a. **Description.** This work consists of providing and maintaining a quality control plan (QCP) for welding non-primary member pile splices to produce welds that meet *American Welding Society (AWS) D1.1:2010, Structural Welding Code - Steel* (as modified by the current FUSP 12SP-707A - Structural Steel and Aluminum Construction), hereafter called AWS D1.1. QCP’s are not required for primary member pile splices. Perform quality control (QC) inspection in accordance with the QCP during all phases of the welding. The QCP must conform to the FUSP 12SP-705A - Special Provision for Pile Splicing and the specifications herein.

b. **Quality Control Plan.** Provide and maintain a QCP stating the scope of work and listing all methods, procedures, personnel, equipment, supplies, and facilities necessary to ensure the welded pile splices meet the contract requirements. Ensure the QCP is administered by a QC Manager that is a full time employee or a contracted consultant (see requirements below). The individual must have clearly defined authority and responsibility to take all actions necessary for the successful implementation of the QCP, including but not limited to the QC acceptance and rejection of welds, and prescription of corrective measures to ensure welds meet the contract requirements. Provide a list describing the responsibilities for all others involved in the QCP.

Submit the QCP for review to the Engineer a minimum of 10 working days before the start of pile driving.

Provide the Engineer the opportunity to witness all welding and QC inspection. Do not begin welding of pile splices before approval of the QCP by the Engineer. The Engineer will provide any objections, changes or revisions to the proposed QCP within 5 working days of the receipt of the QCP.

All QC test reports and splicing records must include the pile location (substructure unit) and pile number (based off the plans). Failure to provide proper documents for QC will be justification for withholding acceptance for the welded pile splices, or as a basis for non-payment.

c. **Pre-Welding Meeting.** Hold a pre-welding meeting to discuss the QCP in detail including roles and responsibilities of all QC staff. All staff (QC and production) listed on the QCP must attend the meeting and record their name in a sign in sheet. Notify the Engineer of the meeting date, time, location, and provide a call in number for Department personnel not able to attend the meeting. Provide this information to the Engineer a minimum of 10 working days prior to the meeting. The QCP must be approved by the Engineer prior to the pre-weld meeting.

d. **Quality Control Plan Contents.** At a minimum, include the following items in the QCP.

1. Scope of work.
A. Type and size of piles;

B. Number of piles;

C. Anticipated driven pile lengths;

D. Anticipated number of splices per pile;

E. Pile position for splicing; and

F. Pile splice detail (complete joint penetration (CJP) weld or alternate splice).

2. Weld procedure specification (WPS) for approval or pre-approved WPS.

3. A list of the QCP staff involved in the pile splicing operation including name, position, role, and responsibilities. Ensure this list is updated throughout the project.

4. All relevant information for the pre-welding meeting.

5. Pre-Welding QC Manager Checklist.

   A. Cleanliness of the pile in the area of the weld;

   B. Alignment and pile fit up;

   C. Proper root opening;

   D. Acceptable atmospheric conditions for welding;

   E. Type and size of welding electrode (rod);

   F. Handling, storage (rod ovens), and care of the electrodes according per FUSP 12SP-705A - Special Provision for Pile Splicing;

   G. Allowable atmospheric exposure of low-hydrogen shielded metal arc welding (SMAW) electrodes; and

   H. Welding positions.

6. During Welding QC Manager Checklist:

   A. Slag removal procedures after each pass of welding and visual testing (VT) inspection by the welder;

   B. Corrective action plan for repair of defects or discontinuities discovered from VT; and

   C. Back gouging procedure (when applicable).

7. Post-Welding QC Manager Checklist:
A. Meets visual requirements per FUSP 12SP-705A - Special Provision for Pile Splicing;

B. Meets penetrant testing (PT) inspection requirements per FUSP 12SP-705A - Special Provision for Pile Splicing for CJP welds with cope holes;

C. Measurements using fillet weld gauge; and

D. Verification of all weld dimensions.

8. Contractor’s discipline policy for dealing with individuals who do not adhere to the QCP.

e. QC Manager and Pile Welder Requirements. The QC Manager is defined as the individual administering the QCP and must be a Certified Weld Inspector (CWI), a MDOT Certified Welder tested by a MDOT authorized agency, or a MDOT Qualified Welder tested by the Department. Ensure the pile welder is either a MDOT Certified Welder or MDOT Qualified Welder. Provide the names and necessary certification/qualifications of all QC staff to the Engineer prior to welding.

For additional information about the MDOT Welder Certification Program visit the web location listed below:


For additional information about the MDOT Welder Qualification Program visit the web location listed below:


f. Non-Destructive Testing (NDT) Inspection. Ensure all welds are VT inspected and accepted by the QC Manager. PT inspection is required for CJP welds with cope holes. The welder is allowed to perform the QC inspection after each weld pass (During Welding Inspection as defined in the approved QCP). If corrective action is required, the QC Manager must inspect and accept the repaired weld.

g. Quality Assurance Testing. The Engineer will periodically inspect welded splices and may perform or require the Contractor to perform other NDT on any welds not following the QCP or FUSP 12SP-705A - Special Provision for Pile Splicing. If the additional testing identifies rejectable defects then all costs associated with repairing the weld, retesting the weld using the same NDT that found the defect, and the cost associated with the initial test that found the defect will be at no cost to the Department. If the QCP is not followed or welds with defects are accepted by the QC inspection, then a CWI must inspect and accept all welded pile splices for the remainder of the project at no cost to the Department.

h. Pile Welding QCP Template and Records. Maintain complete QC records documenting the required acceptance criteria have been met including: pre-welding, during welding, post-welding, corrective repairs, and final acceptance. These records must indicate what action was taken to correct deficient welds when inspection indicates defective welds. Ensure the QC
records are furnished to the Engineer within 24 hours after the date covered by the record in portable document format (PDF) file.

Submit QCP’s and pile welding records using the following MDOT Forms:

1. Pile Welding Quality Control Plan (Form 5627);
2. Pile Welding Splice Record (Form 5628); and
3. Pile Welding Corrective Action Record (Form 5629).

I. Measurement and Payment. All costs associated with providing and maintaining an effective QCP will be included in the piling pay items.