



Australian Government

MEM234041 Manage steel supply for major fabrication projects

Release: 1

MEM234041 Manage steel supply for major fabrication projects

Modification History

Release 1. New unit.

Application

This unit applies to employees responsible for oversight of the supply chain for large steel items on major fabrication projects such as construction of oil refineries, power stations and ship building. The unit applies to individuals working alone or as part of a multi-disciplinary team.

The unit scope includes reviewing the design and construction schedule, developing and managing a steel storage plan, manage steel receipt and storage, and manage steel stock preparation prior to use. Skills related to this unit are normally applied by interpreting design, scheduling and fabrication-related software for relevant information. The unit can apply to a prototyping stage where steel supply, storage and preparation processes are being tested and to the management of these processes during later fabrication and assembly stages.

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

Pre-requisite Unit

Nil

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.
1. Interpret detailed design and construction schedule for onsite steel supply requirements	1.1 Access detailed design and fabrication scheduling software and correctly identify onsite fabrication stages and/or modules 1.2 Identify type, thickness and grade of major steel items to be used for site fabrication and assembly operations 1.3 Identify schedule requirements for availability of steel items for fabrication
2. Integrate steel storage with onsite fabrication	2.1 Plan or review layout of steel stockyard and take into account available space, quantities, steel types, and standard dimensions of steel

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
and assembly	items and scheduling requirements 2.2 Ensure steel items are marked to indicate grade and schedule requirement 2.3 Inspect steel items for mill scale, and supervise removal where required 2.4 Arrange for any required protection of steel stock before stowage 2.5 Ensure steel items are stowed in an order consistent with the schedule or master plan
3. Supervise preparation of steel items for fabrication and assembly processes	3.1 Plan steel stock release schedule according to nesting strategy, fabrication, and assembly schedule requirements 3.2 Identify and allow for required steel stock preparation time 3.3 Manage steel stock storage and release during prototyping and identify any required adjustments to the stock release schedule. 3.4 Manage rolling of plate for straightening and removal of residual stress
4. Adjust steel supply for schedule progress and variations	4.1 Monitor design variations for changes to large steel item requirements 4.2 Monitor master schedule and module or stage sub-schedules for changes to steel requirements 4.3 Adjust steel stock storage and release schedule based on variations and monitoring undertaken

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.

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|---|--|
| Steel items refers to steel supplied as: | <ul style="list-style-type: none"> • plate • pipe • rod and bar • rolled sections. |
| Steel grade refers to the systems used by suppliers to indicate the properties of the steel being supplied. Properties indicated one or more of the following: | <ul style="list-style-type: none"> • chemical composition • physical properties • mechanical properties • use • delivery condition. |
| Changes to large steel item requirements include changes to one or more of the following: | <ul style="list-style-type: none"> • grade • size • number of steel items • scheduled date for use • storage or fabrication use location on site. |
| Typical software used for large fabrication design and scheduling include one or more of the following types of generic or purpose designed software: | <ul style="list-style-type: none"> • computer aided design (CAD) • computer aided manufacture (CAM) • enterprise resource planning (ERP) • project management. |
| Nesting for large fabrication projects is the process to maximise the cutting together of steel parts from stock to minimise waste using one or more of the following strategies: | <ul style="list-style-type: none"> • use of specialised nesting software to coordinate required material, machine data, cutting lists and available machines • integration of nesting software with CNC and enterprise resource planning (ERP) software • supply of steel stock in a format and schedule that promotes efficient nesting. |

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>

Assessment Requirements for MEM234041 Manage steel supply for major fabrication projects

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Performance Evidence

There must be evidence the candidate has demonstrated the ability to:

- access and interpret design software and plans for steel requirements
- access and interpret scheduling software timing of steel related stages
- plan or review layout of a steel stockyard to take into account:
 - space allocated onsite for steel storage
 - quantities, types, and standard dimensions of steel items specified in designs for each fabrication stage or on site assembled module
 - overall construction schedule and sub-schedules for fabrication stages, sub-assemblies or modules
- prototype steel item storage and supply processes
- schedule release of steel stock items for pre-fabrication processes
- schedule supply of prepared steel stock items for fabrication and assembly taking into account:
 - specified fabrication method
 - specified fabrication processes
 - availability of materials-handling equipment
 - buffer and emergency stock requirements
- liaise with fabrication shop employees to ensure steel stock items' size and availability promote efficient nesting
- vary steel storage and release schedules to take into account design, fabrication and assembly schedule variations
- manage steel stock preparation for use including:
 - rolling of plate for straightening and stress relieving
 - mill scale removal.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- common steel sections, types, grades and standard sizes
- typical software used for large fabrication design and scheduling including access, data entry and data retrieval

- role of prototyping in fabrication projects
- nesting and marking out strategies used during fabrication to achieve efficient use of steel
- advantages and disadvantages of storing steel plate vertically and horizontally
- equipment and methods used for plate straightening and stress relieving
- methods for removal of mill scale including:
 - natural removal by vertical stacking
 - flame treatment
 - shot blasting – needs precise parameters to be used for the blasting chamber to avoid cold hardening.

Assessment Conditions

- Assessors must:
 - have vocational competency in managing steel supply for major fabrication projects at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- There must be suitable access to an operating plant or equipment that allows for appropriate and realistic simulation and documentation including relevant workplace procedures, industry codes and standards.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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