

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
A. SAFETY	
1. Perform all welding skills with a high level of safety awareness	3.2.1.1(1)
2. Maintain a safe work area	3.2.1.1(1)
3. Know the safe and proper way to perform his job	3.2.1.1(1)
4. Wear the proper clothing required for each job	3.2.1.1(1)
5. Wear the proper eye protection for each job	3.2.1.1(1)
B. BLUEPRINT READING AND FABRICATION	
1. Understand and interpret blueprints, using computer skills	3.2.1.2(1)
2. Correctly identify welding symbols	3.2.1.2(2)
3. Solve fabrication problems using welders math	3.2.1.2(2)
4. Fabricate weldments from blueprints accurately	3.2.1.2(3)
C. METAL IDENTIFICATION & THEIR PROPERTIES	
1. Identify various ferrous metals	N/A
2. Identify various non-ferrous metals	N/A
3. Use the spark test to identify metals	N/A
4. Understand the properties of metals	N/A
D. OXY-FUEL CUTTING (OFC)	
1. Set-up, light, and shut down cutting torch	3.2.1.4 Unit 1 (3)
2. Make 90 degree cuts on mild steel plate	3.2.1.4 Unit 1 (5)
3. Restart cuts on mild steel plate	3.2.1.4 Unit 1 (4)
4. Make flame beveled cut on mild steel	3.2.1.4 Unit 1 (7)
5. Cut hole on mild steel	3.2.1.4 Unit 1 (6)
6. Lay out and cut a pattern on mild steel	3.2.1.4 Unit1 (6)
7. Set-up and cut a 30 degree bevel with the machine torch	3.2.1.4 Unit 1 (7)

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
E. OXY-FUEL WELDING (OFW)	
1. Set-up, light, and shut down welding torch	3.2.1.4 Unit 1 (3)
2. Lay beads with no Filler Rod 1-F	N/A
3. Lay beads with Filler Rod 1-F	N/A
4. Weld a corner joint 1-F	N/A
5. Weld a butt joint 1-F	N/A
6. Weld a lap joint 1-F	N/A
7. Weld a tee joint 2-F	N/A
8. Weld a butt joint 3-F	N/A
9. Weld a lap joint 3-F	N/A
10. Weld a tee joint 4-F	N/A
11. Weld schedule 40 pipe in the 5-G	N/A
F. OXY-FUEL BRAZING (OFB)	
1. Set-up, light and shut down equipment for brazing	N/A
2. Lay beads with Bronze Filler Rod 1-F	N/A
3. Braze weld a butt joint on mild steel 1-F	N/A
4. Braze weld a lap joint 2-F	N/A
5. Braze weld cast iron	N/A
6. Silver braze a fillet tee joint	N/A
G. SHIELDED METAL ARC WELDING (SMAW)	
1. Set-up, strike, and restart a bead, shut down equipment safely	3.2.1.3 Unit 1 (4)
2. Weld an E6010 Pad 1-F (E6011)	3.2.1.3 Unit 1 (4)
3. Weld an E7018 Pad 1-F	3.2.1.3 Unit 1 (4)
4. Weld an E6010 Lap 1-F (E6011)	3.2.1.3 Unit 1 (5)
5. Weld an E7018 Lap 1-F	3.2.1.3 Unit 1 (5)
6. Weld an E6010 fillet tee joint 2-F (E6011)	3.2.1.3 Unit 1 (5)

NATIONAL SKILL STANDARD: AWS

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
7. Weld an E7018 fillet tee joint 2-F	3.2.1.3 Unit 1 (5)
8. Weld an E7024 fillet lap joint 2-F	3.2.1.3 Unit 1 (5)
9. Weld an E7024 fillet tee joint 2-F	3.2.1.3 Unit 1 (5)
10. Weld an E6010 fillet lap joint 3-F (E6011)	3.2.1.3 Unit 1 (5)
11. Weld an E6010 fillet tee joint 3-F (E6011)	3.2.1.3 Unit 1 (5)
12. Weld an E7018 fillet lap joint 3-F	3.2.1.3 Unit 1 (5)
13. Weld an E7018 fillet tee joint 3-F	3.2.1.3 Unit 1 (5)
14. Weld an E6010 fillet lap joint 4-F (E6011)	3.2.1.3 Unit 1 (5)
15. Weld an E6010 fillet tee joint 4-F (E6011)	3.2.1.3 Unit 1 (5)
16. Weld an E7018 fillet lap joint 4-F	3.2.1.3 Unit 1 (5)
17. Weld an E7018 fillet tee joint 4-F	3.2.1.3 Unit 1 (5)
18. Weld an E6010 v-groove butt joint 1-G	3.2.1.3 Unit 1 (6)
19. Guide Bend an E6010 v-groove butt joint 1-G	3.2.1.3 Unit 1 (6)
20. Weld an E6010 v-groove butt joint 2-G	3.2.1.3 Unit 1 (6)
21. Guide bend an E6010 v-groove butt joint 2-G	3.2.1.3 Unit 1 (6)
22. Weld an E6010 v-groove butt joint 3-G	3.2.1.3 Unit 1 (6)
23. Guide bend an E7018 v-groove butt joint with E6010 root 1-G	3.2.1.3 Unit 1 (6)
24. Weld an E7018 v-groove butt joint with E6010 root 2-G	3.2.1.3 Unit 1 (6)
25. Guide bend an E7018 v-groove butt joint with E6010 root 3-G	3.2.1.3 Unit 1 (6)
26. Weld an E7018 v-groove butt joint with E6010 root 4-G	3.2.1.3 Unit 1 (6)
27. Weld an E6010 corner joint 1-F	3.2.1.3 Unit 1 (5)
28. Weld an E6010 corner joint 3-F	3.2.1.3 Unit 1 (5)
29. Weld an E7018 corner joint with E6010 root pass 1-F	3.2.1.3 Unit 1 (5)
30. Weld an E7018 corner joint with E6010 root pass 3-F	3.2.1.3 Unit 1 (5)
31. Set-up, air arc gouging and cutting equipment for mild steel and use safely	3.2.1.3 Unit 1 (3)
H. SHIELDED METAL ARC WELDING (SMAW) - PIPE	
1. Set-up SMAW Equipment for pipe welding	3.2.1.3 Unit 1(3)

NATIONAL SKILL STANDARD: AWS

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
2. Weld a pipe to a Plate 1-F	3.2.1.3Unit1(5)
3. Bevel and prepare pipe for welding	3.2.1.3Unit 1(6)
4. Weld a v-groove butt joint 2-G	3.2.1.3Unit 1(6)
5. Weld a v-groove butt joint 3-G	3.2.1.3Unit 1(6)
6. Weld a v-groove butt joint 5-G	3.2.1.3Unit1(6)
I. SHIELDED METAL ARC WELDING (SMAW) - STAINLESS STEEL	
1. Set-up SMAW Equipment for stainless steel welding	3.2.1.3Unit 1 (3)
2. Prepare stainless steel for welding	3.2.1.3 Unit 1 (5)
3. Weld a stainless steel lap joint 2-F using 308-16 stainless rod	3.2.1.3 Unit 1 (5)
4. Weld a stainless steel tee joint 2-F using 308-16 stainless rod	3.2.1.3 Unit 1(5)
5. Weld a stainless steel square butt joint flat position with 308-16 stainless rod	3.2.1.3 Unit1(5)
J. GAS TUNGSTEN ARC WELDING (GTAW) - STAINLESS STEEL AND MILD STEEL	
1. Set-up and shut down GTAW equipment for stainless and mild steel	3.2.1.3Unit 4(3)
2. Prepare mild steel or stainless steel	3.2.1.3Unit 4(3)
3. Prepare Tungsten Electrode for steel	3.2.1.3Unit 4(3)
4. Weld without filler rod	3.2.1.3Unit 4(4)
5. Weld with filler rod	3.2.1.3Unit 4(5)
6. Weld a fillet lap joint 1-F	3.2.1.3Unit 4(5)
7. Weld a fillet tee joint 1-F	3.2.1.3Unit 4(5)
8. Weld a square groove butt 1-G	3.2.1.3Unit 4(6)
9. Weld a fillet lap joint 3-F	3.2.1.3Unit 4(5)
10. Weld a fillet tee joint 3-F	3.2.1.3Unit 4(5)
11. Weld a square groove butt joint 3-G	3.2.1.3Unit 4(6)
12. Weld a fillet lap joint 4-F	3.2.1.3Unit 4(5)
13. Weld a fillet tee joint 4-F	3.2.1.3Unit 4(5)

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
K. NON-FERROUS GAS TUNGSTEN ARC WELDING	
1. Set-up and shut down GTAW Equipment for non-ferrous metals	3.2.1.3Unit 4(3)
2. Prepare non-ferrous metals	3.2.1.3Unit 4(1)
3. Prepare Tungsten for non-ferrous metals	3.2.1.3Unit 4(3)
4. Weld without filler rod	3.2.1.3Unit 4(7)
5. Weld with filler rod	3.2.1.3Unit 4(7)
6. Weld a fillet lap joint 1-F	3.2.1.3Unit 4(7)
7. Weld a fillet tee joint 1-F	3.2.1.3Unit 4(7)
8. Weld a square groove butt joint 1-G	3.2.1.3Unit 4(8)
9. Weld a fillet lap joint 3-F	3.2.1.3Unit 4(7)
10. Weld a fillet tee joint 3-F	3.2.1.3Unit 4(7)
11. Weld a square groove butt joint 3-G	3.2.1.3Unit 4(8)
12. Weld a fillet lap 4-F	3.2.1.3Unit 4(7)
13. Weld a fillet tee 4-F	3.2.1.3Unit 4(7)
14. Weld an aluminum pipe 5-G	3.2.1.3Unit 4(7)
L. GAS METAL ARC WELDING (GMAW) - MILD STEEL	
1. Set-up, adjust shut down GMAW equipment for short circuit transfer on mild steel	3.2.1.3Unit 2(3)
2. Prepare mild steel for GMAW	3.2.1.3Unit 2(2)
3. Lay stringer beads 1-F	3.2.1.3Unit 2(7)
4. Weld a pad 1-F	3.2.1.3Unit 2(7)
5. Weld a fillet lap 1-F	3.2.1.3Unit 2(5)
6. Weld a fillet tee joint 1-F	3.2.1.3Unit 2(5)
7. Weld a v-groove butt joint 1-G (Guide Bend)	3.2.1.3Unit 2(6)
8. Weld a v-groove butt joint 2-G	3.2.1.3Unit 2(6)
9. Weld a fillet lap joint 3-F	3.2.1.3Unit 2(5)
10. Weld a fillet tee joint 3-F	3.2.1.3Unit 2(5)
11. Weld a v-groove butt joint 3-G (Guide Bend)	3.2.1.3Unit 2(6)

NATIONAL SKILL STANDARD: AWS

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
12. Weld a fillet tee joint 4-F	3.2.1.3Unit 2(5)
13. Weld a v-groove butt joint 4-G (Guide Bend)	3.2.1.3Unit 2(5)
14. Weld mild steel pipe in 5-G	3.2.1.3Unit 2(6)
15. Set-up, adjust shut down GMAW equipment for spray arc on mild steel	3.2.1.3Unit 2(3)
16. Weld a fillet lap 1-F	3.2.1.3Unit 2(5)
17. Weld a fillet tee 1-F	3.2.1.3Unit 2(5)
M. GAS METAL ARC WELDING (GMAW) - ALUMINUM	
1. Set-up GMAW equipment for use on aluminum	N/A
2. Prepare aluminum material to weld	N/A
3. Weld a fillet lap joint 1-F	N/A
4. Weld a fillet tee joint 1-F	N/A
5. Weld a fillet lap joint 3-F up	N/A
6. Weld a fillet lap joint 3-F down	N/A
7. Weld a fillet tee joint 3-F down	N/A
8. Weld a fillet lap joint 4-F	N/A
9. Weld a fillet tee joint 4-F	N/A
N. GAS METAL ARC WELDING (GMAW) - STAINLESS STEEL	
1. Set-up GMAW equipment for stainless steel short arc transfer	N/A
2. Prepare stainless steel for welding	N/A
3. Weld a fillet lap joint 2-F	N/A
4. Weld a fillet tee joint 2-F	N/A
5. Weld a flat butt joint	N/A
O. FLUX-CORED ARC WELDING (FCAW) WITH GAS SHIELD	
1. Set-up, adjust, and shut down FCAW equipment for FCAW of mild steel	3.2.1.3 Unit 3 (3)
2. Prepare mild steel for FCAW	3.2.1.3 Unit 3 (5)
3. Weld a fillet lap joint 1-F	3.2.1.3 Unit 3 (5)
4. Weld a fillet tee joint 1-F	3.2.1.3 Unit 3 (5)

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
5. Weld a fillet lap joint 3-F	3.2.1.3 Unit 3 (5)
6. Weld a fillet lap joint 3-F down	3.2.1.3 Unit 3 (5)
7. Weld a fillet tee joint 3-F down	3.2.1.3 Unit 3 (5)
8. Weld a fillet tee joint 3-F up	3.2.1.3 Unit 3 (5)
9. Weld a fillet lap joint 4-F	3.2.1.3 Unit 3 (5)
10. Weld a fillet tee joint 4-F	3.2.1.3 Unit 3 (5)
11. Weld a v-groove butt joint 1-G (Guide Bend)	3.2.1.3 Unit 3 (6)
12. Weld a v-groove butt joint 3-G (Guide Bend)	3.2.1.3 Unit 3 (6)
13. Weld a v-groove butt joint 4-G (Guide Bend)	3.2.1.3 Unit 3 (6)
P. FLUX-CORED ARC WELDING (FCAW), SELF-SHIELDED	
1. Set-up, adjust and shut down FCAW equipment for welding without gas	3.2.1.3 Unit 3 (3)
2. Prepare mild steel for FCAW	3.2.1.3 Unit 3 (3)
3. Weld a fillet lap joint 1-F	3.2.1.3 Unit 3 (5)
4. Weld a fillet tee joint 1-F	3.2.1.3 Unit 3 (5)
5. Weld a v-groove butt joint 1-G (Guide Bend)	3.2.1.3 Unit 3 (5)
6. Weld a fillet lap joint 3-F	3.2.1.3 Unit 3 (5)
7. Weld a fillet tee joint 3-F	3.2.1.3 Unit 3 (5)
8. Weld a fillet lap joint 4-F	3.2.1.3 Unit 3 (5)
9. Weld a fillet tee joint 4-F	3.2.1.3 Unit 3 (5)
10. Weld a v-groove butt joint 4-G	3.2.1.3 Unit 3 (6)
Q. PLASMA CUTTING TORCH, MANUAL	
1. Safely set-up, adjust, shut down plasma cutting equipment	3.2.1.5 Unit 2 (3)
2. Safely use plasma cutting torch to cut mild steel plate	3.2.1.5 Unit 2 (3)
3. Safely use plasma cutting torch to cut stainless plate	3.2.1.5 Unit 2 (3)
4. Safely use plasma cutting torch to cut aluminum plate	3.2.1.5 Unit 2 (3)
5. Safely use CNC plasma cutting equipment	3.2.1.5 Unit 2 (4)

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
R. PLASMA Welding	
1. Safely set-up, shut down plasma welding equipment	N/A
2. Properly prepare tool steel for welding	N/A
3. Weld an outside corner weld in the 2-G position	N/A
4. Weld a hole shut in the flat position	N/A
5. Weld an inside corner weld in the 2-F position	N/A
S. FABRICATION COMPETENCIES	
1. Perform layout skills	2.3.2
2. Use layout tools correctly	2.3.2
3. Build fabrication projects	2.3.2
4. Perform shearing operations	2.3.2
5. Perform bending and forming operations	2.3.2
6. Perform drilling operations	2.3.2
7. Perform correct fit up techniques	2.3.2
8. Understand governmental welding codes and specifications	2.3.2
9. Understand welding procedure specifications (WPS)	2.3.2
10. Locate essential welding information from codes	2.3.2
11. Perform non-destructive testing using dye penetrant methods	2.3.2
12. Perform destructive testing using guide bends	2.3.2
13. Perform visual inspection methods	2.3.2
T. CAREER DEVELOPMENT	
1. List and identify welding terms	1.2.4
2. List the requirements to become a successful welder	1.2.3
3. Promote good work attitudes	1.2.3
4. Identify areas of welding that are open for occupational advancement	1.2.5
5. Prepare a personal resume	1.2.1
6. Complete a job application	1.3.10

NATIONAL SKILL STANDARD: AWS

DUTY AREAS AND TASKS	NATIONAL SKILL STANDARD AWS
7. Complete a job interview	1.3.10
8. Career Exploration	2.1