



Australian Government

Department of Education, Employment and Workplace Relations

RTF3001A Construct turf playing surfaces

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This competency standard covers the process of constructing soil profiles for the establishment of high performance sports and recreational turf surfaces.

The construction of soil profiles for high performance turf playing surfaces is likely to be under limited supervision from others, with checking only related to overall progress. The construction of soil profiles is normally done within routines, methods and procedures where some discretion and judgement are required in the selection of equipment and materials, organisation of work, services, actions, and the achievement of outcomes within time and budgetary constraints.

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Not applicable.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
1 Plan for construction activities	1.1 The construction site for high performance turf playing surfaces and the construction method are identified according to the site and construction plans and enterprise work procedures. 1.2 Soil tests of existing soil are undertaken using representative samples, and according to testing instrument instructions and enterprise work procedures. 1.3 Locations and layout of services and utilities are identified, depths checked against the site or construction plan, and discrepancies are reported to the supervisor and the relevant authorities. 1.4 History of site is determined and taken into account in planning construction details. 1.5 Likely consequences of site aspect, features and run-off from adjacent sites are determined and incorporated in site and construction plans. 1.6 OHS hazards are identified, risks assessed, controls implemented and reported to the supervisor. 1.7 Suitable safety equipment and personal protective equipment (PPE) are selected, used and maintained.
2 Survey the construction site	2.1 Surveying equipment is set up and used according to industry standards. 2.2 Existing levels are surveyed and temporary benchmark established. Details are recorded accurately and legibly according to industry standards. 2.3 New levels are set according to specifications and pegs placed according to industry convention. 2.4 Contour map with reduced levels and a cross section is developed and drawn using accepted industry symbols and mapping conventions.

- 3 Prepare for construction work
 - 3.1 Enterprise work team, contractors and design consultants are identified and, where required, engaged.
 - 3.2 Work tasks are scheduled in a logical, timely and effective manner in consultation with the supervisor.
 - 3.3 Materials required are estimated and costed according to accepted industry practice and ordered.
 - 3.4 **Plans for the new construction profile** are obtained or developed.
- 4 Set out site for construction
 - 4.1 Symbols and terminology are interpreted to ensure the concept of the construction plan is clearly understood according to industry practice
 - 4.2 Boundaries and **features** contained in the site and construction plans are checked and verified against the actual site and existing features.
 - 4.3 Finishing levels, provision for drainage and irrigation, and drainage head of the site are identified and checked against the construction plan to ensure nominated levels are workable.
 - 4.4 Measurements are checked against the construction plan, the construction area is pegged out, and variances are notified to the supervisor according to enterprise work procedures.
- 5 Excavate the construction site
 - 5.1 Excess soil is removed and the construction site cleared with the stockpile being placed in a designated area according to enterprise work procedures.
 - 5.2 The base is graded to the level and slope specified in the **base design**.
 - 5.3 The base of the profile is consolidated to achieve uniform compaction over the entire site according to the construction plan.
 - 5.4 Sub-surface **irrigation system** components and fittings are installed to the required depth and design specified in the construction plan.

- 6 Install drainage system
 - 6.1 Drainage trenches are dug to the required depth and design specified in the construction plan.
 - 6.2 Drainage material is laid on the base of the trench, pipes are laid/installed, and trenches are covered according to industry standards.
- 7 Install soil profile
 - 7.1 **Quantities** of **material** required to be spread over the designated area are calculated and measured according to the construction plan.
 - 7.2 Equipment is calibrated according to manufacturers guidelines to distribute the required amount of material over the designated area.
 - 7.3 7.2 Each profile layer is compacted to reflect the final contour.
 - 7.4 7.3 The interface between profile layers is uniform and unbroken according to the construction plan and enterprise work procedures.
 - 7.5 7.4 **Soil amendments** are prepared according to enterprise work procedures, mixed thoroughly and applied evenly over the designated area.
 - 7.6 7.5 The **finishing soil surface** is given a final levelling and consolidated, ready for planting, according to the construction plan and enterprise work procedures.

Required Skills and Knowledge

Not applicable.

Evidence Guide

What evidence is required to demonstrate competence for this standard as a whole?

Competence in constructing a soil profile for a high performance turf surface requires evidence that the person is able to prepare for construction activities, supervise work groups, set out, survey, test and excavate the construction site, install the soil profile, and apply soil amendments ready for the establishment of the high performance turf playing surface.

The skills and knowledge required to construct a soil profile must be **transferable** to a different work environment. For example, this could include different playing surfaces, soil profiles and workplaces.

What specific knowledge is needed to achieve the performance criteria?

Knowledge and understanding are essential to apply this standard in the workplace, to transfer the skills to other contexts, and to deal with unplanned events. The knowledge requirements for this competency standard are listed below:

practical understanding of the range and use of materials, tools, equipment and machinery available to the enterprise for construction of soil profiles, including soil amendments and base construction materials

practical understanding of the range of construction methods that may be used to construct soil profiles for high performance turf surfaces, and the association of construction methods with site limitations, environmental implications, and end use of the turf surface

practical understanding of surveying principles and techniques

soil testing techniques and the application of results to the construction process

awareness of the comparative environmental implications associated with construction and excavation activity, drainage and irrigations systems, soil amendments and waste disposal procedures.

What specific skills are needed to achieve the performance criteria?

To achieve the performance criteria, appropriate literacy and numeracy levels as well as some complementary skills are required. These include the ability to:

communicate effectively with work team members, supervisors, contractors and consultants

interpret, and draft basic plans

utilise proforma reporting, analyses and work procedure documents

understand design symbols and information

measure materials, interpret site and construction plan specifications, survey and assess site measurements, and interpret and apply test results

co-ordinate work group, contractors and own activities to sequentially and effectively complete construction in a timely and cost effective manner.

What processes should be applied to this competency standard?

There are a number of processes that are learnt throughout work and life, which are required in all jobs. They are fundamental processes and generally transferable to other work functions. Some of these are covered by the **key competencies**, although others may be added. The questions below highlight how these processes are applied in this competency standard. Following each question a number in brackets indicates the level to which the key competency needs to be demonstrated where 0 = not required, 1 = perform the process, 2 = perform and administer the process and 3 = perform, administer and design the process.

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| 1. How can communication of ideas and information (1) be applied? | Written, oral and tele-communication of ideas and information relating to construction activities and problems encountered will be required with the supervisor, work group, contractors or consultants. |
| 2. How can information be collected, analysed and organised (1) ? | Enterprise work procedures and site and construction plans should be consulted, interpreted and applied to co-ordinate construction activities, with further clarification sought from the supervisor, contractors or consultants where necessary. |
| 3. How are activities planned and organised (1) ? | Work activities for the work group, contractors and self will be planned prior to and adjusted during the construction program. |
| 4. How can team work (2) be applied? | The construction program will involve facilitating and leading members of a team to complete the construction on time and budget. |
| 5. How can the use of mathematical ideas and techniques (1) be applied? | Mathematical application will be required to calculate the spatial and logistical requirements of the construction program. |
| 6. How can problem-solving skills (1) be applied? | Site contingencies, personnel difficulties and timeline failures may require problem-solving techniques. |
| 7. How can the use of technology (1) be applied? | Technological understanding will be required to access and apply design specifications, undertake construction activities, communicate and keep records. |

Are there other competency standards that could be assessed with this one?

This competency standard could be assessed on its own or in combination with other competencies relevant to the job function.

There is essential information about **assessing this competency standard for consistent performance** and **where and how it may be assessed**, in the Assessment Guidelines for this Training Package. All users of these competency standards must have **access** to the **Assessment Guidelines**. Further advice may also be sought from the relevant **sector booklet**.

Range Statement

Range of Variables

The Range of Variables explains the contexts within which the performance and knowledge requirements of this standard may be assessed. The scope of variables chosen in particular training and assessment requirements may depend on the work situations available

What types of **high performance turf playing surfaces** may require construction of soil profiles for turf establishment?

Surfaces may include sites for high performance sports and recreation such as golfing greens, cricket pitches and purpose built sporting facilities.

What types of **construction method** may apply to this standard?

Construction methods may include natural or artificial drainage, perched watertable construction method, pure sand construction, and the United States Golf Association (USGA) or modified USGA construction method.

What **enterprise work procedures** may apply to this standard?

Work procedures will be based on sound horticultural principles and practices and may include supervisors oral or written instructions, construction program, enterprise standard operating procedures (SOP), specifications, routine maintenance schedules, work notes; product labels and Material Safety Data Sheets (MSDS); manufacturers service specifications and operators manuals; waste disposal, recycling and re-use guidelines; and OHS procedures.

What **soil tests** may be undertaken?

These may include tests for pH, salinity, texture and soil type, and surface and sub-surface infiltration rate test. Samples may include plugs and core samples. Test kits may include a dry test, CSIRO kits, EC meters and pH kits.

Which **services and utilities** might need to be located on the site?

Services and utilities may include electricity, gas and phone cables, and water source and drainage outlet for planned sprinkler system.

How might the **site history** affect construction?

The previous use of the site may influence the nature of construction or require remediation activities, for example, former livestock treatment sites, landfill, residential, manufacturing, etc.

What **OHS hazards** may be associated with

Hazards may include disturbance or

the construction of soil profiles?	interruption of services, solar radiation, dust, noise, soil and water micro-organisms, chemicals and hazardous substances, manual handling, moving machinery and machinery parts, uneven surfaces, and flying objects.
What OHS requirements may be relevant to this standard?	OHS requirements may include identifying hazards; assessing risks and implementing controls; cleaning, maintaining and storing tools, equipment and machinery; appropriate use of personal protective equipment including sun protection; safe operation of tools, equipment and machinery; safe handling, use and storage of chemicals and hazardous substances; correct manual handling; basic first aid; personal hygiene, and reporting problems to supervisors.
What safety equipment may be required?	Safety equipment may include signage and barriers.
What personal protective equipment (PPE) may be required to construct soil profiles?	Personal protective equipment may include hat, boots, overalls, gloves, goggles, respirator or face mask, face guard, hearing protection, sunscreen lotion and hard hat.
What surveying equipment may be required?	Surveying equipment may include automatic level, laser level, dumpy level, Cowley level, staff, boning rods, pegs, notebook, pencil and calculator.
What should be included in plans for the new construction profile ?	Plans should include contours, cross-section and profile, and will be based on survey and other research conducted in preliminary phases of the project.
What features may be included in site and construction plans?	Features may include permanent fixtures, buildings, site aspect, shade, trees and tree roots.
What structures may the base design include?	Structures may include a one way fall, a rooftop, multiple rooftop or V inverted saucer design.
What irrigation systems may be relevant to this standard?	Irrigation systems may include tow lines, trailing irrigation, pop-ups, automatic, sprinkler, spray, drip, and hand held hose.
How may soil amendment quantities be	Measuring techniques may include scales,

measured?

package size, trucks and volume.

What **materials** may be required for the construction of soil profiles?

Materials may include rootzone, irrigation and drainage materials, and soil amendments such as gypsum, lime or zeolite, artificial fibre, organic matter, mineral fertiliser, turf grids, lock sand and fibre turf.

What **soil amendments** might be applied?

Soil amendments may include organic matter, zeolite, dolomite, turf starter, and fertiliser.

What factors may the **finishing soil surface** incorporate?

Factors may include matching levels of soil with the required final levels, aligning the surface with pegs, and ensuring that no depressions exist and the area is consolidated.

What **tools, equipment and machinery** may be required?

Excavation tools, equipment and machinery may include hand tools such as rakes, shovels, spades, wheelbarrows and hoses, and machinery such as bobcats, ditch witches, backhoes, front-end loaders, graders, trucks, hydraulic trailers, and tractors and 3-point linkage equipment.

What **environmental implications** may be associated with the construction of soil profiles for high performance turf playing surfaces?

Construction may have beneficial environmental impacts where drainage and irrigation reduce excess water, nutrient and chemical flow into the external environment, including natural waterways, or enable recycling of water run-off thus minimising the draw on water resources. Beneficial impacts may also result from the construction of a soil profile with more efficient water and nutrient utilisation than the original soil profile of the site.

Detrimental environmental impacts may arise where surface construction activities produce excess noise, dust or water, or the drainage and irrigation systems do not optimise water use because of incorrect installation or design faults, such as irrigation overspray or inefficient drainage.

Where new sites are established for sporting enterprises, the interruption of native corridors and degradation of the ecosystem edge may compromise existing native ecosystems.

How may a **clean and safe work area** be maintained?

Tasks may include disabling unused tools, equipment and machinery and storing neatly out of the way of construction activities; safely storing materials on site; using signage and safety barriers during and removing after construction activities are completed; and swiftly and efficiently removing and processing debris and waste from the work area.

What **services** may need to be located?

Services may include water supply, gas, power (electricity), telecommunications, irrigation, stormwater and drainage.

What **drainage systems** may be relevant to this standard?

Drainage systems may include earthenware, PVC, surface, sub-surface, spoon, agricultural, strip, aggregate, pits, mole plough, sand slit and sub-surface cultivation.

For more information on contexts, environmental implications and variables for training and assessment, refer to the Sector Booklet.

Unit Sector(s)

Not applicable.