Quality Assurance Procedure QAP
5942

Method of Test For

Procedure for Fabrication of Liquid Penetrant Control Specimen

SCOPE

1.1 This procedure establishes the procedure for fabricating test control specimen used to check the adequacy of penetrant materials and to qualify liquid penetrant tests at temperatures not within 60 - 125 degrees F.

1.2 Two different types of test control specimen are included:

1.2.1 3/8" x 2 1/2" x 5" (full size specimen), which shall be used to compare the sensitivity of aged or newly purchased materials to the original reference material.

1.2.2 3/8" x 2 1/2" x 5" specimen, which, after cracks are induced, are cut in half lengthwise to produce two pieces of the one control block. Each of these halves of these control specimen are liquid penetrant tested and direct comparisons are made between the two. This method is used to qualify testing at temperatures not within 60 - 125 degrees F. and to compare the sensitivity of two lots of penetrant, developer, or both.

REFERENCE

2.1 ASME Pressure Vessel Code

2.2 NDT Handbook, McMaster Vol. 1

2.3 ASTM E 165

2.4 AASHTO/ AWS D1.5M/D1.5 Section 6

MATERIALS

3.1 Test Control Specimen - ASTM B209, Type 2024-T4 aluminum

3.2 Heating torch or bunsen burner using propane gas

3.3 950 - 975 degree F. temperature indicating crayon

3.4 Number and letter indent stencils

3.5 Brush and soap

3.6 Acetone

PROCEDURE

4.1 Mark the center of face "B" with the temperature indicating crayon. Heat a 1" or less diameter area in the center of face "A" of the full size specimen until the temperature indicating mark just melts (no sooner than 4 minutes and no longer than 5 minutes). The specimen shall then be immediately quenched in cold water (less than 50 degrees F.). Repeat this procedure by marking face "A" and heating face "B" The specimen shall then be dried by heating between 200 - 300 degrees F. for 30 minutes.

4.2 Full size specimen shall be identified using the letter "F" and a unique number in chronological sequence (starting with the number "1") of their fabrication by stenciling the edge as shown in Fig. 1. Face "A" shall be marked at the lower right corner with the letter "A". Face "B" shall be marked in the same manner with the letter "B".

4.3 Two halves shall be made from the full size specimen by cutting the 5 in. length in half through the center of the heat mark. Each half shall be stenciled with a letter starting with "A" in chronological order of their fabrication followed by the number "1" on one half and "2" on the other half. Face "A" shall be marked toward the bottom edge adjacent to the cut on each half. Face "B" shall be marked in the same manner with the letter "B".

5. RECORDS

5.1 No records are required when fabrication conforms to this procedure. Any deviancy from this procedure shall be recorded and submitted to CDOT Staff Bridge to be retained on file.