

# MINNESOTA PIPELINE PROJECT

## PRIVATE INVESTMENT, PUBLIC EDUCATION LABOR AND INDUSTRY EXPERIENCE

### Occupational Competency Summary

**Welder** – This position is responsible for the proper, productive and safe fitting and joining of metal and various components/parts together with select welding processes and procedures within a manufacturing environment.

#### Industry-Sector Technical Competencies

- Blueprint Reading/Welding Symbols – Develop the skills necessary to interpret working drawings common to the metalworking field. Focus on orthographic projection drawings and interpreting specified welding information and symbols.
- Welding Math and Measuring – Knowledge to apply basic math skills, make accurate measurements and use measuring tools in regards to various aspects of the welding process.
- Material Inventory Control – Training in how to manage stock materials as well as track and purchase necessary items in order to seamlessly support the overall manufacturing process.
- Machine Maintenance – Know how to complete appropriate and thorough maintenance procedures to keep welding machines running safely and dependably
- Geometric Dimensioning and Tolerancing – Knowledge of the symbolic way that specific tolerances on blueprint drawings are referenced and how this impacts the manufactured part.
- Basic Fabrication – Understanding of metal fabrication by cutting, altering and shaping steel or other materials through the use of different tools, techniques and processes prior to welding.

#### Occupation-Specific Competencies

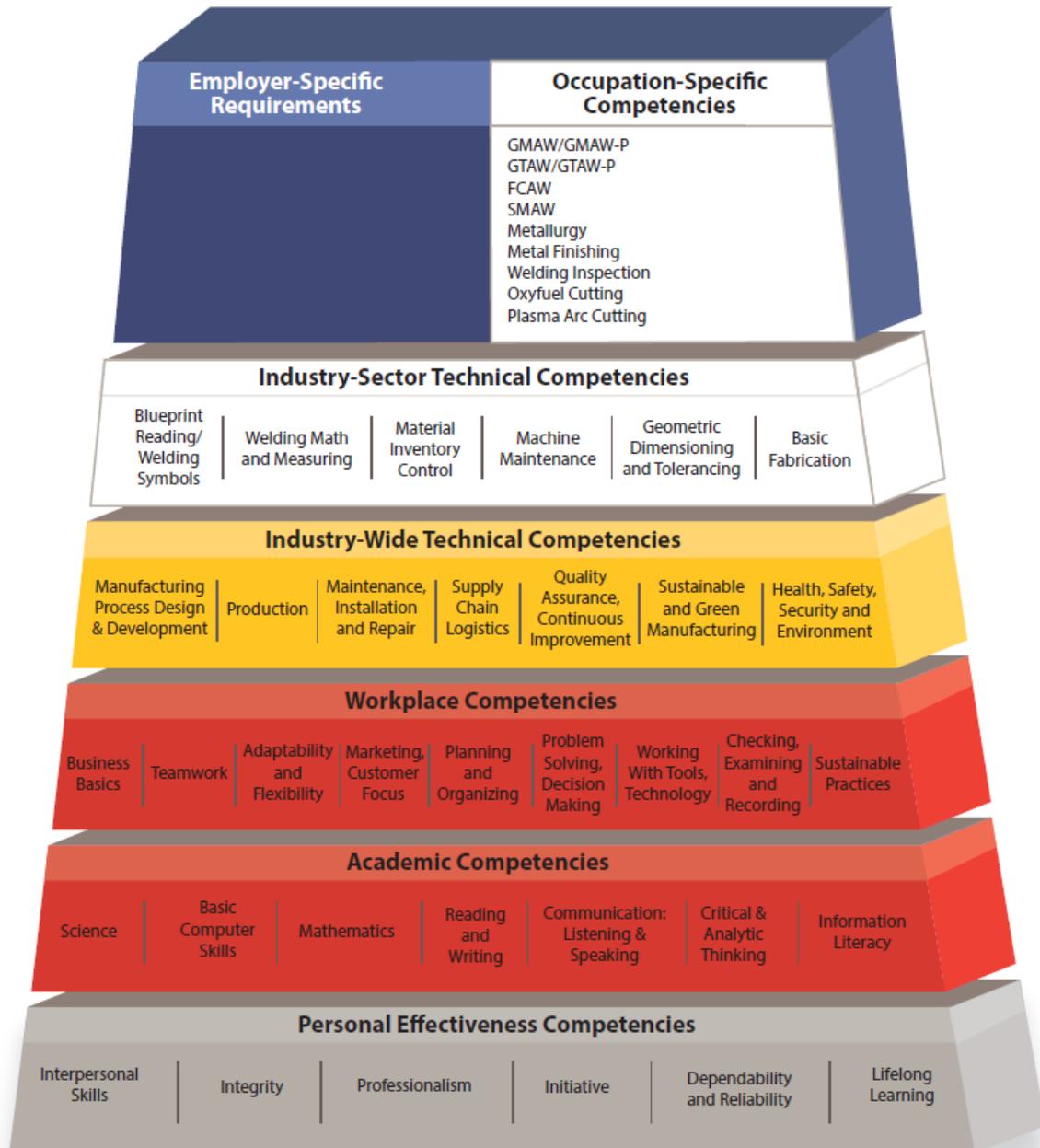
- Metallurgy – Ability to select the appropriate welding process for a particular application, choose or adjust welding parameters and techniques to optimize weldment properties and know the cause of and avoid weld defects.

- Metal Finishing – Able to refine welds without compromising the integrity of the part and welded joint.
- Welding Inspection – Demonstrate how to identify weld defects, confirm product is up to customer welding standards, and use appropriate tools to accomplish weld inspections.
- Oxyfuel Cutting – Aptitude to produce good quality cuts on a variety materials using the correct procedures. Practice safe working procedures for handling the equipment and cylinders in the Oxyfuel process.
- Plasma Arc Cutting - Aptitude to produce good quality cuts on a variety materials using the correct procedures. Practice safe working procedures for handling the equipment and cylinders in the Plasma Arc process.
- GMAW/GMAW-P – Demonstrate welding using gas metal arc welding or pulsed gas metal arc welding (GMAW-P) safely and correctly.
- GTAW/GTAW-P - Demonstrate welding using gas Tungsten arc welding or pulsed gas Tungsten arc welding (GTAW-P) safely and correctly.
- FCAW - Demonstrate welding using flux cored arc welding (FCAW) safely and correctly.
- SMAW - Demonstrate welding using shielded metal arc welding (SMAW) safely and correctly.

**Specific welding skills required will depend on employer's needs.**

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## Competency Model for Advanced Manufacturing Occupation: Welders, Cutters, Solderers and Brazers



Based on: Advanced Manufacturing Competency Model Employment and Training Administration, United States Department of Labor, April 2010.