American Welding Society
550 NW LeJeune Road *Miami, Florida 33126*

AWS D1.1 Interpretation

Subject: Fatigue Figures
Code Edition: D1.1-88
Code Provision: Figures 9.4B, 9.4C
AWS Log: ID1-90-034-01

Inquiry: Are the stress ranges shown in the ordinate of Figure 9.4B and 9.4C in D1.1-88 for completely reversed stresses (i.e., alternately tensile and compressive) or for zero-to-maximum stresses (i.e., application and removal of load)?

Response: The stress range is the algebraic difference of stress variation caused by the cyclic load. For example, 5 ksi tensile to 20 ksi tensile is 15 ksi; however, 5 ksi compression on 20 ksi tensile is 25 ksi.

AWS D1.1, Structural Welding Code—Steel, is prepared by the AWS Structural Welding Committee. Because the Code is written in the form of a specification, it cannot present background material or discuss the committee's intent.

Since the publication of the first edition of the Code, the nature of inquiries directed to the American Welding Society and the Structural Welding Committee has indicated that there are some requirements in the Code that are either difficult to understand or not sufficiently specific, and other that appear to be overly conservative.

It should be recognized that the fundamental premise of the Code is to provide general stipulations applicable to any situation and to leave sufficient latitude for the exercise of engineering judgment. Another point to be recognized is that the Code represents the collective experience of the committee; and, while some provisions may seem overly conservative, they have been based on sound engineering practice.