NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
FILLET WELD
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: **N/A**

Root Treatment: **N/A**

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

Pass Num.	Electrode Size	Welding Current Amperes	Welding Current Volts	Travel Speed	Position	Joint Details
All	**1/8"** **5/32"** **3/16"**	**90-150** **120-200** **170-280**	**20-23** **21-24** **21-24**	**6-9 ipm** **5-10 ipm** **4-11 ipm**	All All Flat, Horizontal	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 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: **Fillet Weld**

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

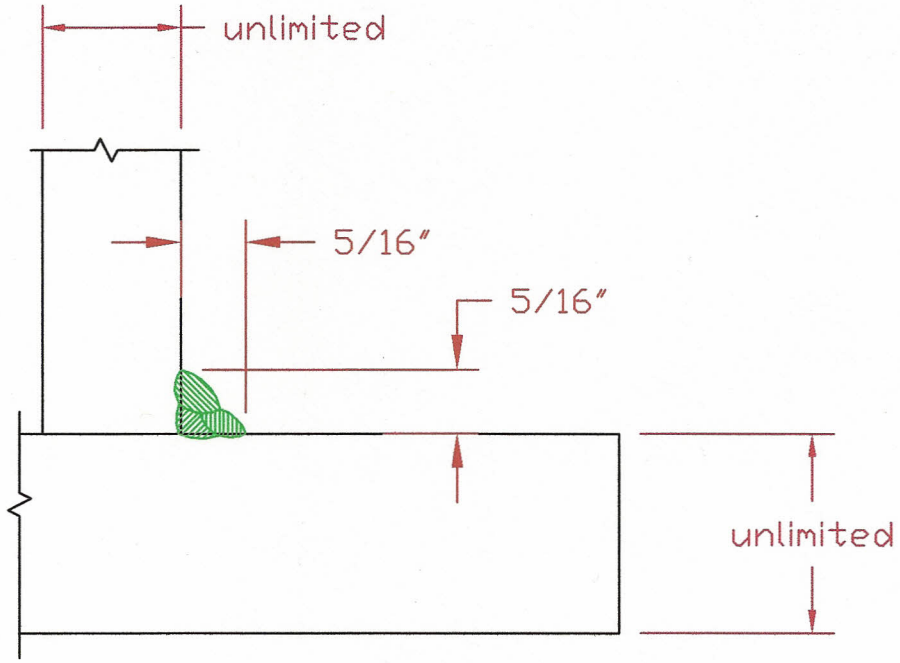
Signature: Randy Dempsey

WPS #: **032811027**

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

Revision #: **1**

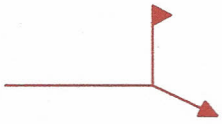
Signature:



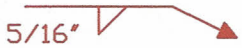
Typical weld size for 1/8" 7018 Electrode, Horizontal 3 passes

STANDARD FILLET WELD DETAILS

Weld Symbol definitions per AWS A2.4:2007

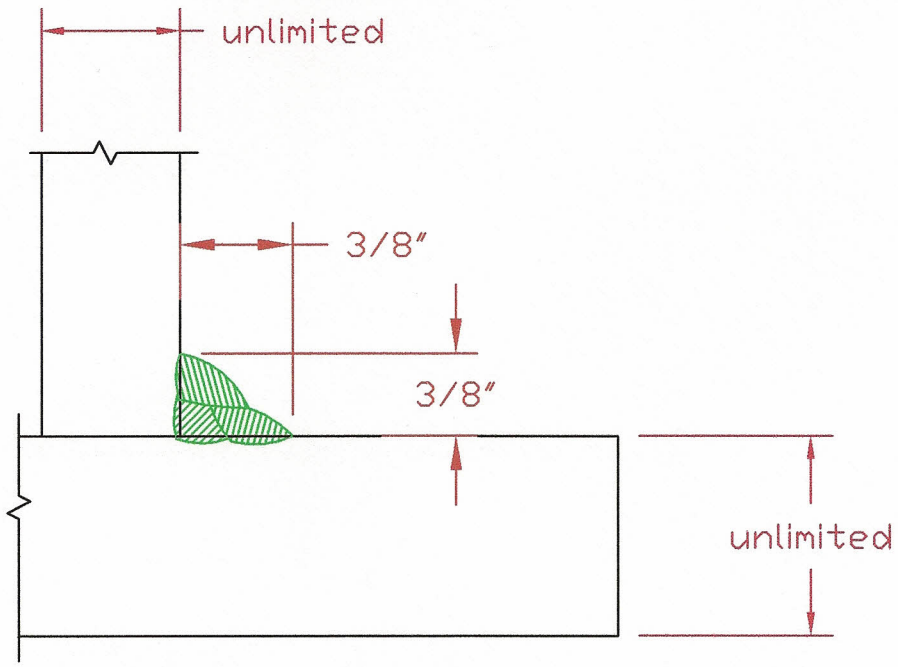


FIELD
WELD
SYMBOL



FILLET WELD, arrow side w/ WELD SIZE

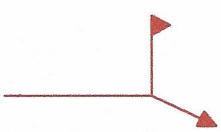
FILLET WELD, other side of arrow w/ WELD SIZE



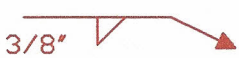
Typical weld size for 5/32″ 7018 Electrode, Horizontal 3 passes

STANDARD FILLET WELD DETAILS

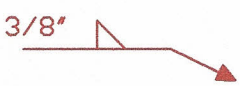
Weld Symbol definitions per AWS A2.4:2007



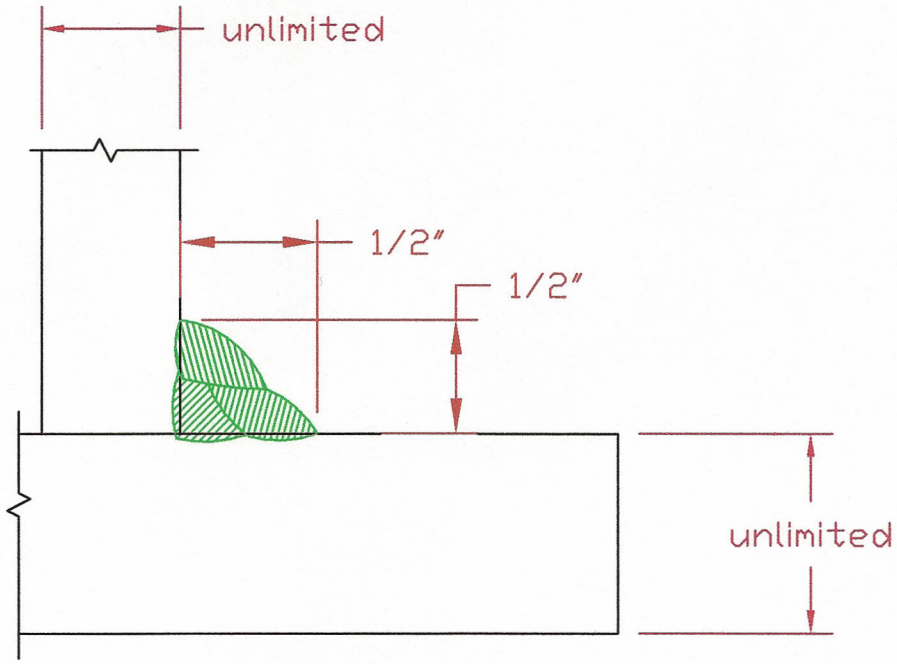
FIELD
WELD
SYMBOL



FILLET WELD, arrow side w/ WELD SIZE



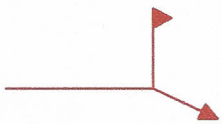
FILLET WELD, other side of arrow w/ WELD SIZE



Typical weld size for 3/16" 7018 Electrode, Horizontal 3 passes

STANDARD FILLET WELD DETAILS

Weld Symbol definitions per AWS A2.4:2007



FIELD
WELD
SYMBOL

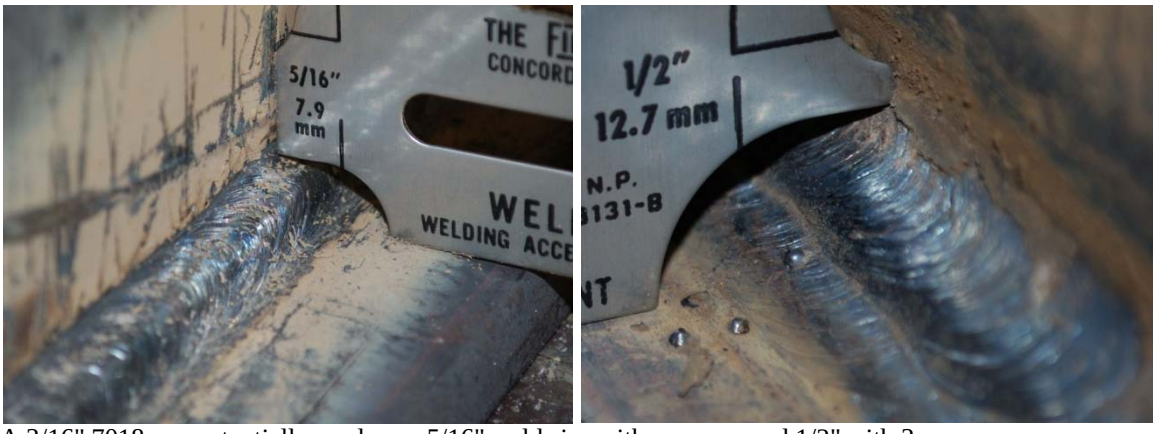
FILLET WELD, arrow side w/ WELD SIZE

FILLET WELD, other side of arrow w/ WELD SIZE

Illustrations for fillet welds using various electrode sizes.

A 1/8" 7018 can potentially produce a 3/16" weld size with one pass and 5/16" with 3 passes.

A 5/32" 7018 can potentially produce a 1/4" weld size with one pass and 3/8" with 3 passes.



A 3/16" 7018 can potentially produce a 5/16" weld size with one pass and 1/2" with 3 passes.