Unit Update • Use from January 2012

This version of this unit replaces all previously published versions with effect from January 2012. This unit should be used by all learners registering for qualifications that include it in their structure from this date.

Unit title:	**Designing and fabricating structural timber connections in the workplace**
Unit reference number:	H/503/2474
QCF level:	3
Credit value:	35
Guided learning hours:	117
Start date:	January 2012

Unit summary

The aim of this unit is to develop the skills, knowledge and understanding required to confirm competence in designing and fabricating structural timber connections in the workplace, within the relevant sector of industry.

Assessment requirements/evidence requirements

This unit must be assessed in a work environment, in accordance with:

- the Additional Requirements for Qualifications using the title NVQ in QCF
- the ConstructionSkills' Consolidated Assessment Strategy for Construction and the Built Environment.

Assessors for this unit must have verifiable, current industry experience and a sufficient depth of relevant occupational expertise and knowledge, and must use a combination of assessment methods as defined in the Consolidated Assessment Strategy.

Workplace evidence of skills cannot be simulated.

Assessment recording

This unit is assessed in the workplace. The table on the following pages shows the learning outcomes and the assessment criteria for this unit. The table includes space for learners to enter the types of evidence they are presenting for assessment and the submission date against each assessment criterion. Alternatively, centres can use their own documentation.

Learning outcomes and assessment criteria

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
1	Interpret the given information relating to the work and resources needed when designing and fabricating structural timber connections.	1.1	Interpret and extract relevant information from drawings, specifications, schedules, method statements, risk assessments and manufacturers' information.			
		1.2	Comply with information and/or instructions derived from risk assessments and method statements.			
		1.3	State the organisational procedures developed to report and rectify inappropriate information and unsuitable resources and how they are implemented.			
		1.4	Describe different types of information, their source and how they are interpreted in relation to: - drawings, specifications, schedules, method statements, risk assessments, manufacturers' information and regulations governing buildings.			
2	Know how to comply with relevant legislation and official guidance when designing and fabricating structural timber connections.	2.1	Describe their responsibilities under current legislation and official guidance whilst working: - in the workplace, below ground level, in confined spaces, at height, with tools and equipment, with materials and substances, with movement/storage of materials and by manual handling and mechanical lifting.			
		2.2	Describe the organisational security procedures for tools, equipment and personal belongings in relation to site, workplace, company and operative.			

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
		2.3	Explain what the accident reporting procedures are and who is responsible for making reports.			
		2.4	State the types of fire extinguishers available when designing and fabricating structural timber connections and describe how and when they are used.			
3	Maintain safe working practices when designing and fabricating structural timber connections.	3.1	Use health and safety control equipment and access equipment (if applicable) safely to carry out the activity in accordance with legislation and organisational requirements when designing and fabricating structural timber connections.			
		3.2	Explain why and when health and safety control equipment, identified by the principles of protection should be used, relating to designing and fabricating structural timber connections, and the types, purpose and limitations of each type, the work situation and general work environment, in relation to: – collective protective measures – personal protective equipment (PPE) – respiratory protective equipment (RPE) – local exhaust ventilation (LEV).			
		3.3	Describe how the relevant health and safety control equipment should be used in accordance with the given instructions.			

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
		3.4	State how emergencies should be responded to in accordance with organisational authorisation and personal skills when involved with fires, spillages, injuries and other task-related hazards.			
4	Select the required quantity and quality of resources for the methods of work to design and fabricate structural timber connections.	4.1	Select resources associated with own work in relation to materials, components, fixings, tools and equipment.			
		4.2	Describe the characteristics, quality, uses, sustainability, limitations and defects associated with the resources in relation to: – measuring and marking equipment – draw pins or podgers, wedges, clamps and trestles – lifting equipment and ancillaries – hand tools and hand-held powered tools, specialist power tools/machines and equipment.			
		4.3	Describe how the resources should be used correctly and how problems associated with the resources are reported.			
		4.4	Explain why the organisational procedures have been developed and how they are used for the selection of required resources.			
		4.5	Describe any potential hazards associated with the resources and method of work.			

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
		4.6	Describe how to calculate quantity, length, area and wastage associated with the method/procedure to design and fabricate structural timber connections.			
5	Minimise the risk of damage to the work and surrounding area when designing and fabricating structural timber connections.	5.1	Protect the work and its surrounding area from damage in accordance with safe working practices and organisational procedures.			
		5.2	Minimise damage and maintain a clean work space.			
		5.3	Dispose of waste in accordance with legislation.			
		5.4	Describe how to protect work from damage and the purpose of protection in relation to general workplace activities, other occupations and adverse weather conditions.			
		5.5	Explain why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers' information, statutory regulations and official guidance.			
6	Complete the work within the allocated time when designing and fabricating structural timber connections.	6.1	Demonstrate completion of the work within the allocated time.			

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
		6.2	State the purpose of the work programme and explain why deadlines should be kept in relation to: – types of progress charts, timetables and estimated times – organisational procedures for reporting circumstances which will affect the work programme.			
7	Comply with the given contract information to design and fabricate structural timber connections to the required specification.	7.1	Demonstrate the following work skills when designing and fabricating structural timber connections: – designing, measuring, marking out, cutting, fitting, finishing, positioning and securing.			
		7.2	Design and fabricate the following structural pegged timber connections for post and beam floor, roof, wall or cross frames to given working instructions: – mortice and tenon – barefaced tenon – stopped tenon – bevelled-shoulder tenon – dovetailed tenon – bridle joint – tusk tenon – pegged scarf joint for top plate, cill plate, purlin and tie beam – dovetailed, secret dovetailed or cogged lap joint – free/slip tenon or spline joint.			

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
		7.3	Safely use and handle materials.			
		7.4	Safely use hand tools, portable power tools and ancillary equipment.			
		7.5	Safely store the materials, tools and equipment used when designing and fabricating structural timber connections.			
		7.6	Describe how to apply safe work practices, follow procedures, report problems and establish the authority needed to rectify them, to: – design pegged post and beam connections suitable for frames – identify loads that will act on a frame (dead, live and wind) – identify the effects of loads on a frame (sustained load, load duration, purlin load, floor joist loads, braces and wind loading and beam sizes) – identify the types of stress acting on a frame (compression, tension, shear and bending) – identify criteria to determine peg hole size and position – identify changes that will occur to connections with shrinkage.			

Learning Outcome		Assessment Criterion		Evidence type	Portfolio reference	Date
		7.7	Describe how to apply safe work practices, follow procedures, report problems and establish the authority needed to rectify them, to: – apply the theorem of Pythagoras – determine geometrical angles – determine graded timber tree anatomy and growth rates, shrinkage and defects – ensure safe and practical erection of components – work with lifting and hoisting equipment (an awareness of the necessity for user certification) – use hand tools, power tools and equipment – work at height – use access equipment.			
		7.8	Describe the needs of other occupations and how to effectively communicate within a team when designing and fabricating structural timber connections.			
		7.9	Describe how to maintain the tools and equipment used when designing and fabricating structural timber connections.			

Learner name: _____ Date: _____

Learner signature: _____ Date: _____

Assessor signature: _____ Date: _____

Internal verifier signature: _____ Date: _____
(*if sampled*)