



Australian Government

MSL974002 Conduct geotechnical site investigations

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSL974002A Conduct geotechnical site investigations

Application

This unit of competency covers the ability to prepare for and conduct and conclude site activities, such as excavations, sampling and testing as part of a geotechnical investigation team. Personnel are expected to solve common site problems and seek advice to deal with situations beyond their own technical competence.

This competency is typically performed by laboratory technicians working under the guidance of a geotechnical paraprofessional or engineer.

This unit of competency is applicable to laboratory technicians working in the construction, mining and drilling industry sectors.

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

Nil

Competency Field

Testing

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Prepare for on-site operations	1.1	Identify the job, location, work instructions, appropriate sampling and test procedures and safety requirements
		1.2	Identify site hazards and identify appropriate personal protective equipment (PPE) and safety procedures that

- are specified for the job and materials used
- 1.3 Record description of the job to be undertaken, compare with specification and report any variations
 - 1.4 Arrange for the collection, checking, stowing and transport of all tools, equipment and materials required at the site
 - 1.5 Ensure site access requirements, such as entry permits and safety inductions, have been organised
- 2 **Arrange excavation of boreholes, test pits and/or trenches**
- 2.1 Identify the sampling/testing location
 - 2.2 Excavate or oversee excavation to the sampling and testing depth, minimising disturbance and potential contamination of the site
 - 2.3 Identify materials and record changes of strata, test results and other relevant information
 - 2.4 Ensure materials from different strata are kept separate
 - 2.5 Terminate the excavation at the appropriate depth and record the reason for termination
- 3 **Conduct site sampling**
- 3.1 Prepare and check sampling equipment and materials
 - 3.2 Take disturbed and undisturbed samples in accordance with workplace methods and procedures
 - 3.3 Label and record samples in accordance with workplace methods and procedures
 - 3.4 Recognise and record details of site conditions that may impact on sample integrity or site interpretation
- 4 **Conduct testing**
- 4.1 Prepare and conduct pre-use checks of test equipment
 - 4.2 Perform, or assist with performing, tests in accordance with test methods or workplace procedures
 - 4.3 Record test data in accordance with test methods or workplace procedures

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| | | 4.4 | Recognise obvious errors or atypical data and take appropriate corrective actions |
| 5 | Finalise site operations | 5.1 | Backfill or seal any excavation and ensure that it is left in a safe and uncontaminated condition |
| | | 5.2 | Reinstate surfaces disturbed by sampling or testing |
| | | 5.3 | Clean all equipment (and vehicle, as necessary) avoiding environmental damage, stormwater contamination or spread of pests |
| | | 5.4 | Check all equipment and materials prior to re-stowing them for safe transport |
| | | 5.5 | Handle and transport samples in accordance with established practices |
| | | 5.6 | Notify appropriate site personnel on completion of investigations and prior to leaving site |
| | | 5.7 | Check serviceability of test equipment before storage on return to base |
| 6 | Maintain records | 6.1 | Maintain equipment records in accordance with established practices |
| | | 6.2 | Complete site safety plans, equipment logs and test reports in accordance with workplace procedures |
| | | 6.3 | Maintain confidentiality of workplace information |
| 7 | Maintain a safe work environment | 7.1 | Use safe work procedures and PPE to ensure personal safety and that of others |
| | | 7.2 | Minimise environmental impacts of testing/sampling and generation of waste |
| | | 7.3 | Collect and/or dispose of all waste in accordance with workplace procedures |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the competence of testing and calibration laboratories, laboratory safety, quality management and environmental management
- national work health and safety (WHS) standards and codes of practice, national measurement regulations and guidelines, and environmental legislation and regulations
- standard methods for sampling and testing construction materials, such as soils, aggregates, concrete and asphalt
- specific codes, guidelines, procedures and methods, such as:
 - AustRoads test methods, and State/Territory Road Authority test methods
 - National Association of Testing Authorities (NATA) documents regarding construction materials testing (Field application document)
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; calibration and maintenance schedules; material safety data sheets (MSDS) and safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; waste minimisation and safe disposal procedures; and maps and site plans
- sampling and testing procedures for specific sites, clients and samples

Common site problems

Common site problems include, but are not limited to, one or more of:

- caving in of excavation walls
- drilling difficulties
- not knowing the requirements of the design engineer
- not understanding the nature of the item being designed (e.g. retaining wall, piled structure and earthworks)
- sample loss during retrieval
- knowing when to stop a hole, or what and when to test and sample
- misidentification of samples and sampling locations

- equipment breakdown and breakage
- environmental problems and issues, including site access, inclement weather, traffic, wildlife, vegetation and construction activities

Site hazards

Site hazards include, but are not limited to, one or more of:

- solar radiation, dust and noise
- manual handling of heavy materials and equipment
- working in/on trenches, confined spaces, wet and uneven surfaces, heights and slopes
- vehicular and pedestrian traffic
- underground services, such as gas and electricity
- working close to earth moving equipment, trucks and overhead loads

Safe work procedures Safe work procedures include, but are not limited to, one or more of:

- locating site services before investigations commence
- use of signage, barriers, flashing lights and traffic control
- use of PPE, such as hard hats, hearing protection, gloves, goggles, coveralls and safety boots
- use of MSDS
- use of machinery guards
- recognising and observing hazard warnings and safety signs/barriers
- handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- labelling of samples, reagents and hazardous materials
- regularly cleaning equipment and vehicles
- following established manual handling procedures

WHS and environmental management requirements

WHS and environmental management requirements:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>