

Tensile Ductility of HPS70W

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Abstract

In 1993, the American Iron and Steel Institute (AISI) and the Federal Highway Administration (FHWA) created an initiative to develop a high performance steel that possesses improved material characteristics. The result of this research was a 1994 cooperative program between AISI, FHWA and the U.S. Navy. This interagency program developed HPS70W (High Performance Steel, Grade 70, Weathering Capabilities) as a result of the program. HPS70W has demonstrated material qualities superior to other grades of high-strength steel. HPS70W has yield strength in excess of 70 ksi but also has increased fracture toughness and associated good weldability and resistance to hydrogen cracking.

Testing is required to verify that traditional design equations, developed in the 1950's through 1970's on mild steel and perhaps Grade 50 steel, are also appropriate for HPS70W. One of the last issues to be fully addressed is the ductility of the tension flange in HPS70W girders. Primarily, this research builds on research at University of Minnesota, where it was determined that both gross and net sections of tension panels developed acceptable plastic characteristics.

The poster will illustrate the ductility of HPS70W through the pictures of girder tests and graphs of test data.