

# Welding Terms

The following is a list of definitions commonly used in “Welding Quality Control” documents. Current and additional definitions can be found in American National Standards Institute/American Welding Society (ANSI/AWS) “*Standard Welding Terms and Definitions*”.

**Certified Welding Inspector (CWI) for State Projects** – Inspector certified in accordance with AWS QC1. For State projects the Quality Control Inspector will be a CWI.

**FCAW** – Flux Cored Arc Welding – An arc welding process utilizing a tubular electrode with the flux contained within the core. The electrode is supplied on a reel and is fed continuously to the welder’s gun automatically.

**FLUX** – A material used to hinder or prevent the formation of oxides and other undesirable substances in molten metal and on solid metal surfaces, and to dissolve or otherwise facilitate the removal of such substances.

**GMAW** – Gas metal arc welding utilizes a bare or a flux-cored electrode. Gas from an external source is used for shielding. Normally a shop welding process. Often referred to as MIG welding.

**Nonconformance Report** – A written report originated by OQASI (Office of Quality Assurance & Source Inspection) which addresses a deficiency being performed and the contract documents not being fulfilled. The report will describe the problem, the location, the Quality Control Inspector response, the proposed solution, and OQASI recommendation.

**Nondestructive Testing (NDT)** – Testing or an inspection method which does not damage the element being tested (e.g., Radiographic (RT), Ultrasonic (UT), Visual (VT), Magnetic Particle (MT), Liquid Penetrant (PT)).

**Procedure Qualification Record (PQR)** – Documentation indicating testing was performed to qualify a WPS.

**Quality Assurance (QA)** – This oversight is the prerogative of the Engineer and will be performed by a state representative.

**Quality Assurance Inspector (QA Inspector)** – The duly designated person who acts for and on behalf of the Engineer. This person is from OQASI and will inspect the welding operation and write a welding report for the State.

**Quality Control (QC)** – Responsibility of the Contractor. As a minimum, the Contractor shall perform inspection and testing prior to welding, during welding and after welding

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as specified in the contract documents and additionally as necessary to ensure that materials and workmanship conform to the requirements of the contract documents.

**Quality Control Inspector (QC Inspector)** – The person duly designated by the contractor, to perform inspection, testing, and address welding issues on the project. This person shall be responsible to the Contractor for the quality control acceptance or rejection of materials, workmanship, and shall be currently certified as AWS Certified Welding Inspector (CWI) in conformance with the requirements in AWS QC1, “Standard and Guide for Qualification of Welding Inspectors.”

**Quality Control Manager (QCM)** – A representative, employed by the prime contractor, who is responsible directly to the Contractor for the quality of all field welding performed. This includes the materials and workmanship. The QCM reviews, approves, and submits all QC documents to the Engineer.

**Quality Control Plan (QCP) or Welding Quality Control Plan (WQCP)** – A plan submitted by the Contractor to the State for each item of welding work to be performed. This plan contains all welding documents required by the contract (refer to the Special Provisions and QCP 1). No welding can begin until this plan is reviewed by OQASI and approved by the Structure Representative.

**QCP-1, QCP-5 and QCP-7** – These forms are used by OQASI and the Structure Representative, as checklists to ensure the contractor’s Quality Control Plan or Fracture Control Plan are complete.

**SAW** – An arc welding process utilizing a solid wire electrode that is fed automatically to the welding head from a reel. A granular flux is automatically deposited from a dispenser onto the molten weld deposit (normally a shop welding process).

**Resistance Butt Welding (Flash Butt Welding)** – A welding process in which the necessary heat is derived from an arc, or a series of arcs established between the bars being welded prior to pressure being applied to join the ends together.

**SMAW** - Shielded Metal Arc Weld – An arc welding process utilizing a solid electrode with an outer flux coating.

**Welding Procedure Specifications (WPS)** – A document providing the required welding variables for a specific application to assure repeatability by properly trained welders and welding operators.

**Welder’s Qualification** – Welders must be certified for type and position of weld and weld process. If not certified, tests can be performed to qualify the welders. Welders must be certified and approved by OQASI before welding on State projects.

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Welding Quality Control Plan (WQCP) – See QCP above.