

ECVET Earth Building	Repair and conservation: Plaster and building	Unit R common part
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Learning outcomes		Level 4
KNOWLEDGE	SKILLS	
<ul style="list-style-type: none"> - Traditional techniques and materials. Conservation aspects and methods - Causes of damage /decay /collapse: previous intervention, construction, external factors, combination of several factors, humid and structural pathology - Global analysis of a building - Sourcing information on era, history of use and repair - Investigation methods, sampling of original materials - Repair materials - Common and new or regional techniques and technologies for reconstruction, repair, conservation - Maintenance techniques - The order of work, sequence and programme of repairs - Documentation of buildings and projects - Site organisation, storage, access, scaffolding - Tools, machinery and equipment, materials, products: selection criteria and sourcing - Historic regulations relating to repairs - Relevant codes of practice/standards for work and materials - Health and safety regulations 	<p>Diagnose</p> <ul style="list-style-type: none"> - Make an assessment of problems/previous interventions - Identify and classify damage and determine solutions - Take samples - Read plans and calculations <p>Materials</p> <ul style="list-style-type: none"> - Make test panels if needed, and interpret the results - Select, calculate and source materials - Store, make, recover repair materials <p>Preparation of intervention</p> <ul style="list-style-type: none"> - Remove damaged, degraded, inappropriate materials - Conserve historical/artistic coatings and surfaces - Prepare surfaces to receive maintenance, repair materials or surface treatment - Secure (propping and fencing) and protect structures according to instructions <p>Intervention</p> <ul style="list-style-type: none"> - Use maintenance techniques - Choose and apply the appropriate surface treatment - Document the intervention <p>Organisation</p> <ul style="list-style-type: none"> - Protect adjoining surfaces - Select and use appropriate tools, machinery and equipment - Organise the building site 	

Decision making process

- Give input into urgent decision making process, whether to call a structural engineer
- Recognise the value of traditional and historic earth structures and clay plaster finishes, and report
- For buildings, identify and analyse common damage and determine the appropriate repair technique for pathology
- For plaster, identify and analyse common damage due to mix, application, wear and tear and determine the appropriate repair technique

Planning and organising for team work

- Plan and organise all the steps involved in the maintenance or repair of earth structures and finishes, from the analysis of damage and remedy through to surface finish

Execution, quality control and coordination within the earth building team

- Supervise and coordinate the entire work of the earth building team according to the specifications and program
- Report repair progress
- Identify significant problems and intervene
- Control quality of the work of the earth building team
- Control drying of wet walls and intervene if necessary
- Ensure your team respects health and safety regulations

Communication beyond the earth building team

- Liaise with supervision and design team
- Liaise with other trades and professionals, coordinate and sequence earth works within the general schedule
- Liaise with non earth building specialists on options for repair and maintenance regarding permeability, health, culture and environment

ECVET Earth Building	Repair and conservation: Building	Unit R sub unit
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Learning outcomes		Level 4
SPECIFIC KNOWLEDGE	SPECIFIC SKILLS	
<ul style="list-style-type: none"> - Damage to earthen structures: cracks, loss of material, degradation, deformation, tilting etc. - Causes of decay: structural pathologies, moisture etc. - When to get advice from a structural engineer - Details to prevent, water damage, abrasion etc. - Repair techniques: masonry, monolithic systems, others - Repair materials: burnt and un-fired bricks, stones, mortars, fibres, ties, threaded bar, mesh, etc. - Building formwork and frames - Use of gutter, gravel drains, air brick - Finishes, thermal insulation, air tightness, moisture protection - Treatment of openings, floors, edges and top of walls - Installation of services - Propping damaged structures, temporary coverings 	<ul style="list-style-type: none"> - Survey and record the structure's condition, reporting to architect/engineer where necessary - Secure, prop structure according to instructions - Install temporary coverings - Repair and refurbish with appropriate technique and according to specifications: <ul style="list-style-type: none"> o Repair below / reinforce existing structure o Execute horizontal bracing, etc. o Rebuild with appropriate: masonry, monolithic systems o Form a new opening: Insert and fit lintels, plates, etc o Fill holes and cracks with earth material, masonry o Choose and apply "sacrificial" plasters to remove efflorescence o Connect new and old earth structures and materials o Connect woodwork and earth o Apply the appropriate surface treatment o Chase, build in services o Apply appropriate insulation materials 	

Criteria and Indicators for the Assessment of Skills		Level 4
Criteria	Indicators	
Diagnose	<ul style="list-style-type: none"> - Existing building material is correctly identified and reported - The causes of damage are correctly identified and reported 	
Preparation of intervention	<ul style="list-style-type: none"> - Inappropriate material has been removed - The surfaces to be repaired are clean, wetted/dried, and fixed - The stability of the wall is ensured (propping, etc.) - Adjoining zones are protected from dirt and shocks 	
Materials	<ul style="list-style-type: none"> - Recycled material is not contaminated - Repair material is compatible with the existing fabric - Repair material corresponds to specifications (structural, aesthetic) 	
Intervention	<ul style="list-style-type: none"> - Bond and alignment are robust and correct - The joint between old and new material is solid, full and tight - The appearance conforms to the brief - The intervention doesn't create new problems 	
Soffits, lintels, new openings	<ul style="list-style-type: none"> - Appropriate measures are used for propping, controlling forces, etc. - The sequence of tasks is adapted to the nature of walls - The bearing surfaces are correctly prepared - Soffits are correctly executed - Lintels are correctly placed and fixed 	

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

ECVET Earth Building	Repair and conservation: Clay Plaster	Unit R sub unit
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Learning outcomes		Level 4
SPECIFIC KNOWLEDGE	SPECIFIC SKILLS	
<ul style="list-style-type: none"> - Techniques for maintenance and touching up - Damage diagnose - Specific causes of damage: plaster mix, application - Different repair options and accurate touching up - Finished plaster quality to achieves required standard - Options for final treatments/coatings: fixatives, paints, plasters with other binders, tiles, glass, wood, wallpaper - External clay plaster and renders onto earthen walls - Composition and application of clay slip, clay paint, washes - Use of lime onto clay plaster. Bonding and carbonation - Composition and application of lime plasters and paints - Surface treatments impact: permeability, health, environment 	<ul style="list-style-type: none"> - Interpret the test panels results to determine the correct mix - Make seamless joins with repair plaster - Demonstrate paint effects onto sample clay plaster boards - Paint clay plaster with clay and lime based paints and washes - Prepare and apply fixatives - Make sample boards of lime putty based plaster - Use maintenance techniques - Repair damage to any level 	

Criteria and Indicators for the Assessment of Skills		Level 4
Criteria	Indicators	
Preparation of repair	<ul style="list-style-type: none"> - The damaged plaster has been removed - Background is prepared and ensure a suitable key - The edges of the remaining plaster are cut almost vertically - The cut edge has been sufficiently moistened 	
Recipe	<ul style="list-style-type: none"> - Test samples are logically ordered and have a clear key - Test sample thickness and dimensions are the same - The chosen recipe from the test results is <ul style="list-style-type: none"> o correct for the plaster layer o closely resembles the original plaster - The chosen recipe is clearly written down and can be repeated 	
Quality of the repair plaster	<ul style="list-style-type: none"> - The proportions are correct to guarantee a stable plaster - The base coat that may have some cracks, adheres strongly to the wall - The finish coat has no cracks - The grain size is correct for the thickness of the plaster layer - The fibre choice and content is appropriate for the layer 	
Workability	<ul style="list-style-type: none"> - The consistency is appropriate for manual application - by float, trowel, thrown or by hand 	
Quality of the repaired surface	<ul style="list-style-type: none"> - The surface is homogenous - The colour and the texture of the repair replicate the original surface - The join between new and old plaster is seamless 	
Quality of the fixative	<ul style="list-style-type: none"> - The solution is not lumpy - The dilution is sufficient according to the binder 	
Workability of the clay or lime paint	<ul style="list-style-type: none"> - The consistency is appropriate according to its paint layer 	
Quality of the painted or treated surface	<ul style="list-style-type: none"> - Paint or fix is homogenous 	

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