## Metal Fabricator – Competency Changes

### Current Program Outline Competencies found in Harmonized Level 1

This document is to show the **60 additional hours** from current level 1 to harmonized level 1

<table>
<thead>
<tr>
<th>Green = Added</th>
<th>Red = Removed/Moved/Combined</th>
<th>210 hours (Increased by 60 hours)</th>
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</thead>
</table>

### A Introduction to the Trade

**A1** Describe the Metal Fabrication Trade

### B Use Safe Work Practices

**B1** Describe safe shop practices

**B2** Identify legislation which regulates safe working environments

**B3** Describe protective clothing and equipment

**B4** Use basic lifting techniques (body mechanics)

**B5** Describe fire safety

**B6** Describe safe work practices for confined work spaces

### C Solve Trade Math Problems

**C1** Solves problems involving fractions

**C2** Use a scientific calculator

**C3** Calculate a flat pattern layout for cylinders and forming

**C4** Calculate area and weights/mass for various plate shapes

**C5** Solves problems using ratio and proportion

**C6** Solve simple problems using geometric construction

**C7** Solve simple problems using Pythagorean theory

**C10** Solve problems involving weight, mass and the capacity of vessels (CL2 → HL1)

### D Use Trade Tools

**D1** Use basic measuring, layout and hand tools

**D2** Use bench and hand grinders

**D3** Use and maintain portable power tools

**D4** Use specialized measuring tools (CL4 → HL1)

### E Use Shop Equipment

**E1** Use the power plate shears

**E2** Use the hydraulic brake press

**E3** Use the power plate rolls

**E4** Use the ironworker

**E5** Use shop saws
<table>
<thead>
<tr>
<th></th>
<th>Use drill presses</th>
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<tbody>
<tr>
<td>E7</td>
<td>Use thread cutting machine (CL2 → HL1)</td>
</tr>
</tbody>
</table>

### F  Burn and Weld Metals

- **F1** Describe safe burning practices
- **F2** Use a portable oxy-fuel unit
- **F3** Describe safe arc welding practices
- **F4** Identify various arc welding practices
- **F5** Identify electrode characteristics and classifications
- **F6** Welder plate using manual arc welding equipment
- **F7** Use arc-air gouging/cutting methods (CL2 → HL1)
- **F9** Use semi-automatic welding machines (CL2 → HL1)

### G  Read Drawings

- **G1** Sketch objects using isometric projection
- **G2** Sketch objects using orthographic projection
- **G3** Draw secondary views of simple objects
- **G4** Identify standard symbols and abbreviations
- **G5** Interpret standard weld symbols
- **G6** Interpret simple multi-view shop drawings
- **G7** Interpret simple structural drawings

### H  Use Material Handling Equipment

- **H1** Use safe rigging practices
- **H2** Use material handling equipment and storage practices
- **H3** Use synthetic and natural fiber lines (CL2 → HL1)
- **H4** Describe safe work practices related to mobile equipment
- **H5** Describe safe work practices related to mobile equipment

### I  Use Structural Layout Techniques

- **I1** Identify standard structural shapes
- **I2** Layout simple templates from a given structural shop drawing

### J  Develop Plate and Structural Patterns

- **J1** Define basic layout terms
- **J2** Develop various patterns using parallel lines development
- **J3** Describe shop layout and processing for plate

### K  Use Surface Preparation and Finishing Methods

- **K1** Describe common method of metal preparation
- **K2** Describe the types of paints used in industry
- **K3** Identify the common methods of paint application
### L Fabricate Plate and Structural Sections

| L1 | Describe common fitting consideration and procedures |
| L2 | **Fabricate a cylinder within a cylinder** |
| L3 | Layout and fit a structural beam (CL2 → HL1) |

### M Describe Basic Metallurgy and Testing Techniques

| M1 | Describe the types, grades and properties of steels (CL4 → HL1) |
| M2 | Describe the effects of heat and stress on metals (CL4 → HL1) |
| M3 | Describe stress relieving techniques on metals (CL4 → HL1 & 2) |
| M4 | Identify and use common metal testing methods (CL4 → HL1 & 2) |

### N Use Testing and Inspection Methods

| N1 | Describe relevant provincial, national and international fabrication codes (CL4→HL1) |
| N2 | Use standard non-destructive testing inspection techniques (CL4 → HL1) |

### O On-site Installation

| O2 | Establish laydown area (CL4 → HL1) |
| O3 | Determine required equipment (CL4 → HL1 & 3) |