

ECVET Earth Building	Building with earth - masonry, cob, rammed	Unit B
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Learning outcomes		Level 5
KNOWLEDGE	SKILLS	
<ul style="list-style-type: none"> - Advantages of earthen materials from a local and global sustainability standpoint: embodied energy, carbon intensity, recyclability, toxicity, transport of extracted material, use of water, use of local raw material, socio-economic benefits versus financial costs - Different earth building techniques old and new - Specific planning needs for earth construction sites <ul style="list-style-type: none"> o Protection during building and until completion: equipment and time o Sourcing and providers, storage and material handling, costs o Transport o Behaviour of earth materials and construction with water o Changes in earthen structures during building: shrinkage, drying, humidity, final strength, final surface finish, efflorescence, mould - The stresses applied on a structure according to the contract documents, regulations, site and natural hazards (i.e. seismic, flood, snow...) - Innovation and development related to earth construction - Earth construction professionals <ul style="list-style-type: none"> o networks o qualifications o providers & contractors - Codes and regulations in respect to earth construction 	<p>Planning</p> <ul style="list-style-type: none"> - From the contract documents, <ul style="list-style-type: none"> o identify the work packages which include earth works o identify the subcontracts where elements are directly connected to earthen structures o analyse the coherence and functioning of the whole o propose alternative solutions if necessary - Include earth building activities into the health & safety plan <p>Coordination</p> <ul style="list-style-type: none"> - Organise the workforce and coordinate the team for optimum workflow - Adhere to and implement environmental protection standards regarding waste, environment and heritage - Organise a specific waste management plan (not mix earth with waste) and re-use of earthen materials - Ensure the stability of the built element during building and drying, instruct others putting temporary protection and propping - Optimise the drying process according to site conditions - Provide weather protections - Deal with unexpected issues regarding water exposure and recognize the signs before damage - Organise demonstration visits - Liaise with and control various trades related to earth construction - Modify program against earth related incidents - Document work progress and quality - Provide specific recommendations for maintenance in the user manual for clients and other professionals <p>Controls</p> <ul style="list-style-type: none"> - Check humidity, quantity and quality of delivered materials and storage conditions - Assess the quality of construction material (visual and manual examination of homogeneity, final surface finish, for example through quality control samples) - Control the correct application of the site induction plan - Check the correct application of the site health & safety plan 	
COMPETENCE		Level 5
<ul style="list-style-type: none"> - Create confidence on site and underline the particular issues relating to earth structures through inductions and training if necessary - Integrate earth construction issues into the general site managing: ordering, work and cost planning, reporting, health and safety, control, handing over - From the plan, understand the structural behaviour of the building, assess whether the design is appropriate for earthen elements, if necessary propose modifications to the engineer and adapt the plans by producing drawings - Control the work to conform to specification and organise if necessary undoing and redoing better - Prepare hand over and completion documents 		

Criteria and Indicators for the Assessment of Skills		Level 5
Criteria	Indicators	
Planning	<ul style="list-style-type: none"> - The earth works are identified and coordinated with other activities - The design is checked and any problems related to earth identified - Earth activities are included in the site health and safety plan 	
Coordination	<ul style="list-style-type: none"> - The earth building competence of the team is assessed and training needs identified - The workers are aware of the special needs of earth construction and understand the requirements of the earth - The earth elements have appropriate protection during & after construction - The quality of the earth construction is controlled and documented appropriately - The work plan and cost plan are up-dated in light of events - Concerns in unpredictable situations are reported - Variations are reported 	
Controls	<ul style="list-style-type: none"> - The stability of the wall is ensured - The work is completed on time and according to cost - The effects of possible changes on site are anticipated and contingency plans are in place - The works are as intended in design and quality, and any variation is coordinated - The site is managed safely: <ul style="list-style-type: none"> o Personal protection equipment is adapted to risks and is used according to safety instructions o Equipment is used according to safety instructions. o All protective safeguards are in place o Erection of ladders and scaffolding according to regulations 	

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