

Welder Qualification Program

Description

This document describes the purpose of the *Michigan Department of Transportation's (MDOT) Welder Qualification Program (WQP)* and gets into specific program requirements including testing notification, testing expenses, welding personnel responsibilities, and MDOT testing responsibilities. MDOT's WQP was developed as a performance test for MDOT to verify welding personnel (welders, welding operators, and tack welders) working in an American Institute of Steel Construction certified fabrication facility (hereafter called shop) and MDOT project site (hereafter called field), already qualified in accordance with the American Welding Society (AWS), can produce a sound weld meeting the applicable AWS Code qualification test for the welding that will occur on the project. MDOT's endorsement is for a specific period of effectiveness and welding location (shop or field).

MDOT's performance testing is identical to the AWS welding personnel qualification requirements except MDOT does not perform radiographic testing (RT) per Clause 12 of AASHTO/AWS D1.5 for fracture critical welding personnel qualification and MDOT requires all weld cleaning to adhere to AASHTO/AWS D1.5. RT is waived from MDOT's WQP due to the Contractor already providing welding personnel that meet Clause 12 and the unnecessary time and cost RT inspection would add to MDOT's performance test. Welder performance endorsements from other agencies will not be accepted as an alternative to MDOT's performance test.

The MDOT WQP is managed by the Bureau of Bridges & Structures, Structure Construction Section, Structural Fabrication Unit (hereafter called SFU). Please send any questions about this program to the SFUs email resource: MDOT-StructuralFabrication@michigan.gov

Testing Notification

The Contractor (hereafter to include their suppliers, fabricator, manufacturers, etc.) must be awarded a MDOT project that requires their welding personnel to be endorsed through MDOT's WQP before making a request to the SFU to have their welding personnel tested. MDOT Form 0571 (*Welder Qualification Test Request*) must be completed by the Contractor in its entirety and submitted to SFU as notification (see email resource above) they have welding personnel they are requesting to be tested. The Contractor is responsible for determining the following:

1. Reasonable number of welding personnel necessary to complete the welding for the project.
2. Submitting supporting documentation as objective evidence the welding personnel currently meet AWS welding personnel qualification requirements (including fracture critical qualifications) for the qualification test they are requesting.
3. Determine welding parameters [applicable AWS Code, welding location (shop or field), welding process, weld type, welding position, plate thickness, material specification and grade, etc.] required for the project.

Testing Expenses

MDOT will cover the cost to provide an AWS Certified Welding Inspector (CWI) to monitor the Contractor's welding personnel as they complete MDOT's performance test. MDOT will also cover the cost for our testing laboratory (in-house or consultant) to complete the destructive testing and report out the results of the performance test. All other expenses (materials, welding personnel time, shipping test plates to MDOT's selected testing laboratory, etc.) required to complete the performance testing will be at the Contractor's expense.

Retesting (not renewal of an expired endorsement) of welding personnel is at the Contractor's expense (Contractor's expenses noted above in addition to MDOT's expenses noted above). Below are three separate retesting scenarios that provide guidance for the Contractor to understand request notifications, welding personnel training, and associated expenses:

1. Welding personnel fails the performance test and the Contractor requests to have them retested for the same project:
 - a. Request Notification: Contractor is required to submit a new Form 0571 and include supporting documentation as objective evidence the welding personnel currently meet AWS welding personnel qualification requirements (including fracture critical qualifications) for the welding parameters they are requesting to be tested for.
 - b. Welding Personnel Training: Include supporting documentation as objective evidence (attached to Form 0571).
 - c. Expenses: Contractor is responsible for all costs associated with the retests (materials, welding personnel time, shipping to MDOT's selected testing laboratory, reimbursement to MDOT to cover CWI labor to monitor the performance test, reimbursement to MDOT to cover laboratory testing). MDOT's expenses will be documented in a letter sent to the Engineer for them to deduct from the Contractor's project payment.

2. Welding personnel fails the performance test and the Contractor requests to have them given the same test for a different project within a 6-month time period from the failing test. This is treated as a first test because the previous performance test was for a different MDOT project; however, MDOT would be concerned with the welding personnel's ability and require training to improve their welding skills:
 - a. Request Notification: Contractor is required to submit a new Form 0571 and include supporting documentation as objective evidence the welding personnel currently meet AWS welding personnel qualification requirements (including fracture critical qualifications) for the welding parameters they are requesting to be tested for.
 - b. Welding Personnel Training: Contractor is required to provide documented evidence the welding personnel has received sufficient training to pass the performance test.
 - c. Expenses: Expenses are split between the Contractor and MDOT as described above for a first test.

3. If welding personnel fails the same test two times in a row for the same project or for different projects within a 6-month time period from the first failing test then the Contractor and SFU need to discuss additional training requirements for the welding personnel prior to MDOT testing the welder again.
4. If welding personnel fails, the same test three times in a row for the same project or for different projects within a 6-month time period from the first failing test then the welding personnel will not be considered for additional testing for the MDOT WQP test in question.

SFU will notify the Contractor (copy Engineer) if a welder performance retest has been requested to confirm they agree to cover MDOT's expenses in addition to the Contractor's expenses. Upon confirmation from the Contractor, the SFU will approve the retests on Form 0571 and send it to MDOT's CWI that will monitor the performance test(s).

Welding Personnel Responsibilities

Welding personnel endorsed through the MDOT WQP are required to adhere to the following responsibilities or risk loss of their welding privileges:

1. Welding personnel must not weld on MDOT projects unless they have been endorsed through MDOT's WQP for the welding parameters [applicable AWS Code, location (shop or field), process, weld type, welding position, plate thickness, material, etc.] required for the welding they will perform. Welding personnel endorsed to weld in the shop are not authorized to weld in the field and personnel endorsed to weld in the field are not authorized to weld in the shop.
2. Meet all AWS welder, welding operator, and tack welder qualification requirements. Weld tests conducted through MDOT's Welder Certification Program are considered contractor tests.
3. Follow all contract documents including, but not limited to the 2020 MDOT Standard Specifications for Construction (as modified by 20SS-001A – *Errata to the 2020 Standard Specifications for Construction*) hereafter called 2020 MDOT SSC, applicable AWS Code (e.g., AWS D1.1, ANSI/AWS D1.2, AASHTO/AWS D1.5, AWS D1.6 as modified by 20SP-707A - *Special Provision for Structural Steel and Aluminum Construction*).
4. Shop welding personnel are responsible for adhering to subsections 707.03.D.10 of the 2020 MDOT SSC for bridge and structural steel welding requirements including welder endorsements. Qualification begins from the coupon welding date and not the laboratory test report date.
5. Field welding personnel are responsible for adhering to subsections 707.03.E.7 (except subsections e and f) of the 2020 MDOT SSC for bridge and structural steel welding requirements including welder endorsements. Qualification begins from the coupon welding date and not the laboratory test report date.

6. MDOT Form 0394 (*AWS D1.1 Field Welding Plan*) and Form 0395 (*AASHTO/AWS D1.5 Field Welding Plan*), as applicable, are required for all field welding and must be submitted to SFU for review and approval prior to the start of welding.
7. Welding personnel must have a copy of their MDOT WQP endorsement (MDOT Form 0396 - *Welder Qualification Test Report*) available at all times. Failure to produce the endorsement while welding on a MDOT project will result in welding privileges removed from the project until the endorsement is provided.

Below is a list of typical MDOT project field and shop welding that is required to be performed by welding personnel endorsed through MDOTs WQP:

1. Main and secondary member bridge welding in accordance with AASHTO/AWS D1.5 as specified in subsection 707.03.D.10.a of the 2020 MDOT SSC or other contract documents.
2. Structural steel welding in accordance with AWS D1.1 as specified in subsection 707.03.D.10.b of the 2020 MDOT SSC or other contract documents.
3. Main member pile welding in accordance with AASHTO/AWS D1.5 as specified in subsection 705.03.C.2.d.i of the 2020 MDOT SSC or other contract documents.
4. Non-main member pile welding in accordance with AWS D1.1 as specified in subsection 705.03.C.2.d.ii of the 2020 MDOT SSC or other contract documents.
5. Miscellaneous welding in accordance with AWS D1.1 or AASHTO/AWS D1.5 as specified in the contract.

Welding personnel endorsed through MDOTs WQP are permitted the same welding privileges granted through MDOTs Welder Certification Program provided they adhere to additional welding personnel responsibilities set forth in that program.

MDOT Testing Responsibilities

MDOTs testing laboratories must complete performance testing in accordance with the applicable AWS Code (e.g., AWS D1.1, ANSI/AWS D1.2, AASHTO/AWS D1.5, AWS D1.6 as modified by 20SP-707A - *Special Provision for Structural Steel and Aluminum Construction*) specified for the work per the contract. The *Welder Qualification Test Report* (Form 0396) must accurately reflect the endorsement period of effectiveness, which is established at two (2) years for field welding personnel and three (3) years for shop welding personnel from the test plate welding date. SFUs testing laboratories are required to adhere to the following:

1. Testing laboratories are strictly prohibited from using a third-party to perform any portion of the welder performance testing (VT, cutting, bending, testing, interpretation, reporting, etc.), unless approved by the SFU in writing.
2. Perform MDOT WQP laboratory testing upon receiving test plates and work assignment task.

3. Retain a record of all applicable documentation related to the performance testing (mill certifications, reports, etc.) for a minimum of 3 years.
4. Maintain a MDOT WQP log documenting relevant information for every welder that is tested by them as part of this program. The log must be kept current and available at all times.
5. Perform all mechanical test requirements in accordance with applicable AWS Code (e.g., AWS D1.1, ANSI/AWS D1.2, AASHTO/AWS D1.5, AWS D1.6 as modified by 20SP-707A - *Special Provision for Structural Steel and Aluminum Construction*).
6. Retain the weld test plates for 3 months after the reported test date. Retention must be for all qualification tests regardless of where the plate is tested (shop or laboratory).
7. Provide an AWS CWI staff member to perform or oversee the required mechanical testing and sign the *Welder Qualification Test Report* (Form 0396).
8. Report test results on MDOT Form 0396 (Welder Qualification Test Report) in the following naming system and send to SFU's email resource (see above):
 - 0396 Last First Position Process Expiration Date (use test date for failing qualification test)
 - Example: 0396 Fox Bill 4G SAW 050614
 - Example: 0396 Fox Bill 4G SAW FAIL 050614
9. Consultant(s) providing AWS CWI to monitor performance test and testing laboratory must prepare and transmit a MDOT WQP retest letter to the Engineer for each unique MDOT project number. MDOT will provide direct re-testing reimbursement to our consultant through the normal monthly fabrication inspection contract invoicing process. The retest letter is intended to provide the Engineer with information to accurately and timely bill the Contractor for the QAP retesting costs and is required to contain the following information:
 - Project information
 - Welding personnel name and weld test information (process, position, plate thickness, etc.)
 - Form 0571
 - Laboratory testing costs
 - CWI hourly costs (travel and meals are not applicable)

Frequently Asked Questions

1. **Is MDOT responsible for transporting shop and field welder qualification test plate(s) to MDOT's selected testing laboratory?**

No. The Contractor is responsible for delivering the welder qualification test plate(s) in accordance with subsection 105.05.B of the 2020 MDOT SSC.

2. **Is the AWS CWI responsible for monitoring MDOT WQP performance test required to fail a welder qualification test plate based on visual test (VT) inspection at the shop or field?**

Yes. SFU expects the CWI that is monitoring the welder qualification test to perform VT inspection of the test plate(s) in accordance with AWS and apply pass/fail acceptance criteria to the test plate(s) in the shop/field. If the test plate(s) fail VT inspection, then the welding personnel fails their performance test. The CWI must take photographs of the test plate(s) as objective evidence the visual findings result in failure of the performance test. The CWI is responsible for completing Form 0396. Additional tests (bend, soundness, etc.) on the qualification test plate(s) are not to be performed. The test plate(s) are not required to be retained.

3. If a welder fails an unlimited thickness performance test, are they able to perform the same test except for limited thickness (or vice versa) and count it as a new test?

Yes. This would be considered a new test because it is different than the first test. The Contractor must submit a Form 0571 with supporting documentation as objective evidence the welding personnel is already qualified in accordance with AWS for the new test.

4. Do field welding personnel need to submit documentation attached to Form 0571 as objective evidence they are already qualified in accordance with the AWS for the requested performance test prior to being tested by MDOT?

Yes. This is typically accomplished by the welding personnel submitting an endorsement through the MDOT Welder Certification program but may consist of records from a different testing laboratory as well.

5. Can the AWS CWI responsible for monitoring the MDOT WQP performance test complete tack and fillet weld performance test(s) without sending it to the selected laboratory for testing?

Yes. The CWI must take photographs of the test plate(s) as objective evidence they pass or fail the performance test. The CWI is responsible for completing Form 0396. The test plate(s) are not required to be retained if they are tested in the shop/field.

6. What if a Contractor wants to add more shop or field welding personnel to the approved Form 0571?

A new Form 0571 is required to be submitted to SFU with supporting documentation as objective evidence the welding personnel is already qualified in accordance with AWS. The CWI should call SFU to discuss as soon as they are notified by the Contractor of the additional welding personnel in the event SFU is able to perform a verbal review and approval.

7. What tools may welding personnel use to clean between weld passes during performance testing?

All weld cleaning, regardless of the applicable AWS Code required for the work, must be in accordance with AASHTO/AWS D1.5 (year specified in 20SP-707A - Special Provision for Structural Steel and Aluminum Construction) regardless of the applicable AWS Code.

8. Is testing due to an expired MDOT endorsement considered a first test or a retest?

A first test.