Click the “Print this Section” button above to automatically print the specifications for this contest. Make sure your printer is turned on before pressing the button.
### WPS 101

**Welding Procedure Specification**

**WPS No:** WPS 101  
**Revision:** 3  
**Date:** 4/21/2013  
**By:** NP

**Welding Process(es):** SMAW  
**Supporting PQR(s):** Prequalified

#### JOINT
- **Type:** Butt / T-Joint
- **Backing:** Yes  
- **Backing Material:** A-36
- **Root Opening:** 1/4" ±1/16"  
- **Root Face Dimension:** 0" - 1/8"  
- **Groove Angle:** 45°  
- **Back Gouge:** Yes  
- **Method:** N/A

#### BASE METALS
- **Material Spec.:** A-36 to A-36
- **Thickness:** 1/8" to Unlimited  
- **Diameter (Pipe, in):** N/A

#### FILLER METALS
- **AWS Specification:** A5.1  
- **Classification:** E-7018

#### SHIELDING
- **Flux:** Gas  
- **Electrode-Flux (Class):** N/A  
- **Gas Cup Size:** N/A

#### TECHNIQUE
- **Transfer Mode (GMAW):**  
  - Short-Circuiting  
  - Globular  
  - Spray  
- **Current:** AC  
- **Tungsten Electrode (GTAW):** Size: N/A  
  - Type: N/A

#### POSITION
- **Position of Groove:** JOINT
- **Vertical Progression:** Up, Down

#### ELECTRICAL CHARACTERISTICS
- **Transfer Mode (GMAW):**  
  - Short-Circuiting  
  - Globular  
  - Spray  
- **Current:** AC  
- **Tungsten Electrode (GTAW):** Size: N/A  
  - Type: N/A

#### PREHEAT
- **Preheat Temp., Min:** 60 Deg.F
- **Thickness:**  
  - Up to 3/4"  
  - Over 3/4" to 1-1/2"  
  - Over 1-1/2" to 2-1/2"  
  - Over 2-1/2"  
- **Interpass Temp., Min:** N/A  
- **Peening:** N/A  
- **Interpass Cleaning:** Chip slag and wire brush

#### POSTWELD HEAT TREATMENT
- **PWHT Required:**

### WPS 103

**Welding Procedure Specification**

**WPS No:** WPS 103  
**Revision:** 2  
**Date:** 04/20/2013  
**By:** NP

**Welding Process(es):** GTAW  
**Supporting PQR(s):** Prequalified

#### JOINT
- **Type:** T-Joint / Corner
- **Backing:** Yes  
- **Backing Material:** N/A
- **Root Opening:** 30-90°  
- **Root Face Dimension:** 0" - 8"  
- **Groove Angle:** 45°  
- **Back Gouge:** Yes  
- **Method:** N/A

#### BASE METALS
- **Material Spec.:** 3003 to 3003
- **Thickness:** Unlimited to Unlimited  
- **Diameter (Pipe, in):** N/A

#### FILLER METALS
- **AWS Specification:** A5.10  
- **Classification:** ER4043

#### SHIELDING
- **Flux:** Gas  
- **Electrode-Flux (Class):** N/A  
- **Gas Cup Size:** N/A

#### TECHNIQUE
- **Transfer Mode (GMAW):**  
  - Short-Circuiting  
  - Globular  
  - Spray  
- **Current:** AC  
- **Tungsten Electrode (GTAW):** Size: N/A  
  - Type: N/A

#### POSITION
- **Position of Groove:** JOINT
- **Vertical Progression:** Up, Down

#### ELECTRICAL CHARACTERISTICS
- **Transfer Mode (GMAW):**  
  - Short-Circuiting  
  - Globular  
  - Spray  
- **Current:** AC  
- **Tungsten Electrode (GTAW):** Size: N/A  
  - Type: N/A

#### PREHEAT
- **Preheat Temp., Min:** 60 Deg.F
- **Thickness:**  
  - Up to 3/4"  
  - Over 3/4" to 1-1/2"  
  - Over 1-1/2" to 2-1/2"  
  - Over 2-1/2"  
- **Interpass Temp., Min:** N/A  
- **Peening:** N/A  
- **Interpass Cleaning:**

#### POSTWELD HEAT TREATMENT
- **PWHT Required:**

### WELDING PROCEDURE

<table>
<thead>
<tr>
<th>Layer/Pass</th>
<th>Process</th>
<th>Filler Metal Class</th>
<th>Diameter</th>
<th>Cur. Type</th>
<th>Amps</th>
<th>Volts</th>
<th>Travel Speed</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>SMAW</td>
<td>E-7018</td>
<td>1/8</td>
<td>DCEP</td>
<td>90-150</td>
<td>N/A</td>
<td>4-10 ipm</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Layer/Pass</th>
<th>Process</th>
<th>Filler Metal Class</th>
<th>Diameter</th>
<th>Cur. Type</th>
<th>Amps</th>
<th>Volts</th>
<th>Travel Speed</th>
<th>Other Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>GTAW</td>
<td>ER4043</td>
<td>3/32&quot;</td>
<td>AC</td>
<td>110-150</td>
<td>N/A</td>
<td>4-8 ipm</td>
<td></td>
</tr>
</tbody>
</table>
**Layer/Pass** | **Process** | **Filler Metal Class** | **Diameter** | **Curt. Type** | **Amps** | **Volts** | **Travel Speed** | **Other Notes**
---|---|---|---|---|---|---|---|---
All 3F & 4F | FCAW | E71T-1 | 0.045" | DCEP | 150-200 | 25-27 | 6-15 ipm |  |
All 1F & 2F | FCAW | E71T-1 | 0.045" | DCEP | 200-250 | 26-28 | 6-15 ipm |  |
### WPS 106

**Welding Procedure Specification**

<table>
<thead>
<tr>
<th>WPS No.</th>
<th>WPS 106</th>
<th>Revision</th>
<th>2</th>
</tr>
</thead>
</table>

**Welding Process(es):** SMAW  
**Type:** Manual  
**Supporting PQR(s):** Prequalified

#### JOINT
- **Type:** T-Joint
- **Backing Material:** N/A
- **Root Opening:** N/A
- **Root Face Dimension:** N/A
- **Groove Angle:** N/A
- **Radius (J-U):** N/A
- **Method:** N/A

#### BASE METALS
- **Material Spec.:** A-36  
- **Thickness:** Groove (in.) N/A  
  Fillet (in.) N/A  
  Unlimited
- **Diameter (Pipe, in.):** N/A

#### FILLER METALS
- **AWS Specification:** A5.1
- **AWS Classification:** E-6010

#### SHIELDING
- **Flux:** Gas N/A  
- **Composition:** N/A
- **Electrode-Flux (Class):** Flow Rate N/A  
- **Gas Cup Size:** N/A

#### PREHEAT
- **Preheat Temp., Min.:** 60 Deg.F  
- **Thick.:** Up to 3/4"  
- **Over 3/4" to 1-1/2"** N/A  
- **Over 1-1/2" to 2-1/2"** N/A  
- **Over 2-1/2"** N/A
- **Interpass Temp., Min.:** N/A

#### POSTWELD HEAT TREATMENT
- **PWHT Required:** N/A

#### WELDING PROCEDURE
- **Layer/Pass:** All  
  **Process:** SMAW  
  **Filler Metal Class:** E-6010  
  **Diameter:** 1/8  
  **Cur. Type:** DCEP  
  **Amps:** 90-115  
  **Volts:** N/A  
  **Travel Speed:** 4-10 ipm

---

### WPS 107

**Welding Procedure Specification**

<table>
<thead>
<tr>
<th>WPS No.</th>
<th>WPS 107</th>
<th>Revision</th>
<th>2</th>
</tr>
</thead>
</table>

**Welding Process(es):** SMAW  
**Type:** Manual  
**Supporting PQR(s):** Prequalified

#### JOINT
- **Type:** T-Joint
- **Backing Material:** N/A
- **Root Opening:** N/A
- **Root Face Dimension:** N/A
- **Groove Angle:** N/A
- **Radius (J-U):** N/A
- **Method:** N/A

#### BASE METALS
- **Material Spec.:** A-36  
- **Thickness:** Groove (in.) N/A  
  Fillet (in.) N/A  
  Unlimited
- **Diameter (Pipe, in.):** N/A

#### FILLER METALS
- **AWS Specification:** A5.1
- **AWS Classification:** E-7024

#### SHIELDING
- **Flux:** Gas N/A  
- **Composition:** N/A
- **Electrode-Flux (Class):** Flow Rate N/A  
- **Gas Cup Size:** N/A

#### PREHEAT
- **Preheat Temp., Min.:** 60 Deg.F  
- **Thick.:** Up to 3/4"  
- **Over 3/4" to 1-1/2"** N/A  
- **Over 1-1/2" to 2-1/2"** N/A  
- **Over 2-1/2"** N/A
- **Interpass Temp., Min.:** N/A

#### POSTWELD HEAT TREATMENT
- **PWHT Required:** N/A

#### WELDING PROCEDURE
- **Layer/Pass:** All  
  **Process:** SMAW  
  **Filler Metal Class:** E-7024  
  **Diameter:** 1/8  
  **Cur. Type:** DCEP  
  **Amps:** 130-150  
  **Volts:** N/A  
  **Travel Speed:** 4-10 ipm
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 102
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED. NUMBERS IN WELD SYMBOL TAIL ARE FOR SCORING ID.

1. WELD IN ACCORDANCE WITH WPS# 102
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL

ID | Qty | Title
---|-----|------
A  | 1   | 0.25 X 8 X 8 Steel Plate
B  | 1   | 1/4 x 3 x 3.75 Plate
C  | 1   | 3 x 5.0# x 10 Steel Channel
D  | 1   | 0.25 x 6 x 10 Steel Plate
E  | 1   | 1/4 x 3 x 6 Plate
F  | 1   | 5/16 x 3 x 3 x 6 Steel Angle

**2013 National SkillsUSA Welding Contest**

**FCAW College**

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

2013 National SkillsUSA
Welding Contest

GMAW HIGH SCHOOL

ID | Qty | Title
---|-----|-------
A | 1   | .25 x 12 x 12 Plate
B | 4   | .25 x 1.75 x 4.125 Plate
C | 4   | .25 x 3 x 5.5 Plate

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 104
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE DOWNHILL
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 104
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE DOWNHILL

<table>
<thead>
<tr>
<th>ID</th>
<th>Qty</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>.25 x 12 x 12 Plate</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>.25 x 1.75 x 4.125 Plate</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>.25 x 3 x 5.5 Plate</td>
</tr>
</tbody>
</table>
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 103
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL
5. NO POST CLEANING

<table>
<thead>
<tr>
<th>ID</th>
<th>Qty</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>0.125 x 8 x 8 Aluminum Sheet</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>0.125 x 6 x 6 x 6 Aluminum Sheet</td>
</tr>
</tbody>
</table>
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. WELD IN ACCORDANCE WITH WPS# 103
2. TACK COMPLETE ASSEMBLY IN ANY POSITION
3. WELDING TO BE COMPLETED WITH PLATE A FLAT TO THE TABLE
4. ALL VERTICAL WELDS TO BE UPHILL
5. NO POST CLEANING

<table>
<thead>
<tr>
<th>ID</th>
<th>Qty</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1</td>
<td>0.125 x 5 x 5 Aluminum Sheet</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>0.125 x 4 x 4 Aluminum Sheet</td>
</tr>
<tr>
<td>A</td>
<td>1</td>
<td>0.125 x 6 x 6 Aluminum Sheet</td>
</tr>
</tbody>
</table>
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. LAYOUT IN ANY POSITION
2. CUTTING TO BE COMPLETED WITH PLATE FLAT ON TABLE

2013 National SkillsUSA Welding Contest
OFC High School

<table>
<thead>
<tr>
<th>ID</th>
<th>Qty</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>0.5 x 12 x 12 Steel Plate</td>
</tr>
</tbody>
</table>
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. LAYOUT IN ANY POSITION
2. CUTTING TO BE COMPLETED WITH PLATE FLAT ON TABLE

<table>
<thead>
<tr>
<th>ID</th>
<th>Qty</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1/2 x 12 x 12 Plate</td>
</tr>
</tbody>
</table>
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. TACK COMPLETE ASSEMBLY IN ANY POSITION

2. WELDING TO BE COMPLETED WITH THE GROOVE WELD IN THE 3G POSITION WITH PLATE A ON THE TABLE

<table>
<thead>
<tr>
<th>ID</th>
<th>Qty.</th>
<th>Desc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>0.25 X 4.5 X 8 Steel Plate</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>3/8 x 7 x 3 22.5 Bevel Both Ends</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>3 x 5.0# x 7 Steel Channel</td>
</tr>
<tr>
<td>D</td>
<td>1</td>
<td>0.25 x 2 x 7 Steel Plate</td>
</tr>
</tbody>
</table>

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

2013 National SkillsUSA Welding Contest

SMAW HIGH SCHOOL
ALL PROCESSES TO BE COMPLETED WITH THE MATERIALS PROVIDED

1. TACK COMPLETE ASSEMBLY IN ANY POSITION

2. WELDING TO BE COMPLETED WITH THE GROOVE WELD IN THE 2G POSITION WITH PLATE A ON THE LEFT END OF THE GROOVE WELD JOINT.
2013 SKILLS USA

WELDING QUIZ

Contestant Number ______

DO NOT WRITE ON THESE SHEETS! RECORD ALL ANSWERS ON THE SCANTRON CARD PROVIDED.

1. What gas can be used to cut steel.
   a. Natural gas
   b. propane
   c. acetylene
   d. MAPP
   e. all of the above

2. What flame type has excess fuel?
   a. reducing
   b. neutral
   c. carbonizing
   d. oxidizing
   e. equalized

3. What is the maximum safe working pressure when using acetylene?
   a. 15 lbs
   b. 10 lbs
   c. 20 lbs
   d. 30 lbs
   e. 45 lbs

4. Fuel gas hoses are
   a. blue
   b. green
   c. red
   d. red and green striped
   e. yellow

5. Devices that prevent the gases from mixing in the hoses are called,
   a. back stoppers
   b. one way valves
   c. reverse flow check valves
   d. gas valves
   e. needle valves

6. The gap created by the cut is called the
   a. gap
   b. width
   c. kerf
   d. opening
   e. drag lines
7. The vertical lines on the face of the cut are called
   a. drag lines
   b. cutting lines
   c. sever lines
   d. heat lines
   e. flow lines

8. Oxy Fuel torches can cut
   a. carbon steel
   b. aluminum
   c. copper nickel
   d. all of the above
   e. none of the above

9. The cut is directed by the.
   a. warming jet
   b. cutting flames
   c. oxygen jet
   d. preheat flames
   e. reducing flames

10. A condition that exists when the flame burns back in the torch is called a
    a. burnback
    b. explosion
    c. reverse flow
    d. flashback
    e. mess

11. FCAW-S indicates
    a. the shielding gas to be used
    b. the type of polarity to be used
    c. the type of transfer
    d. the use of a self shielded wire
    e. a solid core wire

12. FCAW uses the following current
    a. DCEP
    b. DCEN
    c. AC
    d. a & b above
    e. b & c above

13. In FCAW the current is determined by the
    a. voltage
    b. shielding gas
    c. wire feed speed
    d. machine type
    e. diameter of the wire

14. In a E71T-1 electrode the first 1 stands for
    a. tubular wire
    b. tensile strength
    c. position wire can be used in
    d. type of shielding gas required
    e. polarity to be used
15. Which of the following is not always an essential element of a FCAW system
   a. constant voltage power supply
   b. tubular electrode
   c. wire feeder
   d. shielding gas
   e. work (ground) lead

16. The welding current in FCAW is transferred to the wire via the
   a. conduit
   b. feed rolls
   c. contact tip
   d. liner
   e. contactor

17. FCAW designates which process
   a. flux cored arc welding
   b. flux centered arc welding
   c. furnace controlled arc welding
   d. friction arc welding
   e. flow arc welding

18. The purpose of the flux in FCAW is to
   a. provide a shielding gas
   b. provide alloys to the weld puddle
   c. provide purifiers for the weld puddle
   d. insulate the weld while cooling
   e. all the above

19. The 7 in an E70T-1 electrode means
   a. the position the electrode can be used in
   b. the tensile strength of the weld deposit X 10,000
   c. the composition of the flux
   d. the welding polarity
   e. none of the above

20. Electrode Extension refers to
   a. the length of the electrode leads
   b. the length of the primary cord
   c. the distance from the end of the gas cup to the contact tip
   d. the distance from the end of the arc to the workpiece
   e. the extension of the electrode from the end of the contact tip

21. For an E-7018 electrode the 8 stands for
   a. the tensile strength times 10,000 lbs
   b. the flux coating
   c. the position the electrode can be used in
   d. the core wire composition
   e. the allowable weave width

22. The SMAW process uses what type of power supply
   a. constant potential
   b. constant voltage
   c. high voltage
   d. constant current
   e. low voltage
23. An E-11018 electrode is
   a. a low hydrogen electrode
   b. has a tensile strength of 110,000 PSI
   c. can be used in all positions
   d. all of the above
   e. none of the above

24. When adjusting an SMAW power supply you set the
   a. voltage
   b. wire feed
   c. amperage
   d. flow rate
   e. slope

25. Opened containers of low hydrogen electrodes should be stored
   a. in a dry storeroom
   b. in a refrigerator with a light bulb
   c. in a vented electric oven
   d. require no special storage
   e. separated from other electrodes

26. An E-7024 electrode can be used in
   a. flat and horizontal only
   b. vertical down and flat only
   c. all positions
   d. flat only
   e. vertical up and horizontal only

27. Using a side to side motion while welding is called
   a. stringing
   b. weaving
   c. whipping
   d. figure eight
   e. back stepping

28. Filler metal specifications are written by
   a. ASME
   b. ASNT
   c. AWS
   d. ABS
   e. API

29. A 308L-16 electrode would be used to weld
   a. copper nickel
   b. stainless steel
   c. carbon steel
   d. monel
   e. inconel

30. Weld puddle shielding in SMAW is achieved by
   a. an auxiliary gas
   b. decomposition of the core wire
   c. an arc plasma
   d. decomposition of the flux coating
   e. metal vapors
31. GTAW uses what type of gases for shielding  
   a. active  
   b. inert  
   c. a combination of active and inert  
   d. volatile  
   e. inactive  

32. When using the GTAW process an EWP electrode is 
   a. 1% thoriated  
   b. 2% thoriated  
   c. 2% zirconiated  
   d. striped  
   e. pure tungsten  

33. What current do you use to weld stainless steel when using the GTAW process  
   a. DCEP  
   b. DCEN  
   c. ACEN  
   d. AC  
   e. half wave  

34. What flow rate would be proper when using argon shielding gas for the GTAW process  
   a. 10 - 20 CFH  
   b. 40 - 50 CFH  
   c. 10 - 20 lbs  
   d. 40 - 50 lbs  
   e. 10 - 20 CFM  

35. What current in GTAW causes the most heat at the electrode  
   a. DCEN  
   b. ACEP  
   c. AC  
   d. DCEP  
   e. AC balanced  

36. The shape of the electrode when using GTAW with AC current should be  
   a. blunt  
   b. balled  
   c. tapered  
   d. squared  
   e. feathered  

37. A green stripe electrode for GTAW is  
   a. EWP  
   b. EWTh-1  
   c. EWTh-2  
   d. EWTh-3  
   e. EWZr  

38. The recommended tungsten for GTAW welding aluminum is  
   a. EWTh-1  
   b. EWTh-2  
   c. EWTh-3  
   d. EWP  
   e. EWZr
39. During GTAW welding High frequency units serve to
   a. balance the AC sine wave
   b. allow the arc to jump the gap
   c. cool the tungsten
   d. provide additional amperage
   e. decrease the voltage

40. Safety considerations must be given when using Argon because
   a. Argon will displace air
   b. Argon is heavier than air
   c. Argon does not support life
   d. Argon is odorless
   e. all the above

41. The wasting away of metal due to atmospheric elements is due to
   a. oxidation
   b. carbonization
   c. reduction
   d. all of these
   e. none of these

42. The property of metal that resists forces acting to pull it apart is its __________ strength
   a. shear
   b. compressive
   c. tensile
   d. impact
   e. hardness

43. The basic element of a welding symbol is the
   a. tail
   b. arrow
   c. reference line
   d. joint symbol
   e. broken arrow

44. A non destructive test used to detect surface or near surface discontinuities in magnetic materials is
   a. Penetrant testing
   b. Magnetic particle testing
   c. Radiography
   d. Visual testing
   e. Ultrasonic testing

45. A non destructive test method used to detect discontinuities well below the surface is
   a. visual
   b. Penetrant
   c. magnetic particle
   d. radiography
   e. eddy current

46. The failure of a weld bead to fuse to the groove walls or to another bead is called
   a. lack of penetration
   b. undercut
   c. slag entrapment
   d. lack of fusion
   e. overlap
47. Burning away the base metal at the toe of the weld is
   a. undercut
   b. underfill
   c. lack of fusion
   d. lack of penetration
   e. overlap

48. The kind of electricity that reverses the direction of current flow regularly is called
   a. pulsed
   b. direct
   c. alternating
   d. reversed
   e. positive

49. The tendency of the arc to wander away from its' path is caused by
   a. strong drafts
   b. magnetic fields
   c. short arcs
   d. low currents
   e. AC current

50. A plate groove weld in the overhead position is
   a. 1G
   b. 2G
   c. 3G
   d. 4G
   e. 5G
<p>| | |</p>
<table>
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<td>25.c</td>
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</table>
1. What is the depth of the undercut on this weld sample?
   a. 1/16"
   b. 1/64"
   c. 1/32"
   d. 3/32"

2. The weld reinforcement on this sample is
   a. 1/32" - 1/8"
   b. 1/2" - 5/8"
   c. 1/32" - 1/16"
   d. 0" - 1/16"

3. What is the weld size of fillet weld, Side A?
   a. 5/16"
   b. 3/8"
   c. 17/32"
   d. 3/16"

4. The discontinuity illustrated from O to A1 is
   a. arc strike
   b. linear porosity
   c. cluster porosity
   d. spatter on weld face

5. The weld size on side B is
   a. 1/8"
   b. 5/16"
   c. 3/8"
   d. 1/2"

6. The discontinuity illustrated from A4 to A5 is
   a. arc strike
   b. cluster porosity
   c. linear porosity
   d. spatter on weld face

7. What is the size of the weld on side 1?
   a. 1/8"
   b. 3/8"
   c. 1/4"
   d. 3/16"

8. What is the depth of the undercut on side 4?
   a. 1/16"
   b. 3/64"
   c. 1/32"
   d. 3/32"

9. What is the weld size of side 2?
   a. 1/4"
   b. 3/16"
   c. 5/16"
   d. none of the above

10. What is the weld size of side 3?
    a. 3/16"
    b. 1/4"
    c. 5/16"
    d. 3/8"

11. What is the weld size of side 4?
    a. 3/16"
    b. 1/4"
    c. 5/16"
    d. 3/8"
Little T Joint

12. The weld size side A is
   a. 1/8"
   b. 1/2"
   c. 3/8"
   d. 1/4"

13. The weld size for side B is
   a. 1/8"
   b. 1/4"
   c. 3/8"
   d. 1/2"

14. The porosity illustrated at area B1 can be described as
   a. cluster porosity
   b. scattered
   c. linear porosity
   d. pock marks

Fillet Weld Sample B

15. The weld size for side 2 is
   a. 3/16"
   b. 5/16"
   c. 3/8"
   d. 1/4"

16. The weld size for side 4 is
   a. 1/4"
   b. 5/16"
   c. 3/8"
   d. 1/2"

17. What is the size of the weld on side #3?
   a. 1/8"
   b. 3/16"
   c. 1/4"
   d. 3/8"

18. The weld size for side 1 is
   a. 1/4"
   b. 1/8"
   c. 5/16"
   d. 3/8"

Porosity Sample T-Joint Side "A" (Little T)

19. The porosity in A1 measures
   a. 0.406"
   b. 0.313"
   c. 0.375"
   d. 0.512"

20. The porosity in A3 is
    a. 0.406"
    b. 0.313"
    c. 0.375"
    d. 0.512"
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