

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STUD WELDING PROCEDURE SPECIFICATION (WPS) AWS D1.5

Specifications & Codes: NCDOT Standard Specifications/AASHTO/AWS D1.5, Section 2, 5 and 12

Material Specifications: ASTM A-36, A572, (A709-36, 50), (M270-GR250, 345) Unlimited Thickness

Welding Process: SMAW Manual or Semi- Automatic or Automatic: Manual

Filler Metal Specification: AWS A5.1 Classification: E-7018

Manufacturer: NCDOT Approved Electrodes Single or Multiple Pass both Position of Weld Flat, Horizontal, Vertical, Overhead

Welding Current: DC Polarity: Positive Progression: Vertical up

Root Treatment: N/A

Preheat Temp: 100° minimum Interpass: 450° maximum Post Heat: N/A

Pass Num.	Electrode Size	Welding Current		Travel Speed		Joint Details
		Amperes	Volts			
All	1/8" 5/32"	90-150 120-200	20-23 21-24	6-9 ipm 6-10 ipm		SEE ATTACHMENT

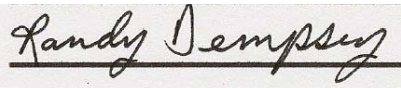
PREHEAT	
Thickness	Min. Temp.
Up to 3/4"	100°
Over 3/4" to 1 1/2"	100°
Over 1 1/2" to 2 1/2"	150°
Over 2 1/2"	225°

**COMMENTS:**

**Remove the protrusion from the bottom of the stud and all coating, rust, dirt and mill scale within one inch of the area to be welded prior to fit-up. Remove all slag, spatter and weld discontinuities between passes. Clean the completed weld of all debris, slag and spatter.**

WPS Description Stud Welding

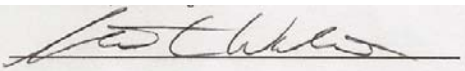
Written By: **Randy Dempsey, CWI/CWE, Transportation Technician IV**

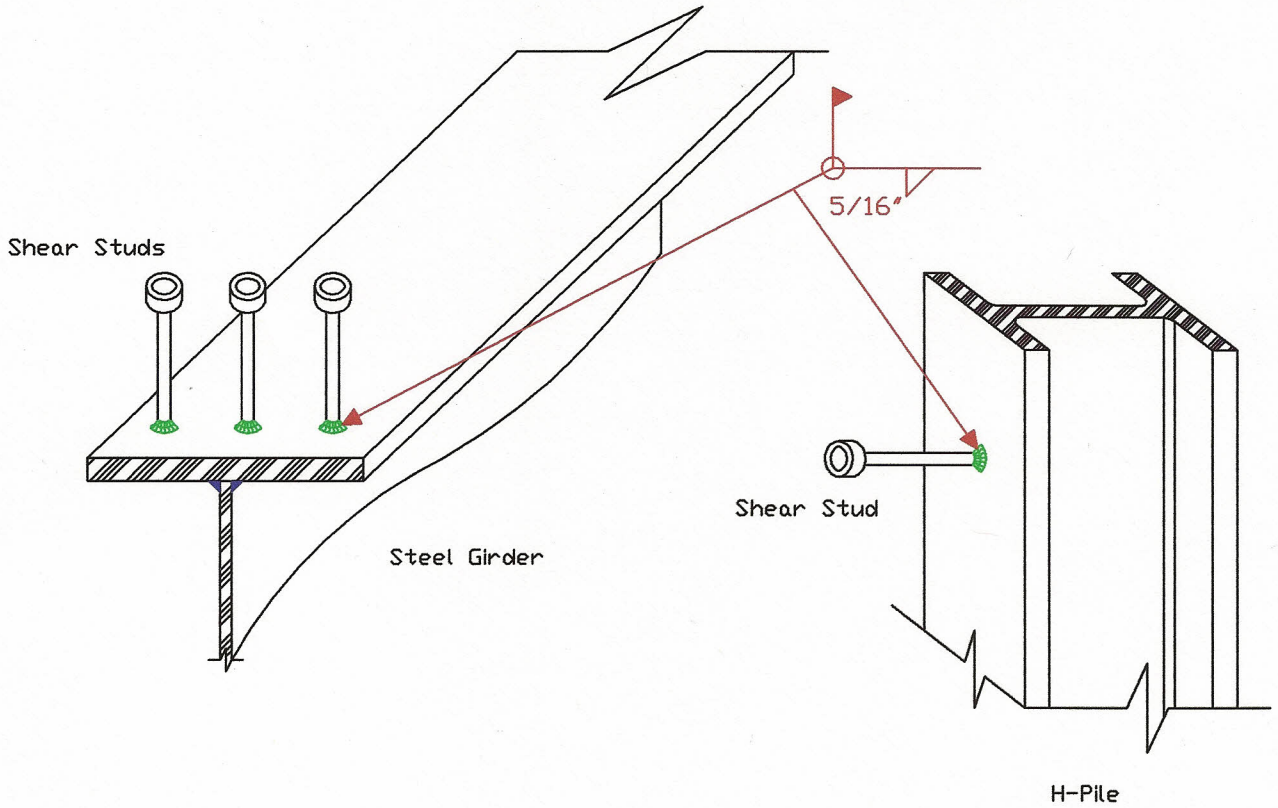
Signature: 

WPS #: 012009007

Authorized By: **Steve Walton, Metals Engineer**

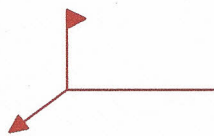
Revision #: 4

Signature: 

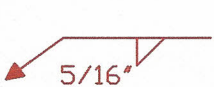


## STUD WELDING DETAILS

Weld Symbol definitions per AWS A2.4:2007



FIELD WELD SYMBOL



FILLET WELD,  
ARROW SIDE with  
WELD SIZE



WELD ALL  
AROUND

## Illustrations for Stud Welding.



Unacceptable weld (too small)



Acceptable weld

NCDOT MATERIALS & TESTS UNIT (STEEL SECTION)