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


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

<table>
<thead>
<tr>
<th>Pass Num.</th>
<th>Electrode Size</th>
<th>Welding Current Amperes</th>
<th>Welding Current Volts</th>
<th>Travel Speed</th>
<th>Position</th>
<th>Joint Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>1/8”</td>
<td>90-150</td>
<td>20-23</td>
<td>6-9 ipm</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>5/32”</td>
<td>120-200</td>
<td>21-24</td>
<td>5-10 ipm</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>3/16”</td>
<td>170-280</td>
<td>21-24</td>
<td>4-11 ipm</td>
<td>Flat, Horizontal</td>
<td>SEE ATTACHMENT</td>
</tr>
</tbody>
</table>

PREHEAT

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Min. Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 3/4”</td>
<td>100°</td>
</tr>
<tr>
<td>Over 3/4” to 1 1/2”</td>
<td>100°</td>
</tr>
<tr>
<td>Over 1 1/2” to 2 1/2”</td>
<td>150°</td>
</tr>
<tr>
<td>Over 2 1/2”</td>
<td>225°</td>
</tr>
</tbody>
</table>

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.

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

Authorized By: Steve Walton, Metals Engineer
Signature:

NCDOT MATERIALS & TESTS UNIT (STEEL SECTION)
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 A2.4i:2007

FIELD WELD SYMBOL

3/8" FILLET WELD, arrow side w/ WELD SIZE

3/8" 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, other side of arrow w/ WELD SIZE

FILLET WELD, arrow side 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.