



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG314A Install surface irrigation structures and components

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This Unit covers the process of installing surface irrigation structures and components and defines the standard required to: organise resources for installation work; set out and prepare site; construct earthworks and install structures; prepare beds and water distribution equipment; and assist in commissioning surface irrigation systems.

Application of the Unit

This Unit applies to skilled workers in the irrigation servicing, and food and fibre production industries, and is likely to be carried out under routine supervision within enterprise guidelines.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This Unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Organise resources for installation of surface irrigation systems	1.1 Materials, tools, equipment and machinery are selected according to the irrigation system design requirements and enterprise work procedures 1.2 The construction site for the irrigation system and construction method is identified according to the site and irrigation system plans and enterprise work procedures 1.3 Parts and equipment delivered to site are checked according to system drawings and specifications 1.4 Pre-operational and safety checks are carried out on tools, equipment and machinery according to manufacturer specifications and enterprise work procedures 1.5 Occupational Health and Safety (OHS) hazards are identified, risks assessed, controls implemented and reported to the supervisor 1.6 Suitable safety and personal protective equipment (PPE) are selected, used and maintained 1.7 Water supply is checked to ensure that it is compatible with system specifications
2 Interpret the surface irrigation plan and mark up	2.1 Plan is interpreted and levels are taken 2.2 Structures are marked out and earthworks pegged 2.3 A clean and safe work area is maintained while installation work is carried out 2.4 Tools appropriate to the task being undertaken are chosen and used according to guidelines and safe working practices are employed
3 Prepare and maintain diversion and conveyancing structures	3.1 Excavations are completed according to plan specifications and enterprise work procedures 3.2 Channels are installed according to the irrigation plan and enterprise work procedures 3.3 Diversion and conveyancing structures are installed 3.4 Structures are tested for configuration, flow rates and capacity consistent with the system plan and according to enterprise work procedures
4 Prepare beds	4.1 Excavations are completed according to plan specifications and enterprise work procedures 4.2 Beds are installed according to the irrigation plan and enterprise work procedures 4.3 Bed surface is prepared with use of roto-buck 4.4 Field distribution structures are installed or prepared 4.5 The supervisor is consulted and remedial action is taken when beds do not meet the plan specifications
5 Complete water measurement and	5.1 Excavations are completed according to plan specifications and enterprise work procedures

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| tailwater works | 5.2 Water measurement structures are installed according to the irrigation plan and enterprise work procedures |
| | 5.3 Channels and tailwater storages are installed according to the irrigation plan and enterprise work procedures |
| | 5.4 Pumping equipment, lines and filters are installed for recycling |
| 6 Complete installation work | 6.1 Earthworks and structures are finished off to plan specifications and enterprise work procedures |
| | 6.2 The system configuration and capacity matches the installation plan |
| | 6.3 The site is restored and waste material is removed from the site and disposed of in an environmentally aware and safe manner according to enterprise work procedures |
| | 6.4 Tools, equipment and machinery are cleaned, maintained and stored according to enterprise work procedures |
| 7 Assist in commissioning a surface irrigation system | 7.1 Water is supplied from channels or head ditches |
| | 7.2 Watering sequence is in accordance with organisational procedures |
| | 7.3 Testing and monitoring equipment are calibrated to manufacturer specifications |
| | 7.4 System is monitored for watering efficiency, deep percolation and tailwater |
| | 7.5 Operating faults are identified and corrective actions taken. |
| | 7.6 Work outcomes are recorded or reported to the supervisor according to enterprise work procedures |

Required Skills and Knowledge

This section describes the skills and knowledge required for this Unit.

Required skills include:

Ability to:

- read, interpret and follow organisational policies and procedures
- use roto-buck for bed preparation
- construct earthworks
- build irrigation structures
- prepare irrigation beds
- install pumps and pipelines
- complete installation work
- perform system commissioning tasks
- implement and follow relevant enterprise OHS and environmental policies and procedures
- use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record information collected accurately and legibly, and select and apply procedures for a range of tasks
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.

Required knowledge includes:

Knowledge of:

- water quality and water filtration techniques
- calculations for installing surface irrigation systems
- components of a surface irrigation system
- characteristics and operation of components
- behaviour of water on varying terrain and soil types
- soil water retention testing techniques
- water quality and water filtration techniques
- basic calculations for installing surface irrigation systems
- soil characteristics
- environmental impacts of surface irrigation installation
- enterprise OHS procedures.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this Unit

The evidence required to demonstrate competency in this Unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following:

- organise resources for installation work
- set out and prepare site
- construct earthworks and install structures
- prepare beds and water distribution equipment
- assist in commissioning surface irrigation systems.

Context of and specific resources for assessment

Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

The range statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Surface irrigation systems</i> may include:	any systems that apply water across the surface of a levelled or contoured area. These include furrow, border and basin irrigation.
<i>Diversion and conveyancing structures</i> may include:	• intake structures • diversion weirs and gates.
<i>Field distribution structures</i> may include:	• canals • pipelines • drop structures and chutes • division boxes and turnouts • checks • crossing structures • flumes • culverts • inverted siphons.
<i>Water measurement structures</i> may include:	• weirs • parshall flumes • cut-throat flumes.

Unit Sector(s)

Irrigation