National Unit specification

General information

Unit title: Modern Methods of Construction: An Introduction (SCQF level 6)

Unit code: H66A 46

Superclass: TE

Publication date: January 2014

Source: Scottish Qualifications Authority

Version: 01

Unit purpose

This Unit is suitable for learners who have limited experience of the construction industry and wish to gain knowledge in the field of technician, contracting or design. The Unit is designed to provide learners with knowledge of modern methods of construction, and the materials, technologies and methodologies involved. Successful learners will recognise the benefits of efficiency, quality, safety and sustainability arising from the use of modern methods of construction.

Outcomes

On successful completion of the Unit the learner will be able to:

1 Describe the materials and systems used in the application of modern methods of construction for the construction industry.
2 Explain how waste is generated by different methods of construction.
3 Explain the ways in which modern methods of construction can improve efficiency and sustainability in the construction industry.

Credit points and level

1 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6)

Recommended entry

Entry is at the discretion of the centre.

National Unit specification: General information (cont)

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Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes for this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

Context for delivery

If the Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

The Assessment Support Pack (ASP) for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable instrument of assessment. Centres wishing to develop their own assessments should refer to the ASP to ensure a comparable standard. ASPs are available on SQA's secure website. (http://www.sqa.org.uk/sqa/46233.2769.html).

Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**.

National Unit specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Describe the materials and systems used in the application of modern methods of construction for the construction industry.

Performance Criteria

(a) Sketch and describe different types of modern methods of construction systems.
(b) Describe the use of materials in modern methods of construction.

Outcome 2

Explain how waste is generated by different methods of construction.

Performance Criteria

(a) Explain how waste is generated using modern methods of construction.
(b) Explain how waste is generated using traditional build construction.

Outcome 3

Explain the ways in which modern methods of construction can improve efficiency and sustainability in the construction industry.

Performance Criteria

(a) Describe the efficiencies resulting from modern methods of construction in housing sectors.
(b) Describe the efficiencies resulting from modern methods of construction in non-housing sectors.
(c) Explain the benefits and difficulties associated with sustainability in modern methods of construction.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

Evidence is required to demonstrate that the learners have achieved all Outcomes and Performance Criteria.

Written and/or recorded oral evidence is required to demonstrate that the learner has achieved this Unit to the standard specified in the Outcomes and Performance Criteria. In this Unit an appropriate instrument of assessment would be an assessment question paper covering all three Outcomes. The evidence for this Unit should be obtained under controlled**,** supervised conditions. The assessment will be open-book and should last no more than 2 hours. Assessment activities must relate to site visits or appropriate case studies. Learners should be permitted to take their notes, handouts and information gathered at site visits into assessment.

Evidence from site visits can be used by the learner in written answers to set short questions. Where site visits are not possible learners can be presented with a construction case study with specific elements of modern methods of construction selected by the centre for the assessment. Evidence will be gathered at appropriate points throughout the delivery of the Unit. Assessments must be manageable and practicable for centres and learners.

National Unit Support Notes

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Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This Unit has been developed as an optional Unit within the National Certificate in Built Environment and the National Certificate in Civil Engineering at SCQF level 6. This Unit can be delivered as a stand-alone Unit.

The main categories of modern methods of construction to be considered are:

- volumetric construction
- panellised systems
- hybrid Construction
- sub-assemblies and components
- site-based methods of construction

The aim of this Unit is to provide learners with an insight into the differences between both domestic and non-domestic builds using modern methods of construction and those built using more 'traditional' site-based techniques such as brick and block cavity construction.

Earlier manufactured systems are normally referred to as 'non-traditional'.
The following should be covered:

- timber frames
- brick and block
- timber panels
- concrete panels

According to the Environment Agency vast amounts of construction and demolition waste is developed in the country.

The three principal sources are earthworks and excavation, demolition and general construction. This results from both the design process and the construction.

The benefits are more than financial. Waste minimisation can lead to improvements in:

- reduced damage to critical components
- improved site appearance
- reduction in double handling
- improved site management
- reduction in time wasted

Learners could be referred to relevant strategy documents relating to sustainable construction which sets down themes relevant to the construction industry including design for minimum waste. This Unit will help learners grasp the basic principles of Modern Methods of Construction which will assist in the comprehension of such matters when articulating to appropriate built environment HN and SVQ levels. This Unit should be deemed an introduction to the benefits and principles of Modern Methods of Construction and there after that knowledge be applied when tackling such matters whether in employment or at HN/SVQ levels.

Guidance on approaches to delivery of this Unit

Learning and teaching of this Unit would be amplified using site visits and case studies there are many research papers, and codes of practice which should be referred to such as the code of practice on sustainable building.

Where possible learners should undertake a visit to a construction site where modern methods of construction are being utilised. Alternatively a visit to a prefabrication factory would be useful.

Visits can be used by the learners to record, sketch and photograph appropriate construction details, materials and waste, and use of plant.

There are active sites where internet access can provide regular updates on progress if actual site visits are not practicable. Alternatives to this provision may be through the analysis of case studies from web based research and industry literature. There are many prefabrication factories that can be used to highlight aspects of modern methods of construction. Following site visits, construction details can be highlighted and discussed in a classroom environment, and used as exemplars, and group sketching used to reinforce points.

The teaching approach should be related to the individual site visits, or case studies selected for use by centres. Each case study should be used to reinforce learning and teaching in relation to each Outcome. It is recommended that a minimum of one traditional build and three modern methods of construction should be covered in respect of materials, methods, plant and waste.

National Unit Support Notes (cont)

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The selection of teaching approach will depend upon the selection and timing of site visits and case studies. At site visits and with case studies, learners should be encouraged to sketch details and take photographic evidence and notes where permissible. Reinforcement should follow each visit with structured learning in the classroom where the study of individual learning Outcomes can be extracted from the 'holistic materials'.

Where possible learners should be encouraged to access relevant industry websites.

The Assessor must ensure that evidence is authenticated as the learners own work under assessment conditions.

Guidance on approaches to assessment for this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

Assessment should be carried out at appropriate points throughout the Unit. Assessment of all Outcomes should not exceed 2 hours and should be supervised and open-book. Learners should be permitted to take any notes and photograph taken at site visits into the assessment.

An appropriate instrument of assessment would be an open-book under supervised controlled conditions consisting of short answer questions. It would be wholly appropriate to include sketches within the assessment although this would not be mandatory.

Evidence will be gathered at appropriate times throughout the delivery of this Unit. An appropriate instrument of assessment could be a question paper consisting of a balance of short answer, restricted response and structured questions and sketches/drawings prepared in class, based on site visits and/or case study material.

The Assessment Support Pack for this Unit provides appropriate sample assessment materials. Where centres wish to develop their own assessment materials they should refer to the Assessment Support Pack to ensure a comparable standard.

There may be opportunities for Accreditation of Prior Learning (APL) for learners who have undertaken the previous version of this Unit F3JR 12 *Modern Methods of Construction*. This is at the discretion of delivering centres. There is no automatic credit transfer.

National Unit Support Notes (cont)

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Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003), SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Opportunities for developing Core and other essential skills

Learners could be provided with opportunities to read critically a range of technical information to support their understanding of construction practices and to take notes as appropriate. During site visits tutors/lecturers could encourage learners to communicate orally with a range of people, asking and responding to questions.

This Unit will also develop learners' understanding of responsible resourcing which helps tackle sustainable development and citizenship skills. In maintaining a Core Skill theme learners will have the opportunity to develop a range of Core Skills including *Communications, ICT* and *Problem Solving*.

Communications attained through written and/verbal reporting throughout the Unit.

ICT attained through the nature of the research and investigation.

Numeracy attained through use of numbers and scales in the production of drawings.

Problem Solving through all Outcomes where the learners will be assigned specific tasks that will require a certain level Planning, Evaluating and Critical Thinking.

History of changes to Unit

Version	Description of change	Date

General information for learners

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This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

The Unit is designed to enable you to develop an understanding of a range of typical modern methods of construction found within the industry and with reference to the materials, the technologies and construction methodologies involved. Such study will lead to your being able to recognise the benefits of efficiency, quality, safety and sustainability arising from the use of these modern methods.

These recent developments within the construction industry will be compared and contrasted with the more 'traditional' site based techniques based on brick and block cavity construction along with the historic finishing trades.

You will be encouraged to carry out investigations in support of your learning and in the production of technical information. Visits to building or civil engineering sites or prefabrication factories might be used to record, sketch, photograph appropriate construction details, materials, waste products, and use of contractors' plant. Alternatively, your research might be based on analysis of case studies found on web sites as well as industry literature if actual site visits are not practicable.

Case study materials will be used to reinforce the learning and teaching requirements associated with each of the three Outcomes with assessment evidence deriving from your findings. Your knowledge and understanding will be examined through open-book assessment under controlled and supervised conditions which will last no longer than 2 hours in total. You will be permitted to take your own notes, handouts and other information gathered during your investigations into the examination.

On completion of the learning materials covered you will be able to apply your knowledge and understanding of these technologies to associated areas of study, either within the Group Award or in your further development through HN studies, vocational award or in employment.

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