

**SKILLS DEMONSTRATION
WELDING (NCCT29)**

National Center for
Construction Education and Research

Skills Demonstration Welding (NCCT29)

(Print) Student's Name:	Date:
(Print) Teacher's Name:	School Name:
Teacher's Signature:	(Print) Registered Test Site Administrator's Name:

This Skills Demonstration is designed to allow students to demonstrate competence by performing various tasks associated with the knowledge requirements of the National Construction Career Tests (NCCT) developed by the National Center for Construction Education and Research (NCCER). Students may complete Skills Demonstration tasks at any time throughout the school year. Use the attached form for a convenient method of tracking each student's achievements. A summary form is also included; you may use this to record results of the Skills Demonstration process for your entire class. This summary form may be used to facilitate the written test by indicating which students have successfully completed the Skills Demonstration component of the NCCT process.

Note:

- Students should be reminded of their progress status regarding completing the Skills Demonstration tasks throughout the year, so they can concentrate on areas that need improvement.
- Students (at the teacher's discretion) may repeat a Skills Demonstration task if they do not demonstrate competence on the first attempt.
- All Skills Demonstration tasks must be successfully completed before credit may be given for completion of the Skills Demonstration.
- The following rating scale may be of benefit in monitoring student progress in completing the Skills Demonstration:
 - 1 Competent—completed tasks accurately with no supervision**
 - 2 Completed tasks with minimum supervision**
 - 3 Training recommended—completed task only with direct intervention by the teacher**
 - 4 Did not complete this task**
- As students complete the entire Skills Demonstration successfully, enter the information requested on the summary form for the class.

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Oxyfuel Cutting	1	2	3	4
Set up, ignite, adjust, and shut down oxyfuel equipment.				
<p>Skills Demonstration Acceptance Criteria</p> <ul style="list-style-type: none"> • Set up in proper sequence • Checked for leaks • Adjusted flame types (carburizing, neutral, oxidizing) • Shut off torch • Shut down equipment • Used proper PPE and followed safety procedures 				
<p>To cut a shape from thin steel, use a 6-inch square, 1/4-inch-thick carbon steel plate. Lay out one 3/4-inch circle and one 3/4" x 2" slot, each located on the center line of the plate and 1 inch from the edge of the plate.</p> <p>Skills Demonstration Acceptance Criteria</p> <ul style="list-style-type: none"> • Proper layout and dimensions • All cuts within 1/8 inch of specifications • Minimum slag sticking to the plate • Proper PPE used and safety procedures followed 				

Horizontal Fillet Weld (Using E6010 or E7018 Electrodes)	1	2	3	4
Using 1/8-inch electrodes, make a horizontal fillet weld. Base metal should be at least 1/4-inch-thick carbon steel. Base plate should be at least 3" x 6", and the horizontal element should have the same dimensions. Run six beads.				
<p>Skills Demonstration Acceptance Criteria</p> <ul style="list-style-type: none"> • Uniform rippled bead appearance • Proper bead sequence • Craters and restarts correctly filled • Uniform weld size $\pm 1/16$ inch • Proper weld profile • No porosity, undercut, inclusions, cracks, or overlap • Smooth transition with complete fusion at the toe of weld • Proper PPE used and safety procedures followed 				

Open-Root V-Groove Weld in the Vertical Position	1	2	3	4
<p>Using appropriate carbon steel filler rods, make an open-root v-groove weld on plate in the vertical position (3G). Base metal should be at least ¼ inch thick. Ensure proper joint details to specifications provided by the teacher.</p> <p>Skills Demonstration Acceptance Criteria</p> <ul style="list-style-type: none"> • Uniform rippled appearance on bead face • Craters and restarts filled to full cross section of weld • Uniform weld size $\pm 1/16$ inch • Acceptable weld profile • Complete uniform root reinforcement at least flush with base metal, not to exceed $3/32$ inch above base • No porosity, overlap, inclusions, cracks, or excessive undercut • Smooth transition and complete fusion at toe of weld • Proper PPE used and safety procedures followed 				

Preparing Plate Joints Mechanically	1	2	3	4
<p>Using a nibbler or cutter, mechanically prepare the edge of a ¼-inch to ¾-inch carbon steel plate with a 30- or 22.5-degree bevel and a $3/32$-inch root face.</p> <p>Skills Demonstration Acceptance Criteria</p> <ul style="list-style-type: none"> • Bevel angle ± 2.5 degrees • Bevel face smooth and uniform to $1/16$ inch • Root face $\pm 3/32$ inch • Proper PPE used and safety procedures followed 				

Open-Root V-Groove Pipe Weld in the 1G-ROTATED Position	1	2	3	4
<p>Using ⅝-inch E6010 electrodes for the root pass and ⅝-inch E7018 electrodes for the filler and cover passes, make an open-root V-groove weld on pipe provided by the teacher in the 1G-ROTATED position.</p> <p>Skills Demonstration Acceptance Criteria</p> <ul style="list-style-type: none"> • Uniform rippled appearance on face of weld • Craters and restarts filled to full cross section of weld • Uniform weld size • Acceptable weld profile • Smooth transition with complete fusion at toe of weld • Root reinforcement at least flush with the inside of pipe, and no more than ⅝ inch maximum buildup • No porosity, inclusions, cracks, or excessive undercut • Acceptable guided bend test results • Proper PPE used and safety procedures followed 				

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Class Summary Form:

(Print) Teacher's Name:	Date:
Teacher's Signature:	School Year (e.g., 2003–2004):

Note:

- Print the name of each student in the class.
- Indicate with an "X" whether the student successfully completed the Skills Demonstration. Remember all tasks associated with the Skills Demonstration must be successfully completed before credit is given.
- Maintain the Class Summary form along with each student's individual performance record as required by your local school district.

	Student's Name (Last, First)	Completed Successfully	
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