National Unit Specification: general information

UNIT Using Machinery for Compacting Materials: An Introduction (SCQF level 5)

CODE F6LW 11

SUMMARY

This Unit provides an introduction to the key principles and techniques of operating plant machinery to compact materials in a construction environment. It will develop the candidate's understanding and practical skills in using machinery for compacting materials. On completion of this Unit, candidates will have developed their understanding of the components and controls of the machinery selected for use, and knowledge of how to carry out pre-operational safety checks of both the machinery and work area. Candidates will learn how to operate, shut down and secure machinery safely and in accordance with the manufacturer's guidelines. This Unit is suitable for candidates working towards a Modern Apprenticeship in the Construction Operative and Specialist suite.

OUTCOMES

1 Establish correct requirements for compacting materials.
2 Conduct pre-operational checks of machinery and the work area to prepare for compacting materials.
3 Compact materials correctly.

RECOMMENDED ENTRY

While entry to this Unit is at the discretion of the centre, candidates undertaking a National Progression Award at SCQF level 5, as part of a Modern Apprenticeship, must meet the necessary criteria which includes being employed in the relevant industry.

Administrative Information

Superclass: TK

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National Unit Specification: general information (cont)

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CREDIT VALUE

1 credit at SCQF level 5 (6 SCQF credit points at level 5*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

CORE SKILLS

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

This Unit provides opportunities for candidates to develop aspects of the following Core Skills:

- *Numeracy (*SCQF level 3)
- *Working with Others* (SCQF level 3)
- *Communication* (SCQF level 3)
- *Problem Solving* (SCQF level 3)

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

Establish correct requirements for compacting materials.

Performance Criteria

(a) Interpret accurately the drawings and/or work specification for the task.
(b) Select the correct machinery to use for the task.
(c) Identify components and controls of machinery selected, using correct terminology.
(d) Select appropriate personal protective equipment (PPE) for the specified task, in accordance with organisational requirements.

OUTCOME 2

Conduct pre-operational checks of machinery and the work area to prepare for compacting materials.

Performance Criteria

(a) Identify any potential hazards, including underground and overhead utilities apparatus to avoid within the work area.
(b) Inspect machinery and confirm it is safe for operational use.
(c) Measure the area for compaction correctly.
(d) Mark out the area for compaction in accordance with the given specification.

OUTCOME 3

Compact materials correctly.

Performance Criteria

(a) Operate machinery in accordance with manufacturer's guidelines and the operator's handbook.
(b) Compact loose materials to specification.
(c) Park, shut down and secure machinery on completion.
(d) Comply with all current workplace safety and legislative requirements.
(e) Dispose of waste in accordance with legislative requirements.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS

Candidates are required to produce evidence to confirm that they have achieved all Outcomes and Performance Criteria outlined in this Unit.

Performance evidence is required to demonstrate the candidate has achieved the standard specified in the Outcomes and Performance Criteria for Outcomes 1, 2 and 3. Performance evidence must be supplemented with an assessor observation/operational checklist and produced at an appropriate interval in training, under supervised conditions, once the candidate has developed the necessary skills and knowledge required to carry out the work.

When carrying out the practical activity for assessment, the candidate should be required to demonstrate performance evidence using any one of the following items of machinery:

- Ride-on Roller
- Soil Compactor
- Landfill Compactor
- Plate vibrator
- Poker

As part of the assessment for this Unit, the candidate will also submit written product evidence such as a works checklist or completed risk assessment form. Oral evidence of knowledge and understanding may be demonstrated by the candidate during practical assignments set for Outcomes 1, 2 and 3 and noted at the time by the observer.

National Unit Specification: support notes

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This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

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

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

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

The Outcomes and Performance Criteria for this Unit can be demonstrated by the candidate using any one of the following items of machinery:

- Ride-on Roller
- Soil Compactor
- Landfill Compactor
- Plate vibrator
- Poker

The content and context of this Unit has been set at an introductory level so that the candidate can develop a basic knowledge and ability in compacting materials within a construction environment.

Health and Safety are vital to working practices within the construction industry and therefore, emphasis will be placed wherever appropriate during the delivery of this Unit on the correct application of Health and Safety principles and processes, in accordance with current codes of practice and legislation.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

These notes are for guidance purposes only, but are not to be considered as complete guidance to learning and teaching approaches.

Opportunities for integrated delivery of this Unit will be possible with all mandatory Units: *Prepare Machinery for Operational Performance, Construction Safety Practices: An Introduction*, and *Efficient Construction Practices: An Introduction.*

The introductory training for this Unit should take place in a separate training area independent of the productive work environment and using dedicated equipment and resources and cover underpinning principles before any practical application of knowledge is carried out by candidates.

National Unit Specification: support notes (cont)

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Delivery of this Unit will be focused on enabling candidates to develop the knowledge required for compacting materials safely before they are given the opportunity to do so within the workplace environment. Candidates should learn and be encouraged to communicate the theories and principles behind good compaction techniques before carrying out any work on-site. Delivery of this Unit will also include ensuring candidates learn about the different components and controls of the machinery, using the correct terminology and understanding the necessary procedures for checking and configuring machinery before operations commence (eg setting the correct driving position). Emphasis will also be placed on the importance of candidates accurately understanding and interpreting the information provided within work specifications and drawings.

During delivery of the practical components of this Unit, candidates should understand the importance of ensuring good visibility at all times when manoeuvring machinery, and that reversing should only be undertaken under the guidance of a nominated vehicle marshal on site. Candidates will also learn how to make sure the machinery remains stable.

Candidates should know how to adhere to relevant Health and Safety regulations and legislation relating both to working practices within the construction environment, as well as those specific to any practical task they are requested to carry out (such as emphasising the importance of selecting and using the correct PPE at all times).

E-learning approaches may be appropriate to help tailor delivery to suit the individual needs or learning styles of candidates. This might include, for example, encouraging learners to use electronic resources to conduct research into a specific knowledge area.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

Candidates will be need to apply the Core Skill of *Numerac*y (SCQF level 3) when interpreting the measurements and other information provided in the work drawings and specification, as well as when calculating and marking out the compaction work to be performed (Outcomes 1 and 2). The interpretation of work specifications and drawings will also require candidates to think critically, plan and organise the task accordingly — key aspects of the Core Skill of *Problem Solving* (SCQF level 3).

The opportunity for the Core Skill *Working with Others* (SCQF level 3) will be provided as candidates check and inspect machinery for safe use, as well as ensuring the safety of others as they comply with codes of practice and working regulations (all Outcomes). Throughout this Unit, candidates will be expected to develop the Core Skill of *Communication* (SCQF level 3) within the work environment, for example to inform others of any safety considerations, using the correct terminology and a tone appropriate to the workplace. In addition, assessment processes may enable candidates the opportunity to develop their Written Communication skills.

National Unit Specification: support notes (cont)

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GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Centres may use the Instruments of Assessment they consider to be most appropriate, and the following notes are given as guidance only.

Assessment may be integrated with all mandatory Units: *Prepare Machinery for Operational Performance, Construction Safety Practices: An Introduction*, and *Efficient Construction Practices: An Introduction*.

Underpinning knowledge of using machinery to compact materials should be assessed before any practical assignments are carried out by candidates. This will include assessment of a candidate's ability to select the correct machinery for a specified task. Assessment of practical performance should take place under supervised conditions and confirm a candidate's ability to carry out basic compacting processes using machinery correctly and safely, whilst adhering to Health and Safety regulations and legislation.

Outcomes 1, 2 and 3 may be assessed by centres setting candidates a series of appropriate practical assignments carried out under supervised conditions and recorded in an assessor observation/operational checklist. Practical assignments undertaken by a candidate will be assessed according to their ability to carry out the task safely, using appropriate machinery according to manufacturer's guidelines.

Adherence to appropriate working regulations and Health and Safety procedures will be observed during the practical exercise carried out by the candidate towards all three Outcomes.

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 candidate 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)*.

DISABLED CANDIDATES AND/OR THOSE WITH ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website **www.sqa.org.uk/assessmentarrangements**