



ECVET
Earth
Building

Building with earth - masonry, cob, rammed, CobBauge

Unit B common part

Learning outcomes

Levels **1+2**

KNOWLEDGE

SKILLS

- What is earth building –
- Earth building techniques and traditions
- Seasonal appropriateness and timing
- Protection before, during and after building: covering choices, and how they aid or impede drying
- Basic knowledge about how earth building works (physics/structural behaviour)
- How high to build according to the technique, weather and site conditions
- Foundations, wall base and DPC (Damp Proof Course)
- Connections with other walls or components bonding techniques
- Fixing structural or non-structural elements, insulation, etc.
- Protection / reinforcement of edge and corner
- Top of walls, interface with other built elements
- Machinery and tools for mixing, cutting, lifting, laying, placing, compacting
- The impact of drying on speed of build
- The ergonomics of the workstation
- Health and safety regulations

Preparatory works and planning

- Place during-the-work protection
- Control mix moisture and/or fibre content under supervision
- Protect adjoining surfaces

Execution

- Create capillary break (e.g. place DPC Damp Proof Course) under supervision
- Connect earth walls to other components (earth or not), and use bonding techniques under supervision
- Place/fix structural and non-structural elements under supervision
- Make chamfered, shaped or reinforced corners under supervision
- Key/dampen day work
- Produce required surface finish under supervision

Site organisation

- Select appropriate tools, machinery, equipment under supervision
- Protect the work during and after building (water, damage/abrasion, paint...)

COMPETENCE

Level 1

Execution, quality control and coordination within the earth building team

- Take instruction on work in accordance with the schedule of works, adjust to general work process on site,
- Identify problems and report
- Control quality of the own work at each step
- Respect health and safety regulations
-

COMPETENCE

Level 2

Decision making process

- Recognise conditions including weather and seasonal issues which may require precautions

Execution, quality control and coordination within the earth building team

- Take instruction on work in accordance with the schedule of works, adjust to general work process on site
- Identify problems and report
- Control quality of the own work at each step
- Respect health and safety regulations

ECVET Earth Building	Building with CobBauge - Cob and Light Earth in Formwork	Unit B sub unit
----------------------	---	----------------------------

--	--

Learning outcomes	Level 1+2
--------------------------	------------------

SPECIFIC KNOWLEDGE	SPECIFIC SKILLS
---------------------------	------------------------

<p>CobBauge – Using structural cob and light earth together in formwork for thermal optimisation</p> <p>PLACING/COMPACTING/SHAPING</p> <ul style="list-style-type: none"> ○ Placing and compacting tools and methods ○ Use of movable formwork (see F) ○ Use of mesh frames, geo-textiles etc <p>- Factors influencing the final wall surface quality</p> <p>- Drying process:</p> <ul style="list-style-type: none"> ○ Differential shrinkage of cob and light earth ○ The use of compatible materials and techniques to fill shrinkage gaps <p>- Remedial measures for wall movement during construction</p>	<p>Level 1 – Observe and follow instructions on basic tasks</p> <p>Level 2 – Follow instructions and carry out range of tasks under supervision</p> <p>COB ELEMENT</p> <ul style="list-style-type: none"> - Lift and place cob mix inside the formwork: by hand, pitch forks, digger, bucket, avoiding disaggregation - Use temporary braced formwork to create vertical separation and tothing between cob and light earth layers - Work to continuous and horizontal lifts (how high?) - Compact the cob using feet or tampers - Periodically check the position and stability of the formwork (no lifting, plumb, alignment, tightness) - Periodically check that the mix is compacted without voids through the mesh - Make sure the cob and light earth surfaces are level before loading new cob - Remove surplus cob at the surface before stripping formwork <p>LIGHT EARTH ELEMENT all under instruction /supervision</p> <ul style="list-style-type: none"> - Remove temporary braced formwork - Lift and place light earth mix in formwork adjacent to compacted cob layer, by hand, bucket, shovel - Manage the compaction process according to the mix requirements - Compact the light earth gently by hand or with wooden tampers - Periodically check that the mix is correctly compacted , lightly but without voids, through the mesh
---	--

Criteria and Indicators for the Assessment of Skills	Level 1+2
---	------------------

Criteria	Indicators
-----------------	-------------------

Building in lifts and infill	<p>All tasks completed under supervision</p> <ul style="list-style-type: none"> - The mixes are even and controlled - The wall surface has a uniform appearance - There aren't any observable weak points due to lack of density - The cob and light earth are placed correctly and well bonded - The mass earth and light earth are correctly compacted within the formwork
------------------------------	--

	- The lift heights are even and correct
Compacting	Manual tamper and feet are used correctly to compact the cob and light earth Temporary formwork is used to correctly separate and tooth the mixes The compacted mixes are finished clean and level before loading a new layer
Quality of details	- Simple details are executed correctly as instructed
Finishing works after stripping	- Surplus cob at the surface is removed before the formwork is stripped
Protection	- The work has efficient appropriate protection during and after completion - Materials are protected - The adjoining surfaces are protected

Ensure that standards of work and materials comply with relevant codes of practice and to current standards.