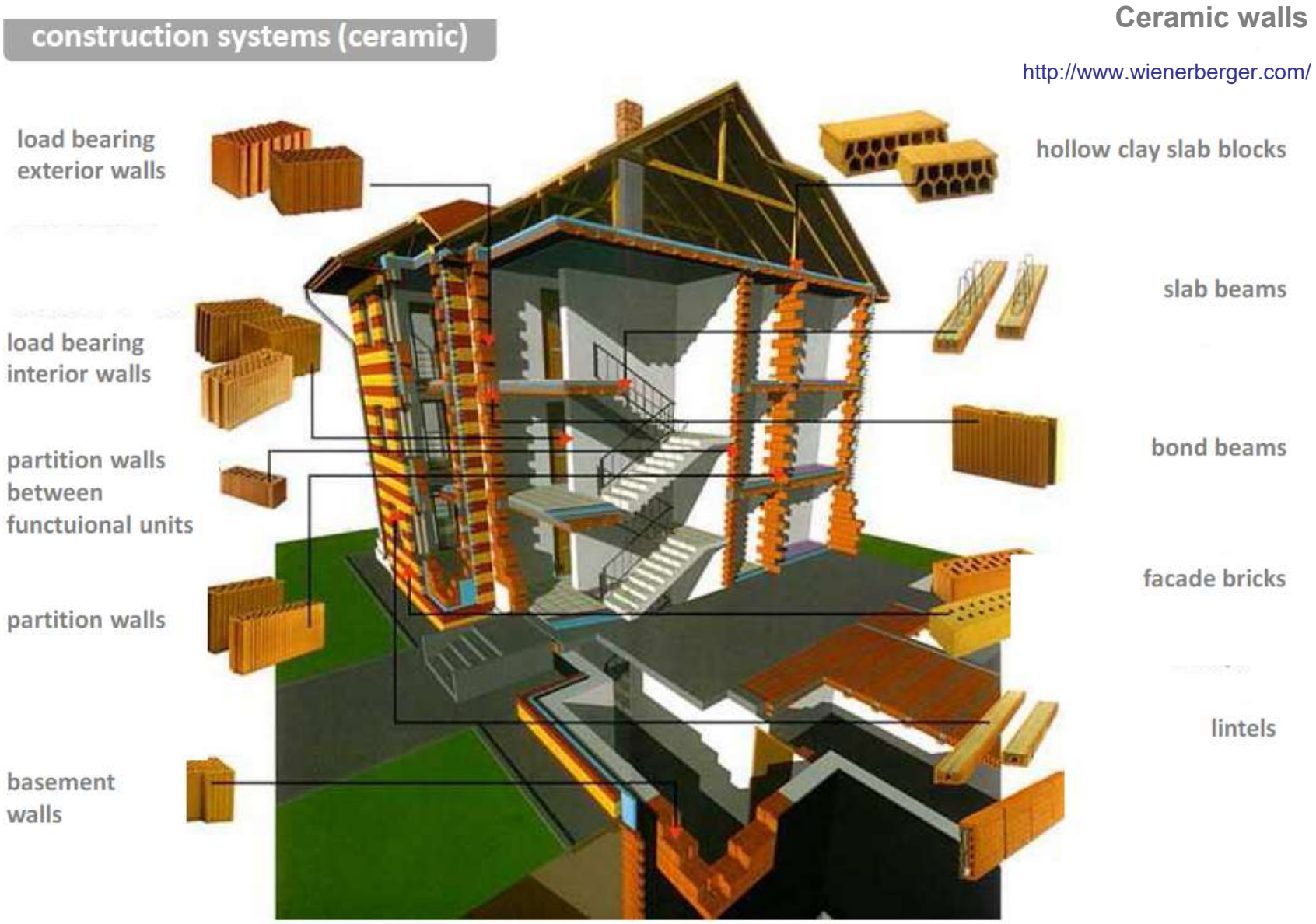
- *concrete block*

- *AAC block*

- *lime-sand brick &block*

- *insulating ceramic blocks*

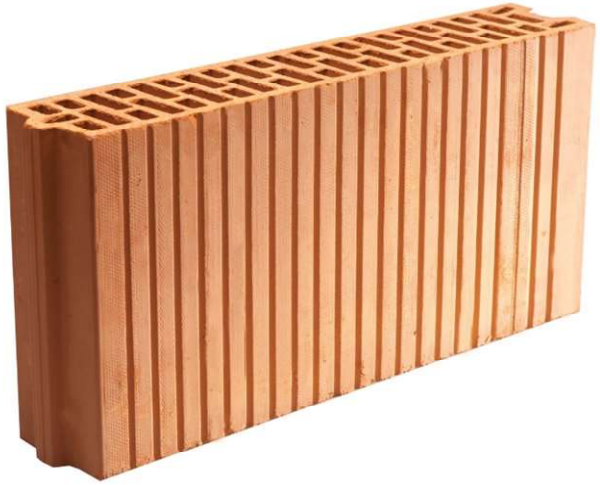
Construction system (ceramic)



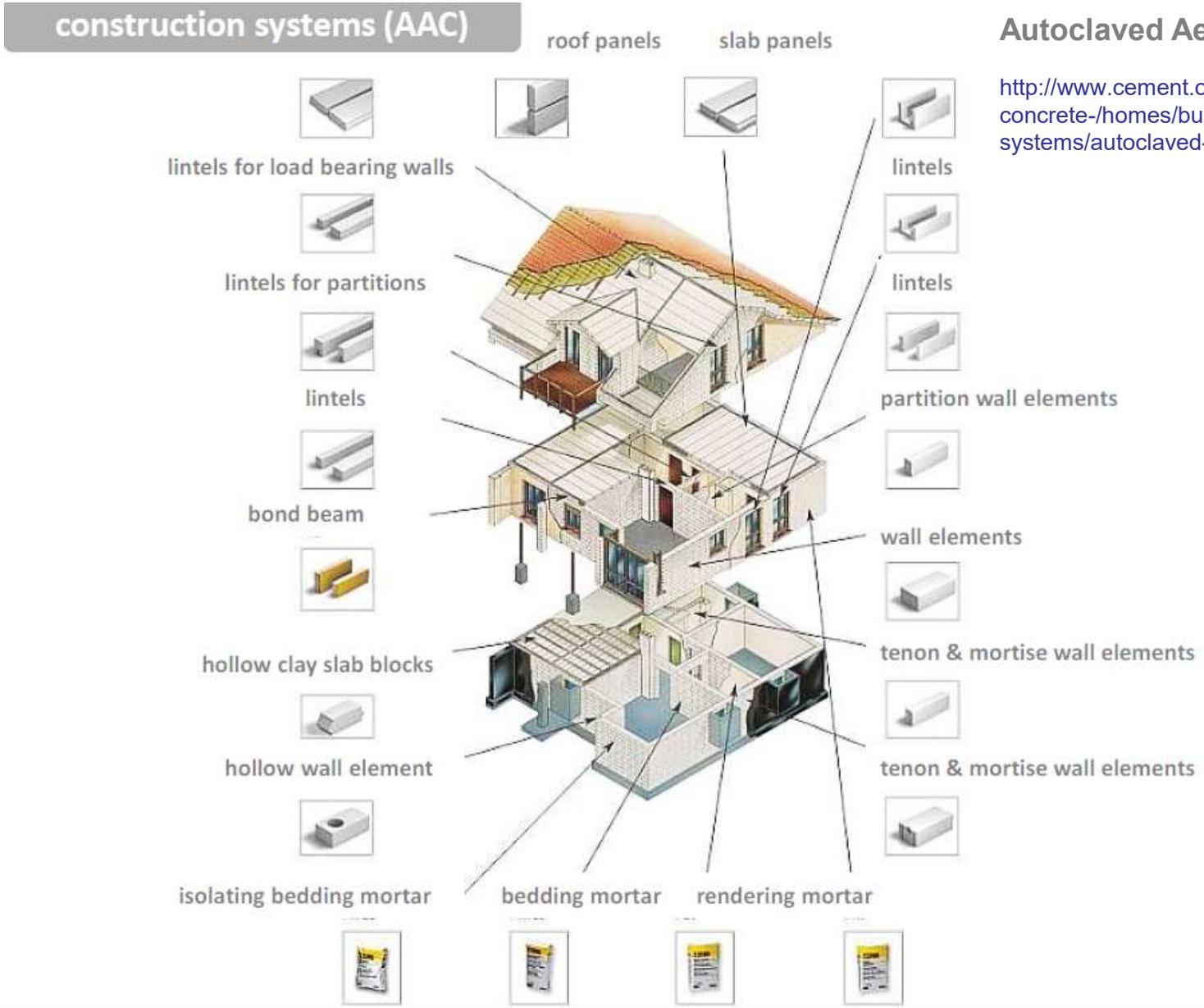
Construction system (ceramic)

Ceramic walls

http://www.wienerberger.com/



Construction system (AAC)



Autoclaved Aerated Concrete

http://www.cement.org/think-harder-concrete-/homes/building-systems/autoclaved-aerated-concrete

Construction system (AAC)

Autoclaved Aerated Concrete

The mortars

Type of material:

- mud mortar
- lime-mortar
- lime-cement mortars
- cement mortar

Contents of mortar:

- binder (lime, cement)
- aggregate (sand, stone dust)
- water
- admixtures and additives

The mortars

Application:

- **Traditional** – prepared on site
  (sand, lime, cement, water)

Properties:

clay in the sand,
not too high quality

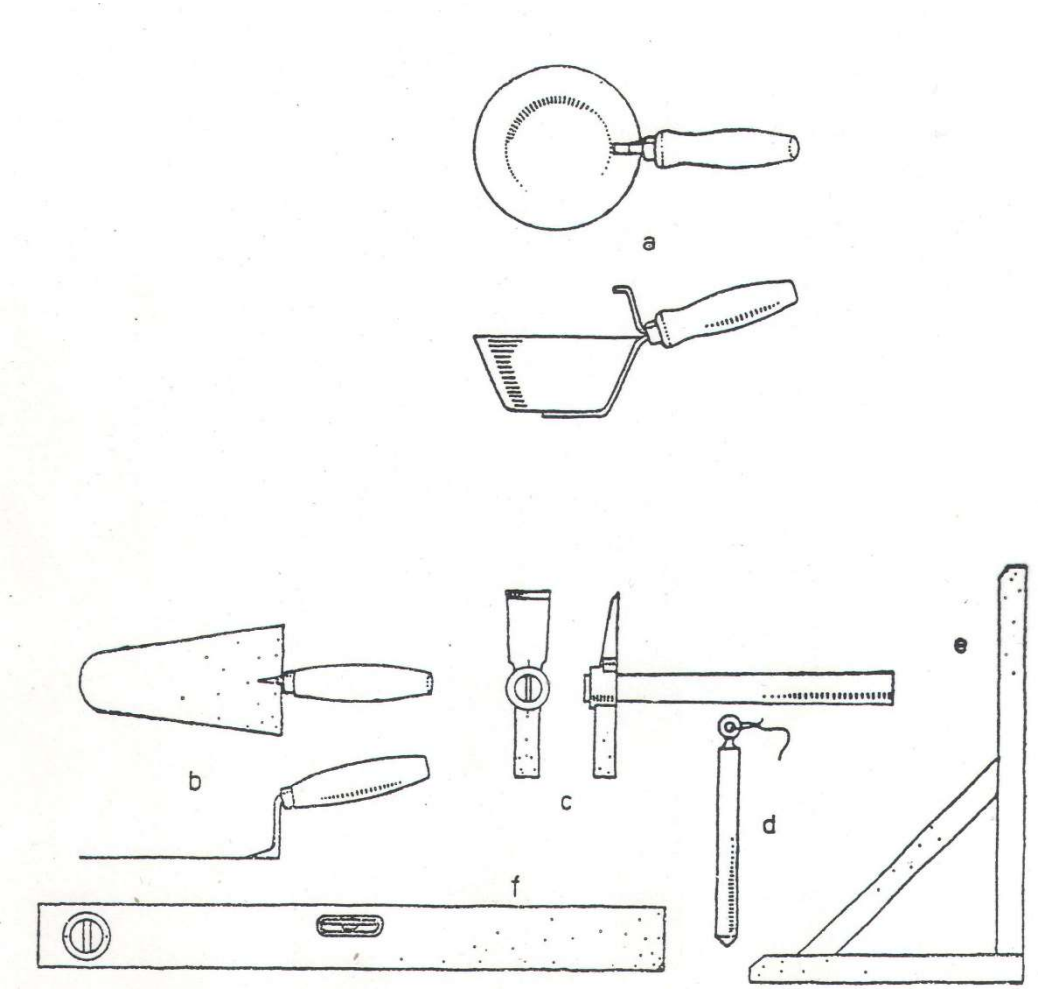
- **Pre-prepared** – mixed only with water on-site
  (special mortar mixture, water)

Properties:

clear mixture without any other things
most precise quality

The tools and machines

a.) Mason pan
b.) Trowel
c.) Mason hammer
d.) Plumb, plumbline
e.) Right angle
f.) Hand level



The tools and machines

a.) Hand saw

b.) Electric saw

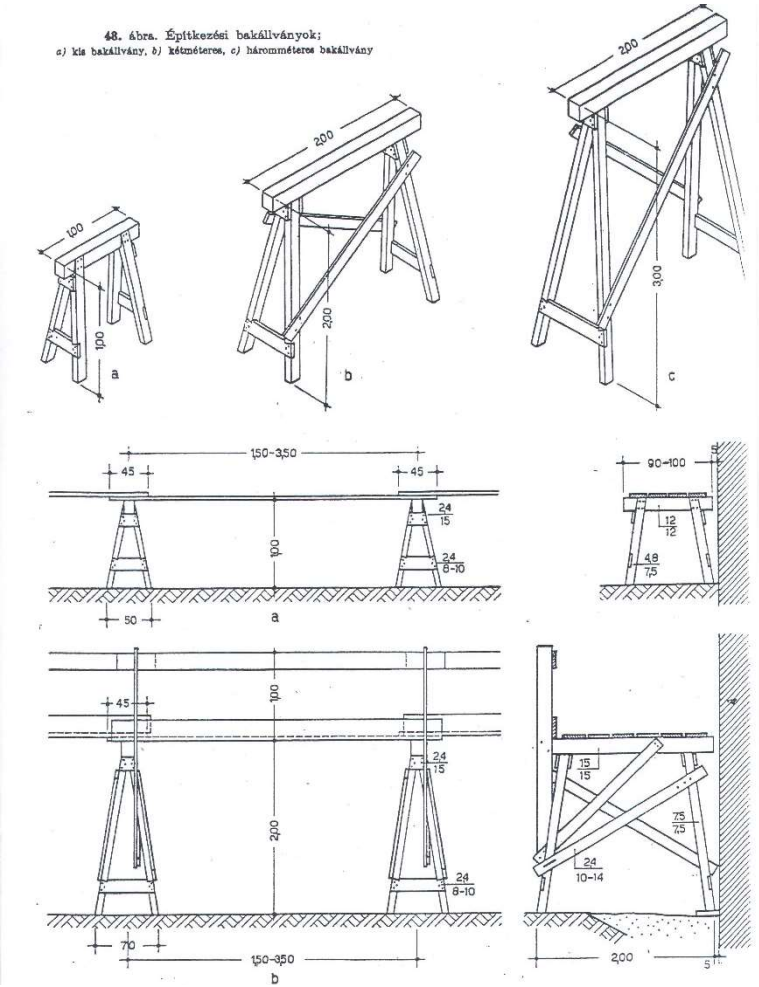
c.) Mortar mixer

The scaffolding

a.) Tranditional (wood)

Stand

planks



b.) Modern (steel)

The circumstances

The main steps:

- the right measurement of the workplaces
  minimum one building level or 300 m2
- the right place on the storey for the materials
  next to machines and workplace (walls)
- the right temperature
  (air temperature and temperature of the surfaces)
- Normally it's have to be more than +5 celsius
- +5-0C: We have to use warm mortals(+15C), and keep smaller space between te bricks
- 0-(15)C: We have to work under a „plastic cover"
- Under (-15): The work is forbidden!

Sequence of the work

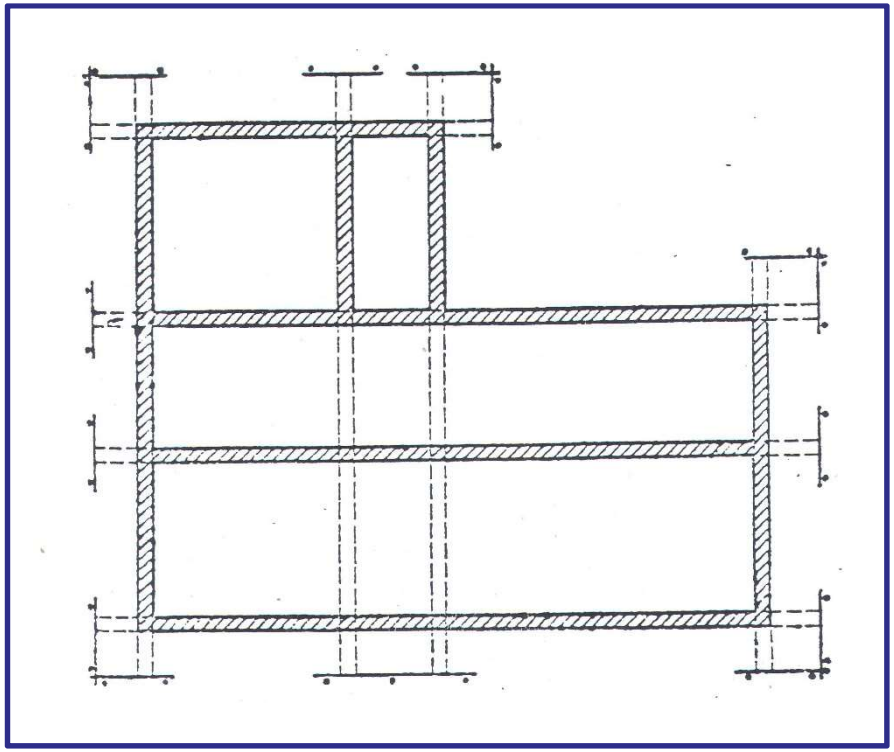
The main steps:

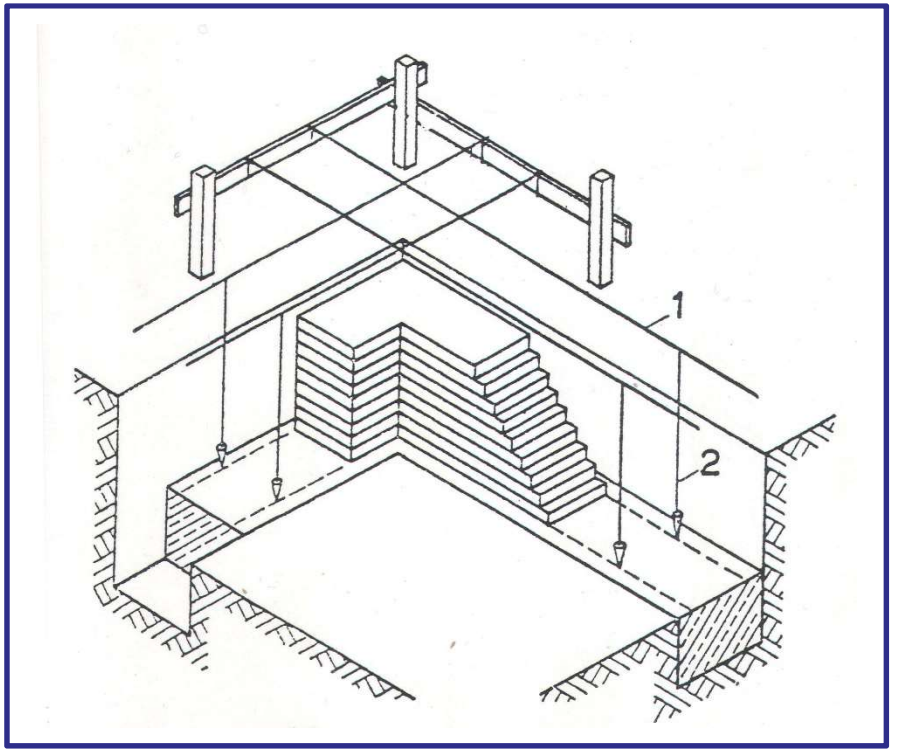
- alignment of the position of the walls (pillars..etc.)
- placement mortar on the basement (corner and central)
- starting the construction on the corners
- placing central bricks in the line of the wall
- building the wall
- placing the lintels
- finish the wall

Sequence of the work

The main steps:

- **alignment** the position of the walls (pillars..etc.)



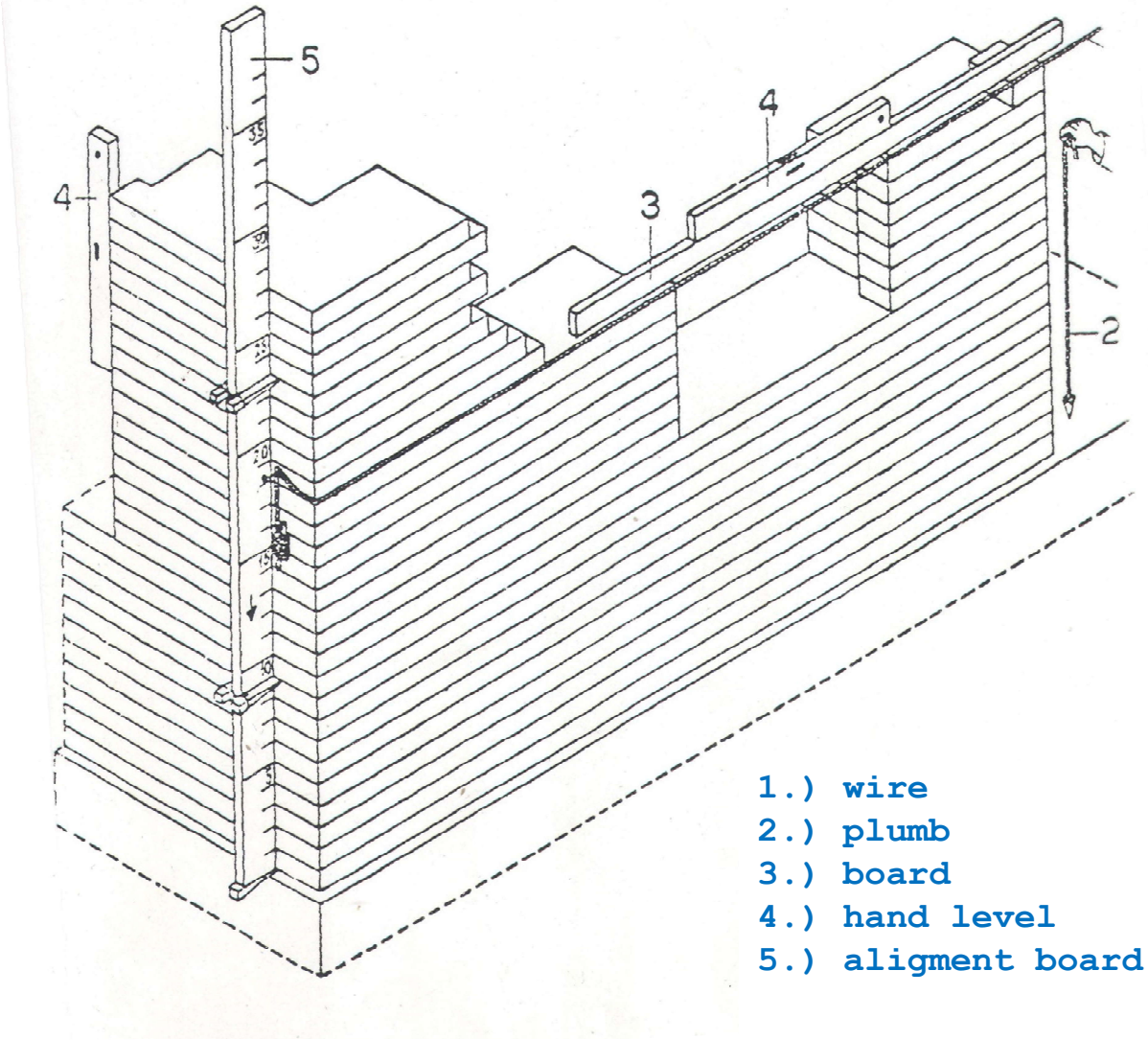


Placement of batter boards

Sequence of the work

The main steps:

- placement mortar on the basement (corner and central)
- starting the construction on the corners
- placing central bricks in the line of the wall
- building the wall
- placing the lintelns
- finish the wall



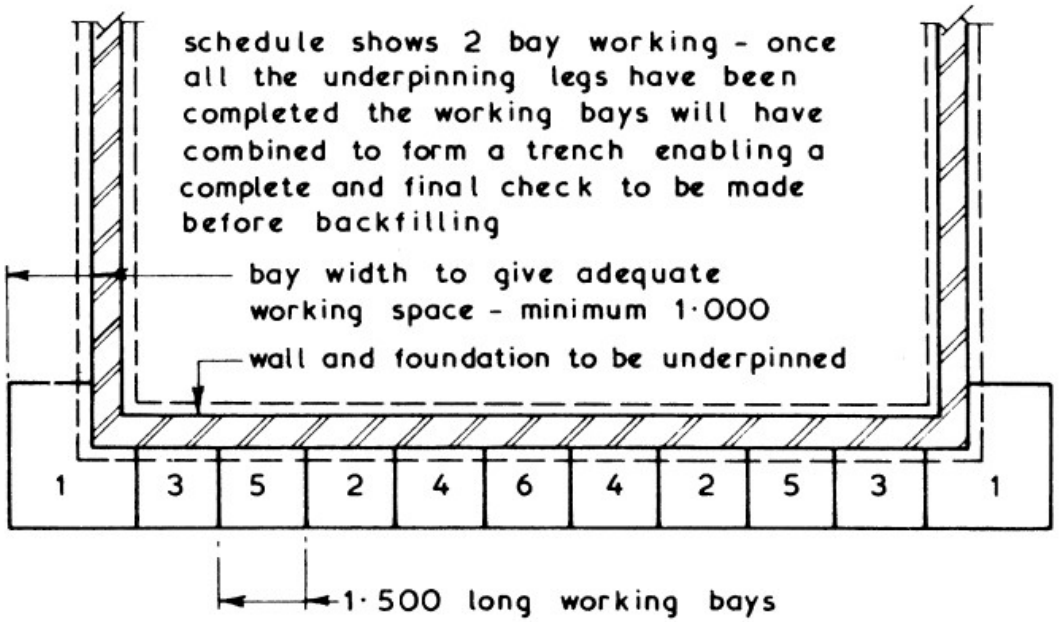
1.) wire
2.) plumb
3.) board
4.) hand level
5.) aligment board

The damage of the foundations

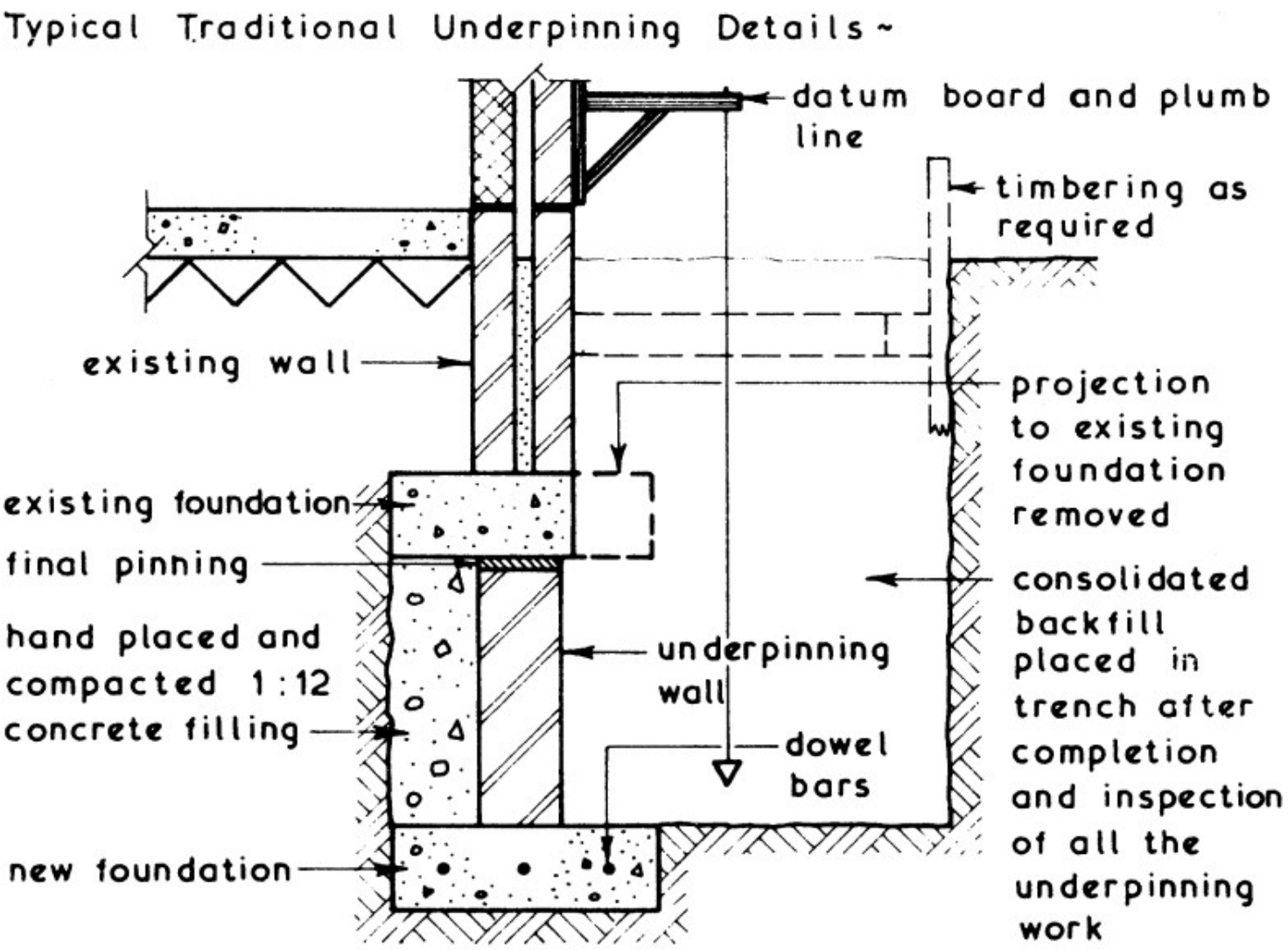
Underpinning to Walls ~ to prevent fracture, damage or settlement of the wall(s) being underpinned the work should always be carried out in short lengths called legs or bays. The length of these bays will depend upon the following factors:-

1. Total length of wall to be underpinned.
2. Wall loading.
3. General state of repair and stability of wall and foundation to be underpinned.
4. Nature of subsoil beneath existing foundation.
5. Estimated spanning ability of existing foundation.

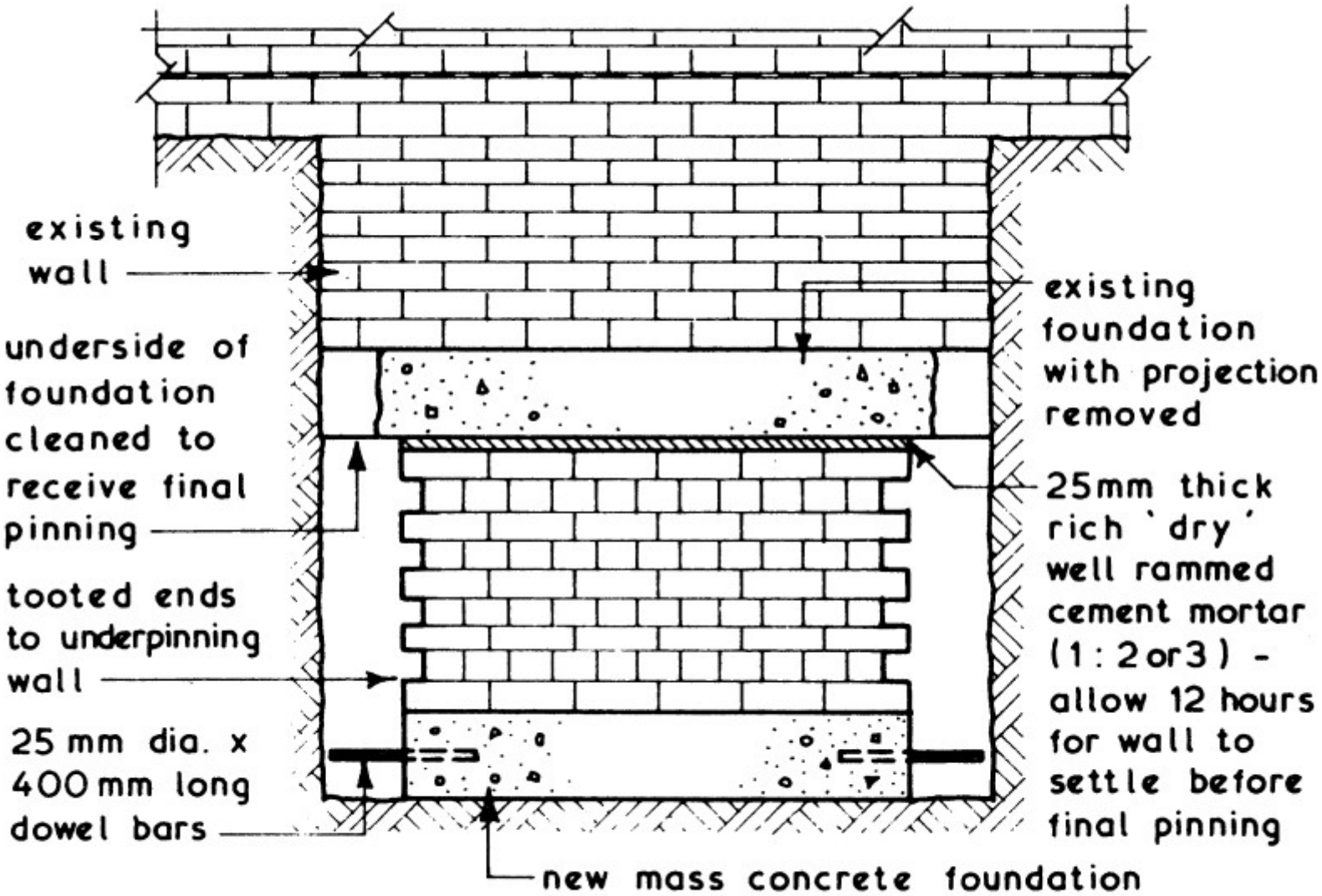
Typical Underpinning Schedule ~



The damage of the foundations



The damage of the foundations



UNDERPINNING BAY ~ TYPICAL ELEVATION