

MID-SOUTH STEEL FABRICATORS COUNCIL MEETING

Career Pathway Implementation Report Overview



Background Research: In Demand Occupations

Review relevant Labor Market Information (LMI)

- Structural Metal Fabricators and Fitters
- Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
- Welders, Cutters, and Welder Fitters
- Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders
- Layout Workers, Metal and Plastic

Background Research: Nationally Recognized Credentials

Analyze competencies vs. credentials

- ACT WorkKeys National Career Readiness Certificate (NCRC)
- Manufacturing Skill Standards Council (MSSC)
- American Welding Society Certifications (AWS)
- National Institute of Metalworking Skills (NIMS)
- National Center for Construction Education and Research (NCCER)
- Fabricators and Manufacturers Association, International (FMA)

Background Research: GMACW Participating Schools

Conduct curriculum review of related programs, site visits and Interviews

- TCAT-Memphis
- Moore Tech
- Southwest Tennessee Community College (Southwest)
- ASU Mid-South

Background Research: National Best Practices

- Cuyahoga Community College – Fast-Track Welding Boot Camp (M-List)
- Des Moines Area Community College – Iowa Welding Institute
- Dunwoody Technical College – Welding and Metal Fabrication
- Ferris State University – Welding Technology AAS and Welding Engineering Technology BS
- Iowa Lakes Community College – Welding Technology Program
- Ivy Tech Community College – Welding Institute
- Lancaster County Career & Technology Center (M-List)
- Lehigh Career & Technical Institute (M-List)
- LeTourneau University – Materials Joining Concentration, Engineering B.S.
- Lorain County Community College (M-List)
- Mississippi Gulf Coast Community College – WIRED Customized Training Courses
- The Ohio State University- Welding Engineering, Materials Joining Technical Track
- Pennsylvania College of Technology – Welding and Fabrication Engineering Technology
- Salt Lake Community College – Welding Fabrication & Inspection Degree

Recommended Steel Fabrication Career Pathway

Step 1 – Foundational Skills (Exposure)

Step 2 – Work-Ready (Entry level)

Step 3 – High-Need Skills (Advanced level)

Step 4 – Subject Matter Expert

Step 1 – Foundational Skills (Exposure)

Step 1 provides generalized, exploratory entry points and preparation for various manufacturing career pathways, including welding, for high school students and transitioning adults

- *Certifications:*
 - OSHA 10
 - WorkKeys National Career Readiness Certificate (NCRC) Levels 3 and 4
 - Manufacturing Skill Standards Council Certified Production Technician (MSSC CPT)
- *Exposure:* a basic understanding of the careers available in manufacturing
 - MFG Day, tours, speakers, and job shadowing
- *Program focus*
 - Employability Skills
- *GMACW Focus Schools:*
 - ASU Mid-South Dual Enrollment?
 - Southwest Industrial Readiness Training
- *Fabrication-related Occupations:*
 - *Cutting, Punching, and Press Machine Setters, Operators, and Tenders (job titles may include “helper,” “assembler,” and “operator.”)*

Step 2 – Work-Ready (Entry level)

Step 2 leads to welding positions which typically require minimal formal education followed by on-the-job training.

- *Certifications:*
 - Test for at least one AWS certification in one process in a position between 1F and 3G, using carbon steel or stainless steel
 - Most common certification earned by entry-level welders is using SMAW or GMAW processes and D1.1 Structural Steel standard specifications
- *Exposure:*
 - SMAW, GMAW, FCAW, GTAW, and thermal cutting processes in addition to basic safety, welding symbol and blueprint reading, and inspection/testing basics.
- *GMACW Focus Schools:*
 - TCAT-Memphis, Moore Tech, and ASU Mid-South one-year or shorter certificate programs
- *Fabrication-related Occupations:*
 - *Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders;*
 - *Welders, Cutters, Solderers, Brazers (commonly: welders).*
 - *Additional occupations may include: machine operator, entry-level machinist, and press break operators.*

Step 3 – High-Need Skills (Advanced level)

At Step 3, students continue along a welding track, gaining greater competence in welding processes in more challenging positions, with more challenging metals, and earning higher-level AWS certifications.

- *Certifications:*

- Test for at least one AWS certification in a position between 1F and 3G, using carbon steel or stainless steel
- Most common certification uses SMAW or GMAW processes and D1.1 Structural Steel standard specifications

- *Exposure:*

- Develop a deeper understanding of types of metals and gases, reactions, the interplay of temperature, atmospheric and process changes, allowing for better problem solving on-the-job
- Increased focus on advanced technologies, such as robotics welding

- *GMACW Focus Schools:*

- Moore Tech's and Mid-South's second-year welding courses; Associate of Applied Science
- Work Based Learning opportunities strongly recommended at final semester (internship or co-op)

- *Fabrication-related Occupations:*

- *Welders, Cutters, Solderers, Brazers*
- *Structural Metal Fabricators and Fitters (commonly: fitters)*
- *Layout Workers, Metal and Plastic*
- *Other occupations may include: machinist, maintenance technician, and quality assurance technician.*

Step 4 – Subject Matter Expert

Step 4 is often achieved only after many years of experience; the individuals in these roles often have extensive institutional knowledge and should be tapped as mentors for the emerging workforce.

- *Certifications:*
 - CWI – Inspectors (must have 5+ years of practical work experience plus technical competencies)
 - CWS – Supervisors
 - Quality, non-destructive testing examiner
 - CWEng – Certified Welding Engineer
 - AWS exam for two inch pipe in the 6G position
- *Exposure:*
 - Continued on-the-job training in one or more specialties
- *GMACW Focus Schools:*
 - Bachelor of Applied Science: University of Memphis or the University of Arkansas Fort Smith (have articulation agreements with GMACW partner schools)
 - This level can also be reached through 10-15 years of on-the-job training
- *Fabrication-related Occupations:*
 - *Welders, Cutters, Solderers, Brazers*
 - *Structural Metal Fabricators and Fitters*
 - *Layout Workers, Metal and Plastic*
 - *Welding Engineer*

Steel Fabrication Career Pathway Draft

Step 1 | Foundational Skills

Generalized, exploratory entry points and preparation for various manufacturing career pathways.

- High School Technical Education
- Industrial Readiness Training (Southwest)

- OSHA 10
- WorkKeys National Career Readiness Certificate (NCRC)
- Manufacturing Skill Standards Council Certified Production Technician (MSSC CPT)

Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic

Wages: \$12.00 - \$17.00 per hour

Step 2 | Work-Ready

Exposure to SMAW, GMAW, FCAW, GTAW, and thermal cutting processes in addition to basic safety, welding symbol and blueprint reading, and inspection/testing basics.

- TCAT-Memphis (One-year program)
- Moore Tech (Certificate)
- ASU Mid-South (Certificate)

AWS D1.1 Structural Steel
NIMS Level 1

Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

Wages: \$13.00 - \$18.00

Welders, Cutters, Solderers, Brazers

Wages: \$16.00 - \$24.00

Other occupations may include: machine operator, entry-level machinist, and press break operators.

Step 3 | High-Need Skills (Advanced Level)

Develop advanced skills with more challenging metals, processes, and positions

OR

Basic fitter training for students with a “maker” mindset

- Moore Tech (AAS)
- Mid-South (AAS)

AWS Certified Welder – various
NIMS Level 1
FMA Fundamentals of Metal Fabrication
Steel Fabricators Council Basic Fitter Certification (in development)

Welders, Cutters, Solderers, Brazers

Wages: \$16.00 - \$24.00

Structural Metal Fabricators and Fitters

Wages: \$13.00 - \$20.00

Layout Workers, Metal and Plastic

Wages: \$15.00 - \$24.00

Other occupations may include: Machinist, maintenance technician, quality assurance technician, and fitter.

Step 4 | Subject Matter Expert

Extensive on-the-job training / work experience

OR

Additional formal education

- University of Memphis
- University of Arkansas Fort Smith

CWI – Inspectors (must have 5+ years' experience)
CWS – Supervisors
Quality, non-destructive testing examiner
CWEng – Certified Welding Engineer
Steel Fabricators Council Advanced Fitter Certification (in development)

Welders, Cutters, Solderers, Brazers

Wages: \$24.00 and up

Structural Metal Fabricators and Fitters

Wages: \$20.00 and up

Layout Workers, Metal and Plastic

Wages: \$24.00 and up

Welding Engineer

Wages: \$29.00 and up

Contact Information

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