

# Welder Qualification Program

## Description

The Michigan Department of Transportation's (MDOT) Welder Qualification Program is managed by the Bureau of Bridges & Structures, Structure Construction Division, Structural Fabrication Unit and was developed to qualify field and AISC shop (hereafter called shop) welders performing work for the Department. MDOT uses independent third party laboratories to perform the qualification testing in accordance with the American Welding Society (AWS) D1.1, *Structural Welding Code – Steel* (hereafter called AWS D1.1), AASHTO/AWS D1.5, *Bridge Welding Code* (hereafter called AWS D1.5) or ANSI/AWS D1.2, *Structural Welding Code - Aluminum* (hereafter called AWS D1.2) based on the type of work being performed. Contractors must be awarded a MDOT project that requires the contractor's welders to be MDOT Qualified before making a request to have their welders tested. MDOT will pay for witnessing the welding of test coupons and required lab testing for a reasonable number of welders required to complete the project. All other expenses, including re-tests, materials, shipping, etc. related to the testing will be the contractor's responsibility. After a second failed test the welder will not be tested again in the same process and position until after a meeting with the Structural Fabrication Unit to discuss training. See the Welder Qualification Program Guidelines section below for more information on period of effectiveness for qualified welders and other responsibilities.

Below is a list of typical field and shop welding that can only be performed by a MDOT qualified welder as specified in the contract documents:

- Bridge welding to AWS D1.5 as specified in section 707 of the MDOT Standard Specifications for Construction;
- Highway structure (sign structures, traffic signal mast arms, high mast luminaires, DMS structures, etc. as stated in the contract documents, etc.) welding to AWS D1.1 as specified in the contract documents;
- Primary member pile welding to AWS D1.5 per the current FUSP 12SP705(A), *Pile Splicing*;
- Contractor add-ons in tension zones (detailed in contract plans) of bridge elements. Note welding must follow AWS D1.5 in tension zones;
- Other miscellaneous structures required to be welded by a MDOT qualified welder per AWS D1.1 or AWS D1.5 as stated in the contract documents.

Note that a MDOT qualified welder is also permitted to perform all welding privileges granted to a MDOT certified welder provided they adhere to the certified welder responsibilities set forth in the [MDOT Welder Certification Program](#). Please direct any questions you may have concerning the MDOT Welder Qualification Program to the Structural Fabrication Unit at [MDOT-StructuralFabrication@michigan.gov](mailto:MDOT-StructuralFabrication@michigan.gov).

Welding on fracture critical elements requires a welder to meet the AWS D1.5 clause 12 fracture control plan. MDOT's qualified welder test report can be used in conjunction with the fabricator's radiographic test results. Fabricator must arrange to perform their radiographic testing prior to MDOT's laboratory performing mechanical testing.

## Testing Laboratory Responsibilities

Welder qualification testing must be in accordance with the latest AWS D1.5 code followed by MDOT (as modified by [Special Provision 12SP707\(A\), Structural Steel and Aluminum Construction](#)) and has an effective period of two (2) years for field welding and three (3) years for shop welding. Laboratories are strictly prohibited from using a third party to perform any portion of the welder qualification testing (cutting, bending, testing, interpretation, reporting, etc.), unless approved by the MDOT Structural Fabrication Engineer. Welder qualification testing is required to adhere to the following:

- Perform MDOT welder qualification testing after being notified by MDOT's Structural Fabrication Unit or MDOT's shop inspector;
- Retain a record of all applicable documentation related to the welder qualification testing (mill certifications, reports, etc.) for a minimum of 3 years;
- Maintain a welder qualification log documenting relevant information for every welder that is tested as part of this program. MDOT may ask to review these records during random audits, therefore they must be kept available at all times.
- Perform all mechanical test requirements in accordance with AWS D1.1, AWS D1.2, AWS D1.5, or AWS D1.6 as applicable; and
- Retain the weld test coupons for 6 months after the reported test date.

The testing laboratory must have a Certified Welding Inspector (CWI) on staff to perform or oversee the required mechanical testing and sign the test report. All testing laboratories must report test results on MDOT Form 0396 (Welder Qualification Test Report). The test report must be sent to [MDOT-StructuralFabrication@michigan.gov](mailto:MDOT-StructuralFabrication@michigan.gov) in the following format:

- 0396 Last First Position Process Expiration Date
- Example: 0396 Fox Bill 4G SAW 050614
- Example: 0396 Fox Bill 4G SAW FC 050614 (for Fracture Critical Qualifications)
- Example: 0396 Fox Bill 4G SAW FAIL 050614 (for failing qualification tests)

## Welder Qualification Program Guidelines

MDOT qualified welders are required to adhere to the following responsibilities or risk loss of qualification:

1. Must follow all contract documents including the MDOT Standard Specifications for Construction, AWS D1.1 and AWS D1.5 (as modified by the current [Special Provision 12SP707\(A\), Structural Steel and Aluminum Construction](#)), special provisions, special details, and contract plans.
2. Qualification is required for field and shop welding as stated in the contract documents. See above list for common welding that requires a qualified welder.
3. Welder qualification remains in effect for two (2) years for field welders and three (3) years for shop welders, unless the welder does not engage in welding for at least 3 months, or a specific reason exists to question the welder's ability. Qualification begins from the coupon welding date and not the laboratory test report date. The Engineer may require a confirming qualification test during the progress of the work.

4. MDOT qualified field welders are not permitted to perform MDOT qualified shop welding and vice versa.
5. Welders must have a copy of their qualification report (MDOT Form 0396 - *Welder Qualification Test Report*) available at all times. Failure to produce the report while welding on a MDOT project will result in welding privileges removed from the project until the qualification report is provided.
6. Qualification is good for specific welding processes and positions as permitted by AWS D1.1 and D1.5. Welders must not weld on MDOT projects using welding processes or positions they are not qualified to.
7. [Form 0394 – AWS D1.1 Field Welding Plan](#) or [Form 0395 – AASHTO/AWS D1.5 Field Welding Plan](#) must be completed for all field welding and approved by the MDOT Structural Fabrication Unit before welding can begin.
8. All WPSs are subject to qualification testing.
9. Do not perform welding when the ambient temperature is below 40° F unless heating and housing is approved by the Engineer.
10. Preheat surfaces for welding in accordance with subsection 707.03.D.8.b of the Standard Specifications for Construction for AWS D1.5 welding. Preheat surfaces for welding in accordance with AWS D1.1 when welding to AWS D1.1.
11. Do not weld during periods of precipitation (rain, snow, or heavy fog) with low hydrogen welding rods unless heating and housing is approved by the Engineer.
12. Welders must not use low hydrogen electrodes that have become wet. They must also not weld using low hydrogen electrodes during periods of precipitation (rain, snow, heavy fog, etc.).
13. The welder is responsible for assuring the electrodes and flux are stored in accordance with the contract requirements.