

ICC – E mail Comments – 01.23.2008

Proposed Acceptance Criteria for Narrow-Gap Improved Electroslag Welding (NGI-ESW) Subject
AC411-0209-R1

(a) **STAFF SOUGHT INPUTS**

Item 1. Provisions adequately address General Requirements of AWS D1.1:2006 with exceptions noted in ‘PROPOSED ACCEPTANCE CRITERIA’ in (b) of this document.

Item 2. The CVN intermix toughness testing is required only when the Electroslag Weld is Repaired with FCAW-S process in accordance with AWS D1.8:2005. Therefore a repair of Electroslag weld with for instance SMAW welding process does not necessitate CVN testing. Further no additional testing is necessary as the original Electroslag will have been qualified by PQR testing.

Secondly the CVN toughness and temperature of testing are generally specified in the Contract Documents that may site either one or any combination of codes such as AWS D1.8, FEMA 353 or AISC. All the 3 codes have different CVN requirements for ‘Demand Critical’ welds such as:

| | |
|-------------------------|--------------------|
| AISC - Demand Critical: | 20 ft.lbf @ -20 °F |
| FEMA 353 - All Welds: | 40 ft.lbf @ +40 °F |
| D1.8 - Demand Critical: | 40 ft.lbf @ +70 °F |

Item 3. Preparation of a Repair WPS is mandatory. However a standalone WPS cannot be generated since the nature and severity of the proposed repair is hypothetical. The Repair WPS has to be accepted by the Project Engineer. No qualification testing is necessary as the Electroslag Weld will have been accepted by a qualified PQR, and generally the repair will utilize a prequalified joint in accordance with AWS D1.1:2006.

The use of the combination procedures is consistent with AWS D1.1: 2006 Structural Welding Code-Steel, Section 3.6.1 that notes:

“ A combination of qualified and prequalified WPS’s may be used without qualification of the combination, provided the limitation of essential variables applicable to each process is observed.”

(b) **PROPOSED ACCEPTANCE CRITERIA**

Line 84 - Item 3.2.2 ELECTRODES

The source of Section 4.2.5.4 is unclear.

Line 94 - Item 3.4 REPAIRS

Response as in Item 3 of ‘Staff Sought Inputs’ of this document.

Line 97 - Item 4.0 TEST METHODS

Prior to NDT testing (Line 102), the test plate shall be subjected to Visual Examination in accordance with Sec. 4.8.1 using the criteria in Sec. 4.8.1.1 of AWS D1.1:2006

Line 102 - Item 4.2 NONDESTRUCTIVE TESTING

Either of the two NDT techniques (4.2.1 Radiographic Examination, 4.2.2 Ultrasonic Examination) is acceptable. That is, any one of the two is necessary, not both techniques.

Line 127 - Item 4.3.3.2 CONDITION OF ACCEPTANCE (All-Weld Tension)

Table 3 was included as an example. The expected all-weld metal properties will be certified by the electrode/flux manufacturer for the appropriate Electrode Designation.

Line 134 - Item 4.3.4.1.1 PROCEDURE (AWS D1.8)

CVN testing in accordance with Annex A of AWS D1.8:2005 is not applicable to Electroslag Welding. The procedure described in the Annex is for the WPS Heat Envelope Testing at both High and Low Heat Inputs. The suggested heat inputs and the preheat temperatures are not applicable to Electroslag Welding. The heat input of the NGI-ESW is significantly higher than that proposed, and no preheat is necessary. Therefore the Heat Envelope Testing has no merit.

Line 136 - Item 4.3.4.1.2 CONDITIONS OF ACCEPTANCE

Inapplicable as explained above for Line 134.

Line 148 - Item 4.3.4.2.2 CONDITIONS OF ACCEPTANCE

When tested in accordance with FEMA 353, Sec. 2.4.1.1.2, the CVN toughness shall be a minimum 40 ft.lbf (54J) at +7⁰ 0F (21 ⁰C). This requirement is when using the 'Heat Envelope' testing method. This is not applicable to NGI-ESW as explained in Line Item 134 of this note.

Line 163 - Item 4.4.1 PROCEDURE (Weld Repair)

No specimens are required. Sections A.1 and A.2 of Appendix A of the criteria merely describe the repair procedure.

Perhaps the line should read: "Recommended practice for Minor and Weld Restart repairs is as described in Appendix A complemented by a documented Repair WPS. Other methods of repair are also possible provided each is accompanied by a WPS and approved by the applicable authority".

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