



National Unit Specification: general information

UNIT Operating Road Rail Plant: An Introduction (SCQF level 5)

CODE F6R6 11

SUMMARY

This Unit provides an introduction to the key principles and techniques of operating road rail plant and machinery. On completion of this Unit, candidates will also be able to carry out basic construction operations in a rail construction area, having correctly interpreted work specifications and/or drawings. This will include developing an 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. Adherence to regulatory and legislative safety requirements will be ensured at all times. This Unit is suitable for candidates working towards a Modern Apprenticeship in the Construction Operative and Specialist suite.

OUTCOMES

- 1 Establish correct machinery required for the specified task.
- 2 Conduct pre-operational checks of machinery and the work area to prepare for operating road rail plant.
- 3 Operate road rail plant safely and 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)
- ◆ *Communication* (SCQF level 3)
- ◆ *Working with Others* (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 machinery required for the specified task.

Performance Criteria

- (a) Interpret accurately the drawings and/or work specification for the task.
- (b) Select the correct machinery for the specified rail operation.
- (c) Identify components and controls of machinery selected, using correct terminology.
- (d) Recognise railway signalling systems that road rail plant operators need to observe.
- (e) 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 operating road rail plant.

Performance Criteria

- (a) Identify any potential hazards, including underground and overhead utilities apparatus, points and crossings within the work area.
- (b) Carry out functional checks on machinery to confirm it is safe for use.

OUTCOME 3

Operate road rail plant safely and correctly.

Performance Criteria

- (a) Use road rail plant in accordance with manufacturer's guidelines and the operator's handbook.
- (b) Park, shut down and secure machinery on completion.
- (c) Comply with all current workplace safety and legislative requirements.
- (d) 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 candidates have developed the necessary skills and knowledge required to carry out the work.

Performance evidence should be demonstrated by candidates using EITHER one of the following:

- ◆ Road rail — excavator crane
- ◆ Road rail — crane
- ◆ Road rail — excavator 360° wheeled or tracked
- ◆ Road rail — crawler tractor/dozer

OR two of the following:

- ◆ Road rail — forward tipping dumper
- ◆ Road rail — mobile elevated working platform scissor
- ◆ Road rail — mobile elevated work platform boom
- ◆ Road rail — dump truck articulated chassis
- ◆ Road rail — dump truck rigid chassis
- ◆ Road rail — rough terrain forklift truck
- ◆ Road rail — telescopic handler
- ◆ Road rail — agricultural tractor
- ◆ Road rail — knuckle boom crane

Performance evidence should also be demonstrated by the candidate using one of the following attachments:

- ◆ Rail thimble
- ◆ Rail flail
- ◆ Rail ballast brush
- ◆ Rail ballast/material vacuum Unit
- ◆ Rail hydraulic rail beam
- ◆ Rail hydraulic sleeper grab
- ◆ Rail trailer
- ◆ Rail tamper
- ◆ Rail vacuum lifter
- ◆ Rail grapple/log grab

The candidate should be required to use the correct terminology at all times when identifying components and controls of machinery, and carrying out any practical assignments (Outcomes 1, 2 and 3).

National Unit Specification: statement of standards (cont)

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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 all Outcomes and noted at the time by the observer.

National Unit Specification: support notes

UNIT Operating Road Rail Plant: An Introduction (SCQF level 5)

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 80 guided learning hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

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

- ◆ Road rail — excavator crane
- ◆ Road rail — crane
- ◆ Road rail — knuckle boom crane
- ◆ Road rail — excavator 360° wheeled or tracked
- ◆ Road rail — crawler tractor/dozer

OR two of the following:

- ◆ Road rail — forward tipping dumper
- ◆ Road rail — mobile elevated working platform scissor
- ◆ Road rail — mobile elevated work platform boom
- ◆ Road rail — dump truck articulated chassis
- ◆ Road rail — dump truck rigid chassis
- ◆ Road rail — rough terrain forklift truck
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- ◆ Rail vacuum lifter
- ◆ Rail grapple/log grab

Candidates may operate road rail plant to carry out operations such as lifting or transferring materials, excavation, construction, receiving or transporting loads, accessing work areas, laying and distributing materials, compacting materials, demolishing or processing materials.

National Unit Specification: support notes (cont)

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The content and context of this Unit has been set at an introductory level so that candidates can develop a basic knowledge and ability in operating rail road plant 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.

Delivery of this Unit will be focused on enabling candidates to know and understand the key principles and techniques required for operating road rail plant safely, before they are given the opportunity to do so within the workplace environment. This will 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 any work is carried out. Emphasis will also be placed on the importance of candidates understanding all rail signalling systems that they will be required to observe and adhere to whilst working within a rail construction area. This should include developing an understanding of working on, and navigating points, crossings, cants and gradients. Candidates should be taught to accurately understand and interpret the information provided within work specifications and drawings, so that they can identify the correct machinery to use for a given task.

During delivery of the practical components of this Unit, candidates should understand the importance of ensuring good visibility at all times when manoeuvring machinery, that reversing should only be undertaken under the guidance of a nominated vehicle marshal on site, and checking the ground to identify cants and gradients. 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.

National Unit Specification: support notes (cont)

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OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

Critical Thinking, Planning and Organising (all components of the Core Skill of *Problem Solving* SCQF level 3) will be developed by candidates as they undertake this Unit. Candidates will need to consider a number of factors and create a suitable plan when deciding upon the appropriate action to take and equipment to use during the given task (as outlined in the Performance Criteria for Outcomes 1 and 2).

Candidates will need to apply the Core Skill of *Numeracy* (SCQF level 3), when interpreting work specifications, but also when carrying out procedures using road rail plant that involve, for example, measuring, weighing or balancing loads (Outcomes 1 and 2).

Opportunities for *Working with Others* (SCQF level 3) will be provided as candidates confirm whether equipment has been inspected 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 use the Core Skill of *Communication* within the work environment, for example to inform others of any safety considerations, using the correct terminology and a tone appropriate to the workplace environment. In addition, assessment processes may enable candidates the opportunity to develop their Written Communication skills.

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 operating road rail plant 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 recognise and observe signalling systems in the rail road construction environment and use 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's 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 candidates towards all Outcomes.

National Unit Specification: support notes (cont)

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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

History of changes:

Version	Description of change	Date
02	Credit value incorrect. This has now been amended from 2 to 1.	09/05/2011