Australian Government

MSL974013 Monitor performance of structures

Release: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

MSL974013 Monitor performance of structures

Modification History

Release 1. Supersedes and is equivalent to MSL974013A Monitor performance of structures

Application

This unit of competency covers the ability to monitor civil engineering structures (such as roads, dams, embankments, open cut faces, bridges, tunnels, towers and other concrete/steel erections) to measure their performance, confirm design parameters or measure the effects of improvements or rehabilitation. The unit involves confirming the requirements of the monitoring activities, liaising with site personnel, performing monitoring activities, setting up monitoring equipment, collecting reliable data and reporting results. Personnel are also expected to interpret results in the field, recognise/rectify obvious errors or unexpected results and troubleshoot common problems.

This unit of competency is applicable to laboratory personnel working in the geotechnical, construction material testing, civil engineering and mining 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

MSL973009 Conduct field-based acceptance tests for construction materials

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	**Confirm requirements for monitoring activities**	1.1	Review job request to confirm the purpose and objectives of monitoring activities with supervising staff
		1.2	Review emergency plans, site hazards, risk assessments, safe work procedures and environmental requirements, associated with the monitoring activities and site requirements
		1.3	Review any available data from previous monitoring at the site to identify expected values and any trends in results
		1.4	Liaise with client to arrange site access, confirm timing and clarify the need for permits, induction training or any other special requirements
		1.5	Confirm details of monitoring instruments to be used, parameters to be measured and the data formats required by users
2	**Prepare for monitoring activities**	2.1	Complete all administrative requirements and obtain appropriate approvals/permits
		2.2	Make appropriate travel arrangements to and from the site, as required
		2.3	Assemble all required instruments, equipment and supplies and check that they are fit for purpose
		2.4	Stow monitoring instruments, equipment and supplies to ensure their safe transport
		2.5	Liaise with appropriate personnel on arrival at site to ensure safety and minimise disruption to other workers during monitoring
		2.6	Complete site induction as necessary

3	**Collect and verify monitoring data**	3.1	Use barriers and signage to control access to work area in accordance with workplace safety procedures
		3.2	Perform pre-use checks of instruments and trial measurements to ensure they are operating within specifications
		3.3	Identify location for monitoring in accordance with work instructions and/or test method
		3.4	Operate instruments safely and in accordance with work instructions, test method, and/or manufacturer specifications
		3.5	Take sufficient measurements to ensure that data meets quality requirements
		3.6	Recognise obvious errors or atypical data and take appropriate corrective actions
		3.7	Recognise and record/photograph details of site conditions that may impact on data quality
		3.8	Seek advice to deal with any situation beyond own technical competence
4	**Finalise monitoring activities**	4.1	Remove signage and barriers and reinstate all disturbed surfaces in accordance with workplace procedures
		4.2	Ensure all data are stored safely before shutdown of instrument/equipment
		4.3	Clean all instruments and equipment (and vehicle as necessary) to avoid environmental damage, including stormwater run-off and/or transfer of pests
		4.4	Check that all instruments, equipment and supplies are present and undamaged before re-stowing them for safe transport
		4.5	Notify appropriate site personnel on completion of monitoring activities and prior to leaving site
		4.6	On return to base, check serviceability of instruments and equipment before storage
		4.7	Download data into laboratory/workplace information management system in accordance with workplace

			procedures
		4.8	Complete site safety plans, instrument/equipment logs and test reports in accordance with workplace procedures
		4.9	Notify supervising staff upon completion of activities
		4.10	Report any significant issues arising from monitoring activities to appropriate personnel
5	**Maintain a safe work environment**	5.1	Use safe work procedures and personal protective equipment (PPE) to ensure personal safety and that of others
		5.2	Minimise environmental impacts of monitoring activities and generation of waste
		5.3	Collect and/or dispose of all waste in accordance with environmental/quarantine requirements and 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; maps and site plans
- sampling and testing procedures for specific sites, clients and samples

Monitoring activities

Monitoring activities include, but is not limited to, measuring one or more of:

- displacement and vibration
- pressure and force
- temperature
- setting time
- strain
- cracking (visual assessment of road condition)
- defect mapping
- moisture
- water levels

- movement of chemical ions through structures

Administrative requirements and appropriate approvals

Administrative requirements and appropriate approvals include:

- travel requisitions and insurance
- authority for procurement of supplies
- use of vehicles and equipment
- access permits

Site hazards

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

- dust and noise
- extreme weather (e.g. sunlight, wind, hail, rain and heat)
- manual handling of heavy equipment or materials
- crushing, entanglement and cuts associated with moving machinery
- vehicular traffic on roads and sites
- injuries caused by falling objects and working conditions, such as uneven surfaces, heights, slopes, wet surfaces, trenches and confined spaces
- nuclear density/moisture gauges and industrial X-ray equipment
- driving vehicles over long distances, in rural or remote areas and over difficult terrain
- fatigue

Safe work procedures

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

- use of site safety plans and MSDS
- use of signage, barriers, flashing lights and traffic control
- use of PPE, such as hard hats, hearing protection, gloves, goggles, coveralls and safety boots
- handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- regularly cleaning equipment and vehicles
- following established manual handling procedures

Minimising environmental impacts

Minimising environmental impacts include, but is not limited to, one or more of:

- damage from movement of vehicles
- disposal of surplus or spent or materials

- containing run-off of water
- recycling of wastes
- compliance with quarantine requirements, including cleaning of vehicles to prevent transfer of pests (e.g. fire ants and seeds) and contaminants
- compliance with environmental, cultural and heritage protection requirements

WHS and environmental management requirements

WHS and environmental management requirements include:

- 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/