

ITEM 586.30010016 – ULTRASONIC IMPACT TREATMENT ON COVER PLATE TRANSVERSE END WELDS

DESCRIPTION

This work shall consist of performing Ultrasonic Impact Treatment (UIT) on cover plate transverse end welds in accordance with the contract documents and as directed by the Engineer.

MATERIALS

None specified.

CONSTRUCTION DETAILS

A. Ultrasonic Impact Treatment Firm Qualifications

The work shall be performed by a UIT firm competent and proficient in the use of Ultrasonic Impact Treatment on existing bridges. The UIT firm shall provide a list of projects it has performed UIT work on, their locations, key personnel directly involved in the performance and supervision of the work, and the names of a current contact person knowledgeable about the work done on each of the projects listed. Additionally, the UIT firm shall provide resumes of personnel to perform the work. These qualifications shall be submitted to the Engineer 30 days prior to scheduled start of work. UIT firm qualification shall be reviewed and approved by the Deputy Chief Engineer of Structures (DCES).

B. Equipment Requirements

The UIT firm shall furnish complete UIT tooling requirements, including, but not limited to, one electronic control unit with power source, one UIT tool, all required tool tip sets; additional treatment pins, as required; closed circuit cooling system; a complete set of extension cables, and equipment consumables required during the application of UIT. The UIT shall be performed using equipment with a frequency of either 27 kHz or 36 kHz, using a power output rating of at least 800 Watts.

The Contractor shall furnish 110 V, 60 Hz, power, with a capacity sufficient to operate the equipment in accordance with the manufacturers' requirements.

C. Procedures

UIT shall be accomplished in accordance with the equipment Manufacturer's recommendations, except as specifically described in the contract documents. UIT shall be performed when the details to be treated are under full dead load.

The use of UIT shall be limited to base metal with specified minimum yield strength of 100 ksi or less.

Prior to the application of UIT on the cover plate transverse end weld and adjacent 3" of the longitudinal fillet weld the UIT firm in the presence of the Engineer shall test for cracks in the weld by Magnetic Particle Inspection, in accordance with the NYS Steel Construction Manual.

If a crack in the weld is found, the Engineer shall contact the Main Office Metals Engineering Unit for the repair procedure. The Contractor shall perform the weld repair to the satisfaction of the Engineer prior to beginning UIT application. The cost of weld repair shall be paid separately. Any weld repair will require the application of UIT on the entire weld area, additional treatment areas will be paid for at the bid price for the quantity listed in the original estimate.

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UIT shall be done along the toe of the weld in a manner that will cause the center of the resultant treatment groove to be at the weld toe, with equal treatment and smooth transition to the adjacent weld and base metal. The application of UIT shall include the cover plate transverse end weld and adjacent 1" of longitudinal fillet welds. The application of UIT shall follow the weld toe in the zone between the weld filler material and the girder flange.

UIT shall be performed so as to result in a uniform groove with a distinct and uniform bright metallic surface, as verified by visual inspection immediately after completion. When viewed under a 10x magnifying glass, the groove shall be free from any visible indications of the untreated base metal or weld metal. If such untreated indications exist within the treated area, such area shall be retreated to obtain a uniform, bright metallic surface across the entire surface of the UIT groove.

METHOD OF MEASUREMENT

This work will be measured as the number of Ultrasonic Impact Treatment locations satisfactorily treated.

BASIS OF PAYMENT

The unit price bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.