

Structural Steel Field Welding JHA

Worked instructional example

Work and worksite

Qualified welders will make specified electric arc welds on released structural connections in a stabilized building frame from a protected work platform. The area below and behind the weld is controlled. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- The welding procedure, base material, coating status and temporary support are identified before welding.
- The hot-work review addresses sparks, concealed combustibles, fume exposure, electrical supply and fire watch.
- This excludes oxy-fuel bracket fabrication, unknown coatings, confined-space welding and using weld completion alone to remove temporary support.

Questions before work

- Which welding procedure and welder qualifications apply to these connections?
- What coatings or contaminants affect the fume-control method?
- Who verifies the fire area below and behind the work platform?

Task Hazard Control

1 Release the connection and procedure

Hazard: Welding the wrong connection or disturbing required support can weaken the frame.

Control: Erection and welding leads confirm current connection details, the applicable procedure and weld sequence. Verify stable access and retain required temporary restraint through the acceptance stage.

Verification: Lead compares the work location and base material with released documents.

Reasoning: Welding starts with a structural and procedure release.

2 Control the hotwork area

Hazard: Sparks and radiation can injure other workers or ignite concealed materials.

Control: Obtain the site hot-work authorization, remove or protect combustibles above, below and beyond the weld, and arrange required fire watch and extinguishing access. Use appropriate screens without defeating ventilation.

Verification: Fire-watch lead checks adjacent spaces and the area beneath the platform.

Reasoning: Elevated sparks can travel beyond the welder's immediate work area.

3 Arrange electrical and fume controls

Hazard: Damaged leads or an unsuitable fume-control arrangement can cause shock or harmful exposure.

Control: Inspect the welding circuit and provide the specified return connection without using prohibited structures as a return. Assess material and process fumes and arrange suitable extraction or ventilation and respiratory protection where required.

Verification: Welding lead checks circuit condition and the selected exposure controls before energizing.

Reasoning: Outdoor air or a respirator alone is not an exposure assessment.

Complete the work and hand over

4 Make the weld

Hazard: Arc radiation, hot metal, fume and a poor working position can harm the welder.

Control: Qualified welder follows the procedure from the protected position with assessed welding PPE. Keep cables clear of access, maintain fume controls and stop for loss of protection, unusual coating response or changed joint conditions.

Verification: Welder and lead monitor work position and control performance during welding.

Reasoning: Procedure quality and worker protection must remain active together.

5 Inspect without releasing support

Hazard: Hot surfaces or premature structural release can injure inspecting or erection crews.

Control: Mark hot metal, allow the specified cooling and obtain the required connection inspection. Retain support until the designated structural release; no teaching example supplies an accepted weld record.

Verification: Inspector and erection lead record actual findings and unresolved defects.

Reasoning: A visible finished bead is not acceptance of the connection.

6 Close hot work and hand over

Hazard: A concealed smoldering fire or abandoned energized lead can expose others.

Control: Shut down and secure equipment, maintain fire-watch follow-up for the period required by the site authorization, and inspect affected spaces. Transfer weld and support status to the receiving crew.

Verification: Hot-work lead records closeout and remaining restrictions.

Reasoning: Fire closeout and structural handover need separate evidence.

Pause and reassess

- Unknown coating, changed joint detail or lost fume control.
- Fire watch, protected access or electrical protection fails.
- Frame movement or an unresolved weld defect affects support release.

Improve the controls

Needs improvement: Work carefully and wear PPE.

More useful: Inspect the welding circuit and provide the specified return connection without using prohibited structures as a return. Assess material and process fumes and arrange suitable extraction or ventilation and respiratory protection where required.

Needs improvement: Check that everything is ready.

More useful: Erection and welding leads confirm current connection details, the applicable procedure and weld sequence. Verify stable access and retain required temporary restraint through the acceptance stage.

Decisions that change the analysis

Does the outdoor bracket welding example cover this connection?

It supplies general hot-work background. Field welding adds elevated access, structural procedure and qualifications, sparks to lower levels, connection inspection and temporary-support interfaces.

What must the crew record for actual use?

Identify the actual equipment and work boundaries, responsible people, applicable criteria, inspection findings and open actions. Resolve changes with affected crews and obtain required project authorization before work.

Training needs

- Welder qualifications and demonstrated use of the actual welding procedure.
- Hot-work, fume, electrical and applicable steel-erection fall instruction for assigned roles.

Confirm applicable qualifications and actual training evidence for the people assigned. Related toolbox talks support discussion; they do not establish competence.

References and adaptation

OSHA 1926.351 Arc welding and cutting

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.351>

OSHA 1926.353 Welding ventilation and protection

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.353>

OSHA 1926.761 Steel erection training

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.761>

References reviewed October 9, 2026. Use actual equipment and product instructions, project design and site requirements. This instructional example supplies no actual inspection results, signatures or work approval.