



Australian Government

Department of Education, Employment and Workplace Relations

RIICTT301A Conduct fluid assisted directional boring

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit covers the conduct of fluid assisted directional boring in civil construction. It includes the planning and preparing for operations, checking equipment, driving the bore and cleaning up when undertaking fluid assisted directional boring activities associated with horizontal directional drilling.

Application of the Unit

This unit includes fluid types, drilling equipment, drilling heads, installation products and tracking and guidance systems. Fluid assisted directional boring includes boring under roadways, railways, footpaths, creeks, rivers, freeways other services and may include mini, midi and maxi operations.

The unit is appropriate for those working in operational roles, at worksites within:

- Civil Construction

Licensing/Regulatory Information

Refer to Unit Descriptor.

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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Plan and prepare for operations	1.1. Access, interpret and apply compliance documentation relevant to the conduct of fluid assisted directional boring 1.2. Obtained, confirm and apply work instructions, including plans, specifications, quality requirements and operational details to the allotted task 1.3. Identify, obtain and implement signage requirements from the project traffic management plan 1.4. Ensure plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, check for serviceability and rectify or report any faults 1.5. Identify and confirm environmental protection requirements from the project environmental management plan, and apply to the allotted task
2. Prepare for boring operations	2.1. Determine location, alignment direction, level and grade of bore from drawings and specifications 2.2. Use above and below ground survey instruments to determine the bore pathway for underground vertical and horizontal alignment 2.3. Conduct visual geological investigation of alignment to determine the differing soil types and groundwater conditions 2.4. Select bore head and drilling fluid for the strata 2.5. Position, anchor/stake down boring equipment in accordance with manufacturer's and/or site requirements
3. Conduct equipment checks	3.1. Identify and apply safety requirements 3.2. Carry out start-up, shutdown and communication procedures 3.3. Check equipment controls and functions, including implements or other attachments, anchors and/or stabilising equipment for serviceability and report faults

	3.4. Conduct inspection and fault finding in accordance with manufacturer's specifications and/or site requirements 3.5. Carry out equipment maintenance tasks regularly
4. Drive bore hole	4.1. Prepare launch and receiving pits for inserting and receiving bore head in accordance with site requirements 4.2. Extract and dispose of mud in accordance with job specifications 4.3. Continuously monitor bore head progress for vertical and horizontal alignment 4.4. Monitor Machine for continuity of production in varied site conditions 4.5. Monitor drilling fluid to accommodate differing strata formation, in accordance with manufacturer's specifications 4.6. Remove borehead in accordance with manufacturer's recommendations, using safe handling procedures for varied site conditions 4.7. Check and fit back reaming attachment to drill string in accordance with manufacturer's recommendations 4.8. Conduct back reaming to dimensions in accordance with plans and specifications 4.9. Correctly position drums/rolls of installing product to enable safe discharge of product
5. Clean up	5.1. Clear work area and dispose of or recycle materials in accordance with project environmental management plan 5.2. Clean, check, maintain and store plant, tools and equipment

Required Skills and Knowledge

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

Required skills

Specific skills are required to achieve the performance criteria in this unit, particularly for the application in the various circumstances in which this unit may be applied. This includes the ability to carry out the following as required to conduct fluid assisted directional boring:

- apply legislative, organisation and site requirements and procedures
- interpret engineering drawings, plan and specification
- apply equipment operational requirements and procedures
- use of laser control equipment
- apply electronic devices to locate electronic cable
- apply electronic equipment calibration
- apply thrust and rotation of boring equipment
- apply operational maintenance
- apply basic diagnostic procedures
- apply site isolation and traffic control responsibilities and authorities
- apply materials safety data sheets and materials handling methods
- apply project quality requirements
- apply JSA's/safe work method statement

Required knowledge

Specific knowledge is required to achieve the Performance Criteria of this unit, particularly its application in a variety of circumstances in which the unit may be used. This includes knowledge of the following, as required to conduct fluid assisted directional boring:

- site and equipment safety requirements
- drilling fluids
- categories of horizontal directional drilling
- laser control equipment
- manual handling
- confined space entry
- electronic cable locating devices
- strike alert systems
- remote units
- electronic equipment calibration
- thrust and rotation of boring equipment
- slinging procedures
- processes for interpreting engineering drawings
- equipment types, characteristics, technical capabilities and limitations

- operational, maintenance and basic diagnostic procedures
- site isolation and traffic control responsibilities and authorities
- materials safety data sheets and materials handling methods
- project quality requirements
- civil construction terminology
- JSA's/safe work method statement

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 worksite operations and satisfy all of the requirements of the performance criteria, required skills and knowledge and the range statement of this unit and include evidence of the following: • knowledge of the requirements, procedures and instructions for the conduct of fluid assisted directional boring • implementation of requirements, procedures and techniques for the safe, effective and efficient completion of least 50 metres fluid assisted directional boring • working with others to undertake and complete fluid assisted directional boring that meets all of the required outcomes • consistent timely completion of fluid assisted directional boring that safely, effectively and efficiently meets the required outcomes
Context of and specific resources for assessment	• This unit must be assessed in the context of the work environment. Where personal safety or environmental damage are limiting factors, assessment may occur in a simulated environment provided it is realistic and sufficiently rigorous to cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills • The assessment environment should not disadvantage the participant. For example, language, literacy and numeracy demands of assessment should not be greater than those required on the job • Customisation of assessment and delivery environment to sensitively accommodate cultural diversity • Aboriginal people and other people from a non English speaking background may have second

	language issues • Assessment of this competency requires typical resources normally used in the work environment. Selection and use of resources for particular worksites may differ due to site circumstances • Where applicable, physical resources should include equipment modified for people with disabilities • Access must be provided to appropriate learning and/or assessment support when required
Method of assessment	This unit may be assessed in a holistic way with other units of competency. The assessment strategy for this unit must verify required knowledge and skill and practical application using more than one of the following assessment methods: • written and/or oral assessment of the candidate's required knowledge • observed, documented and/or first hand testimonial evidence of the candidate's: • implementation of appropriate requirement, procedures and techniques for the safe, effective and efficient achievement of required outcomes • consistently achieving the required outcomes • first hand testimonial evidence of the candidate's: • working with others to undertake and complete the conduct of fluid assisted directional boring
Guidance information for assessment	Consult the SkillsDMC User Guide for further information on assessment including access and equity issues.

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.

Relevant compliance documentation may include:	• legislative, organisational and site requirements and procedures • manufacturer's guidelines and specifications • Australian standards • code of practice • Employment and workplace relations legislation • Equal Employment Opportunity and Disability Discrimination legislation
Signage may include:	• site safety signage • temporary signage for the benefit of motorists and pedestrians • barricades • traffic conditions signage
Tools and equipment may include:	• boring equipment • pumps • compressors • hoses • tape measures • marking equipment • crow bars • spanners • adjustable • wrenches • shovels • picks • hammers (sledge/hand) • string lines • spirit levels • dumpy levels • theodolites • brooms • hacksaws • hand saws • electronic tracking devices

	• slings and cranes
Environmental protection requirements may include:	• organisational/project environmental management plan • waste management • water quality protection • noise • vibration • dust • clean-up management
Drilling fluid may include:	• bentonite and water. Often known as mud it carries the debris in suspension and is then filtered through a recirculation system
Monitoring of boring may include:	• sounder • beacon • hand wired guidance system • magnetometry

Unit Sector(s)

Trenchless Technology

Competency field

Refer to Unit Sector(s).

Co-requisite units

Not applicable.