

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOUBLE BEVEL GROOVE WITH BACK GOUGE

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 Horizontal

Welding Current: DC Polarity: Positive Progression: N/A

Root Treatment: Back Gouge with a grinder to sound metal prior to applying weld to the second side.

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" | 90-150 | 20-23 | 6-9 ipm | | SEE ATTACHMENT |
| All | 5/32" | 120-200 | 21-24 | 6-10 ipm | | |

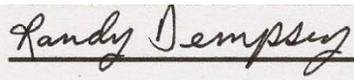
| PREHEAT | |
|-----------------------|------------|
| Thickness | Min. Temp. |
| Up to 3/4" | 100° |
| Over 3/4" to 1 1/2" | 100° |
| Over 1 1/2" to 2 1/2" | 150° |
| Over 2 1/2" | 225° |

COMMENTS:

Remove all coating, rust, dirt and mill scale within one inch of the area to be welded. Remove all slag, spatter and weld discontinuities between passes. Clean the completed weld of all debris, slag and spatter.

WPS Description: Double Bevel Groove With Back Gouge

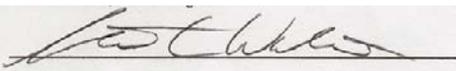
Written By: Randy Dempsey, CWI/CWE, TT IV

Signature: 

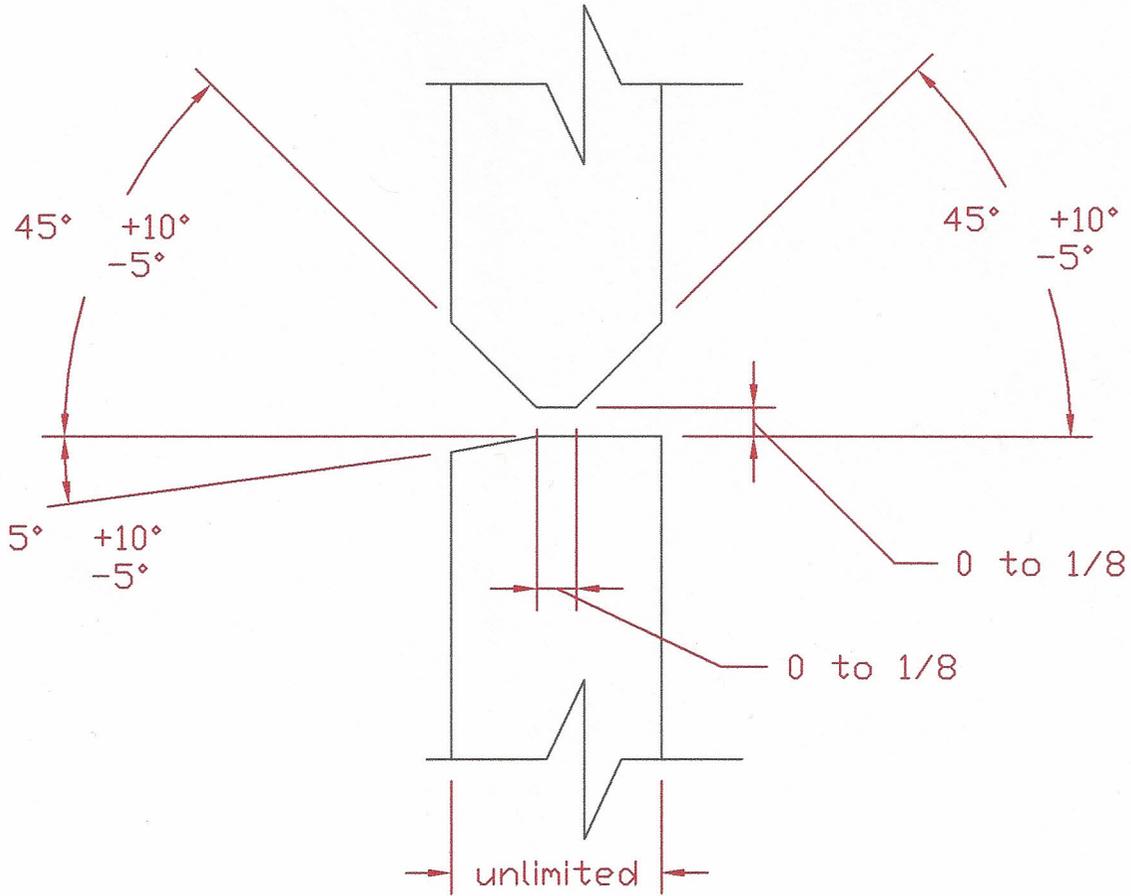
WPS #: 031711023

Authorized By: Steve Walton, Metals Engineer

Revision #: 1

Signature: 

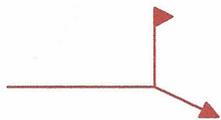
WPS DOUBLE BEVEL GROOVE with Back Gouge 031711023 R1
 JOINT DETAIL ATTACHMENT



DOUBLE BEVEL GROOVE with Back Gouge
JOINT DETAILS

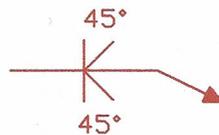
Weld Symbol definitions per AWS A2.4:2007

Back Gouge



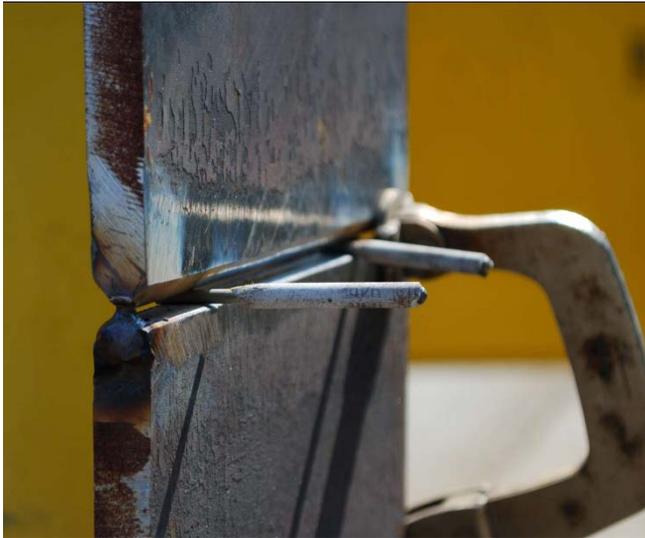
Back Gouge
 Required before
 welding side two

FIELD
 WELD
 SYMBOL



Double BEVEL Groove,
 w/ Groove Angle

Illustrations for a double bevel groove with back gouge.



Typical fit-up using 1/8" electrodes to set the root opening.



Root pass after cleaning.



Inadequate back gouge.



Adequate back gouge.



Completed weld.

NCDOT MATERIALS & TESTS UNIT (STEEL SECTION)