

	<b>Unit ID: 263</b>
<b>Domain</b>	<b>METAL FABRICATION-BOILERMAKING</b>
<b>Title:</b>	<b>Lay out and fabricate work pieces and components using the calculation method as part of metal fabrication operations</b>
<b>Level: 4</b>	<b>Credits: 6</b>

### Purpose

This unit standard specifies the competencies required to layout and fabricate work pieces and components using the calculation method engineering drawings as part of metal fabrication operations. It includes calculation of the true lengths of work pieces and components, calculation of positions of holes in steel sections and plates, fabrication of work pieces and components as well as completion of work and cleaning up. This unit standard is intended for those who work as boilermakers.

### Special Notes

1. Entry information

Prerequisite

- *Unit 228* - Apply safety rules and regulations in a metal fabrication work environment or demonstrated equivalent knowledge and skills.
2. To demonstrate competence, at a minimum, evidence is required of laying out and fabricating two work pieces using the calculation method. These tasks should be performed ensuring correct identification of requirements and finishing of the tasks, correct selection and use of appropriate processes, tools and equipment and completing all work to specification.
  3. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate simulated realistic environment in which boilermaker operations are carried out.
  4. Performance of all elements in this unit standard must comply with manufacturers' specifications and workplace specific requirements.
  5. '*Specifications*' refers to any, or all of the following: manufacturers' specifications and recommendations, site and workplace specific requirements.
  6. Regulations and legislation relevant to this unit standard include the following:
    - Labour Act 6 of 1992
    - Occupational Health and Safety Regulations No.18, 1997 and all subsequent amendments.

## **Quality Assurance Requirements**

This unit standard and others within this Subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on [www.nta.com.na](http://www.nta.com.na).

## **Elements and Performance Criteria**

### **Element 1: Calculate true lengths of work pieces and components**

#### **Performance Criteria**

- 1.1 Theorem of Pythagoras is applied to calculate true lengths of work pieces and components.
- 1.2 Theorem of Trigonometry ratios is applied to calculate true lengths of work pieces and components.
- 1.3 Scales are interpreted and true lengths transferred.

### **Element 2: Calculate the positions of holes in steel sections and plates**

#### **Performance Criteria**

- 2.1 The back mark is calculated to specifications.
- 2.2 Landing is calculated to specifications.
- 2.3 Pitch is calculated to specifications.

### **Element 3: Fabricate work pieces and components**

#### **Performance Criteria**

- 3.1 Appropriate personal protection clothing and equipment is used in line with workplace procedures.
- 3.2 Material is prepared prior to fabrication in line with the job plan.
- 3.3 Jigs and templates are manufactured as required in line with the job plan.
- 3.4 Appropriate personal protection clothing and equipment is used in line with workplace procedures.
- 3.5 Material is marked off and dimensions checked in accordance with the job plan.

- 3.6 Material is cut and formed using appropriate machinery and tools in line with the job plan.
- 3.7 Work pieces and components are developed to true lengths.
- 3.8 Tools and equipment are operated during fabrication tasks in line with manufacturers' specifications and industry standards.
- 3.9 Work pieces and components are assembled using appropriate methods in line with the job plan and specifications.
- 3.10 Distortion is prevented and controlled applying appropriate techniques in line with job requirements.
- 3.11 Final job inspection is performed and permits are issued as required in line with the job plan.

**Element 4: Complete the work and clean up**

**Performance Criteria**

- 4.1 Work is completed and appropriate personnel notified in line with workplace procedures.
- 4.2 Work area is cleared of waste, cleaned, restored and secured in line with workplace procedures.
- 4.3 Plant, tools and equipment are cleaned, checked, maintained and stored in line with workplace procedures.
- 4.4 Work completion details are finalised in line with workplace procedures.

**Registration Data**

<b>Subfield:</b>	Mechanical Engineering
<b>Date first registered:</b>	29 March 2007
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