Australian Government

MEM234040 Plan space allocation for large steel based fabrication and construction projects

Release: 1

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Modification History

Release 1. New unit.

Application

This unit of competency defines the skills and knowledge required to use spatial scanning and modelling software to plan efficient space allocation and usage for workshop and yard facilities used for large fabrication or modular assembly operations such as ship building. The unit applies to those working alone or as part of a multi-disciplinary team.

The unit scope includes scanning available space, estimating areas needed per module and stage of fabrication based on the draft schedule, and testing and modifying area allocations as a result of prototyping. The unit requires operational, quality, and engineering systems inter-relationships to be taken into account.

Where a single measuring of a site is required unit MEM09203 Measure and sketch site information should be selected.

This unit does not cover integration of spatial scans and models with configuration management procedures. Where this skill is required, unit MEM234036 Apply configuration management procedures in engineering project management and its prerequisites should be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

MEM23003 Operate and program computers and/or controllers in engineering situations

MEM16008 Interact with computing technology

MEM16006 Organise and communicate information

Competency Field

Engineering Science

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.

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1. Access site and workshop	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use appropriate personal protective equipment (PPE) in accordance with standard operating procedures
2. Develop a 3D model of yard, workshop and existing fixed plant and services	2.1 Conduct a preliminary visual inspection of yard, workshop and existing fixed plant and services 2.2 Plan access and safety procedures for conduct of a 3D scan 2.3 Scan yard, workshop and existing fixed plant and services using appropriate spatial scanning technology 2.4 Accurately locate site and building boundaries and existing fixed plant and services in 3D space 2.5 Accurately locate usable space 2.6 Check for conflicts and refine model if necessary
3. Use 3D model to assist in locating fabrication and required support services	3.1 Use model to identify limits for workshop-based fabrication of modules or single construction object 3.2 Use 3D model for preliminary location of fabrication area, equipment, materials and services required for each module or single fabrication 3.3 Participate in using 3D model to allocate modules to workshop, yard or offsite construction 3.4 Update 3D model for preliminary area allocations
4. Plan flow of work for prototyping area	4.1 Use 3D model of prototyping stage work area to estimate work and material flow 4.2 Use estimations of cycle and changeover times for common operations to identify potential conflicts and bottlenecks 4.3 Model erection of prototype module or fabrication 4.4 Model movement of completed prototyped module or object from work area
5. Incorporate prototyping data into 3D model for later stages	5.1 Review data from prototyping and categorise into data relevant to later stages or unique to prototyping 5.2 Incorporate relevant prototyping data into 3D model for use with planning of later stages

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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.

Modules refers to sections of a large installation or object that are fabricated separately and later joined. Depending on the industry the term 'module' refers to one or more of the following:	• hull blocks • prefabricated pipework assembly • reactors, catalytic crackers, and other large containment vessels • large platforms, columns, beams, trusses and other structural components • other large fabricated sections manufactured separately for joining to a finished fabricated object or installation.
Common operations for cycle and changeover time estimations include one or more of:	• loading, unloading/storage of materials • removal of mill scale • cutting, bending forming and/or shaping • welding preparation • painting • other operations as required.

Unit Mapping Information

No equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2

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