Equipment Quality Standards - Welding

1. References, Symbols, and Terminology

References

The following are American Welding Society (AWS) standards approved by the American National Standards Institute (ANSI):

- AWS A2.4 "Standard Symbols for Welding, Brazing, and Nondestructive Examination"
- AWS A3.0 "Standard Welding Terms and Definitions"
- ANSI/AWS B1.11:2000 "Guide for the Visual Examination of Welds"
- ANSI/AWS D14.3-94 "Specification for Welding Earthmoving and Construction Equipment"
- ANSI/AWS D14.4-97 "Specification for Welded Joints in Machinery and Equipment"

Refer to the current issue at time of bid solicitation.

- Boats and aquatic craft used by Caltrans shall meet the A.B.Y.C "Standards and Technical Information Reports for Small Craft".

Symbols

The weld symbols used in Caltrans drawings conform to the symbols in referenced publication AWS A2.4. Caltrans weld symbols are listed in Exhibit A (PDF) .

Terminology and Definitions

The terminology and definitions in this standard and Caltrans specifications and drawings shall be interpreted in accordance with the terminology and definitiions in the referenced publication AWS A3.0.

2. Design, Workmanship, and Weld Quality

Requirements

Weld design, preparation, procedures, materials, and quality shall conform to ANSI/AWS D14.3-94 and ANSI/AWS D14.4-97.

Welded joint design shall be per ANSI/AWS standards as described in referenced publications AWS-D14.3 and AWS D14.4.

Although certified welders are not required, it is expected that the final weld quality will be equivalent to a weld made by a certified welder.

Drawings contain one or both of the following notes:

1. All joints to be welded Continuous, unless otherwise specified. Size of all welds to be at least the thickness of the thinner of the adjacent metals. Welds are to be uniform and neat in appearance.

2. The work shall be positioned for flat welding whever possible. Use proper procedures and sequence of welding to avoid needless distortion and minimize shrinkage stresses of the assembly.

3. Welding Inspection

These notes are intended to provide practical guidelines for good workmanship. They are not intended as a substitute for weld design preparation, procedures, materials and quality as provided by the referenced standards.

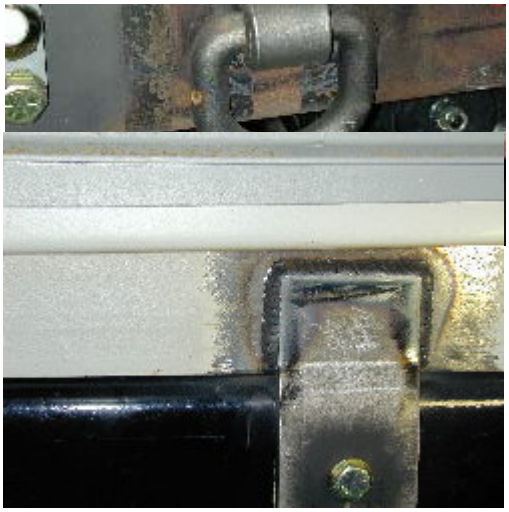
The State of California Quality Assurance Inspection will conform to the contents of Exhibit B (PDF) and guidelines and recommendations covered in reference publication AWS B1.11:2000. Table B contains a list of the most common weld defects and the criteria they shall be judged with for acceptance.

4. Visual Welding Examples

"D"- Rings

Photographs showing weld quality.

Method: Three pass weld with wrap-around on ends.



Body Shear Plate Mounts

Photographs of preparation and final pass.

Method: Two pass weld. Vertical welds shall be uphill only.

Body Hinge Plate

Photograph series of desired installation method.

Method: Two pass weld. Vertical welds shall be uphill only.

Body Telescoping Hoist Mount

Method: Three passes required.

Body Sill to Hinge Blocks

Photograph series of desired installation method.

Method: 3 passes all the way around.

Hydraulic Tanks

Applies to all fluid tanks.

Method: Single pass. NO GRINDING OF WELD.