# Casco Bay Steel Structures

One Wallace Avenue, South Portland ME 04106

## AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

| | | | | |
|---|---|---|---|---|
| WPS record number<br>Date | 201<br>4/24/2014 | Revision 1 | Qualified to<br>Company name | AWS D1.5<br>Casco Bay Steel Structures |
| Supporting PQR(s)<br>Reference docs. | SAW DC + FCM 2-21-14 - Rev 1 | | | |

| | |
|---|---|
| Scope | Fillet, no PWHT (As-welded) |
| Joint | Joint details for this welding procedure specification in:<br>JOINTS section of this WPS |

### BASE METALS

| | | | |
|---|---|---|---|
| Type | Gr50/Gr50W | P-no. | Grp-no. - |
| Welded to | Gr50/Gr50W | P-no. | Grp-no. - |
| Backing: | None | P-no. | Grp-no. - |
| Retainers<br>Notes | All A709 steels with 50 ksi or less are also qualified | | |

**THICKNESS RANGE QUALIFIED** (in.)

| | As-welded | | With PWHT | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| Complete pen. | - | - | - | - |
| Impact tested | - | - | - | - |
| Partial pen. | - | - | - | - |
| Fillet welds | 1/8 | All | - | - |

**DIAMETER RANGE QUALIFIED** (in.)

| As-welded | | With PWHT | |
|---|---|---|---|
| Min. | Max. | Min. | Max. |
| | | - | - |

### FILLER METALS

**THICKNESS RANGE QUALIFIED** (in.)

| | SFA | Classification | F-no. | A-no. | Chemical analysis or Trade name | As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|---|---|---|---|---|
| SAW | 5.23 | ENi1K | 6 | | Lincolnweld LA-75 | 1/8 | All | - | - |
| Flux | - | - | - | - | - Lincolnweld 960 | - None - | | | |
| Sup. filler | - | - | - | - | - | - None - | | | |

### WELDING PROCEDURE

| | | |
|---|---|---|
| Welding process | | SAW |
| Type | | Machine |
| Minimum preheat/interpass temperature | (°F) | See Backpage |
| Maximum interpass temperature | (°F) | 490 |
| Filler metal size | (in.) | 5/32 |
| Layer number | | |
| Position | | F,H |
| Current/polarity | | DCEP |
| Amperes | | 604 |
| Volts | | 29.5 |
| Travel speed | (in./min) | 17.1 |
| Maximum heat input | (kJ/in.) | 62.5193 |
| Wire feed type | | Hot wire |
| Wire feed speed | (in./min) | N/A |
| String or weave | | Stringer |
| C.T.W.D | (in.) | |
| Multi/Single pass per side | | Single or Multiple passes |
| Multiple or single layer | | Single or Multiple layer |
| Oscillation | | None |
| Multi/single electrode | | Single electrode |
| Electrode angle | (deg.) | As needed |
| Maximum pass thickness | (in.) | See Backpage |
| Weld deposit chemistry | | F8A2-ENi1K-Ni1-H8 |
| Notes | | |


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# Casco Bay Steel Structures

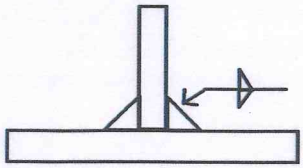
One Wallace Avenue, South Portland ME 04106

## AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

| | | | | |
|---|---|---|---|---|
| WPS record number | 201 | Revision 1 | Qualified to | AWS D1.5 |
| Date | 4/24/2014 | | Company name | Casco Bay Steel Structures |

**JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.**



**3/8 single pass flat**
**5/16 single pass Horizontal**

| | Amps | Volts | Travel Speed |
|---|---|---|---|
| AVG | 604 / | 29.5 / | 17.1 IPM |
| MIN | 544 / | 27.4 / | 14.5 IPM |
| MAX | 644 / | 31.6 / | 19.7 IPM |

*** Multiple passes may be used if drawing details call for a larger size fillet weld than noted above in the position welding is being performed**

| | | | | |
|---|---|---|---|---|
| Type of groove | Fillet weld | Minimum groove angle | (deg.) | N/A |
| | | Minimum root opening | (in.) | N/A |
| | | Maximum root face | (in.) | N/A |

### PREHEAT TABLE

| Applicable standard | |
|---|---|
| AWS D1.5 Bridge Welding Code | For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F).<br>Over 3/4 thru 1-1/2(in.): 70(°F).<br>Over 1-1/2 thru 2-1/2(in.): 150(°F).<br>Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85) |
| AWS D1.5 2010 FCM | For thickness 1/8 to 3/4(in.): 100°F).<br>Over 3/4 thru 1-1/2(in.): 200(°F).<br>Over 1-1/2 thru 2-1/2(in.): 300(°F).<br>Over 2-1/2(in.): 350(°F). No welding to be done if ambient temperature in immediate area is below 0(°F) |
| New York SCM | Up to 3/4 ----------100 (F)<br>Over 3/4 to 1-1/2 ----------200 (F)<br>Over 1-1/2 to 2-1/2 --------300 (F)<br>Over 2-1/2 ----------350 (F) |

### TECHNIQUE

| | |
|---|---|
| Supplementary MF control | |
| Peening | |
| Surface preparation | Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust |
| Initial/interpass cleaning | Brushing and Grinding |
| Back gouging method | None |

### NOTES

AWS FCM preheats are taken from AWS D1.5 2010 Clause 12 Table 12.4 and are based upon calculated heat input calculated in accordance with section 5.12 with an as welded H8 designation for the electrode combination we are using. This higher preheat will be used on non weathering steels also.

**Signature 1**

| Name | Signature |
|---|---|
| Matthew Cote | Matthew J Cote<br>CWI 08051341<br>QC1 EXP. 5/1/2017 |
| Date | |
| 6/2/2014 | |

**Signature 2**

| Name | Signature |
|---|---|
| | |
| Date | |
| | |

**Signature 3**

| Name | Signature |
|---|---|
| | |
| Date | |
| | |

**Signature 4**

| Name | Signature |
|---|---|
| | |
| Date | |
| | |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# Casco Bay Steel Structures

One Wallace Avenue, South Portland ME 04106

## AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

| | | | |
|---|---|---|---|
| WPS record number<br>Date | 203 Revision 1<br>4/24/2014 | Qualified to<br>Company name | AWS D1.5<br>Casco Bay Steel Structures |
| Supporting PQR(s)<br>Reference docs. | SAW DC + FCM 2-21-14 - Rev 1 | | |

| | |
|---|---|
| Scope | Groove, no PWHT (As-welded) |
| Joint | Joint details for this welding procedure specification in:<br>JOINTS section of this WPS |

### BASE METALS

| | | | |
|---|---|---|---|
| Type | Gr50/Gr50W | P-no. | Grp-no. - |
| Welded to | Gr50/Gr50W | P-no. | Grp-no. - |
| Backing: | None | P-no. | Grp-no. - |
| Retainers<br>Notes | All A709 steels with 50 ksi or less are also qualified | | |

**THICKNESS RANGE QUALIFIED** (in.)

| | As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|
| Complete pen. | over 1/2 | 2 | - | - |
| Impact tested | - | - | - | - |
| Partial pen. | NO | - | - | - |
| Fillet welds | - | - | - | - |

**DIAMETER RANGE QUALIFIED** (in.)

| | As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|
| | | | - | - |

### FILLER METALS

| | SFA | Classification | F-no. | A-no. | Chemical analysis or Trade name | THICKNESS RANGE QUALIFIED (in.) As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|---|---|---|---|---|
| SAW | 5.23 | ENi1K | 6 | | Lincolnweld LA-75 | over 1/2 | 2 | - | - |
| Flux<br>Sup. filler | 5.23<br>- | F8A2<br>- | 6<br>- | - | Lincolnweld 960<br>- | - Required -<br>- None - | | | |
| Flux type<br>Flux from recrush. slag | No | | | | | | | | |

### WELDING PROCEDURE

| | | |
|---|---|---|
| Welding process | | SAW |
| Type | | Machine |
| Minimum preheat/interpass temperature | (°F) | See Backpage |
| Maximum interpass temperature | (°F) | 490 |
| Filler metal size | (in.) | 5/32 |
| Layer number | | |
| Position | | F |
| Current/polarity | | DCEP |
| Amperes | | 604 |
| Volts | | 29.5 |
| Travel speed | (in./min) | 17.1 |
| Maximum heat input | (kJ/in.) | 62.5193 |
| Wire feed type | | Hot wire |
| Wire feed speed | (in./min) | N/A |
| String or weave | | Stringer |
| C.T.W.D | (in.) | |
| Multi/Single pass per side | | Single or Multiple passes |
| Multiple or single layer | | Single or Multiple layer |
| Oscillation | | None |
| Multi/single electrode | | Single electrode |
| Electrode angle | (deg.) | As needed |
| Maximum pass thickness | (in.) | |
| Weld deposit chemistry | | F8A2-ENi1K-Ni1-H8 |
| Notes | | |


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# Casco Bay Steel Structures

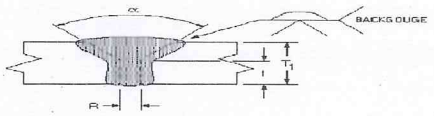
One Wallace Avenue, South Portland ME 04106

## AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

| | | | | |
|---|---|---|---|---|
| WPS record number | 203 | Revision 1 | Qualified to | AWS D1.5 |
| Date | 4/24/2014 | | Company name | Casco Bay Steel Structures |

**JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.**




| | Amps | Volts | Travel Speed |
|---|---|---|---|
| AVG | 604 / | 29.5 / | 17.1 IPM |
| MIN | 544 / | 27.4 / | 14.5 IPM |
| MAX | 644 / | 31.6 / | 19.7 IPM |

BL2c-S

Over 1/2" to 1" (1/4 root face min)
Over 1" to 1-1/2" (3/8 root face min)
Over 1-1/2" to 2" (1/2 root face min)

*backside shall be backgouged prior to welding

| | | | | |
|---|---|---|---|---|
| Type of groove | Single-V-groove | Minimum groove angle | (deg.) | 55 to 70 |
| | | Minimum root opening | (in.) | 0 to 1/16 |
| | | Maximum root face | (in.) | varies |

### PREHEAT TABLE

| Applicable standard | |
|---|---|
| AWS D1.5 Bridge Welding Code | For thickness 1/8 to 3/4(in.): 50°F). Preheat to 70(°F) if the base metal temperature is below 32(°F).<br>Over 3/4 thru 1-1/2(in.): 70(°F).<br>Over 1-1/2 thru 2-1/2(in.): 150(°F).<br>Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85) |
| AWS D1.5 2010 FCM | For thickness 1/8 to 3/4(in.): 100°F).<br>Over 3/4 thru 1-1/2(in.): 200(°F).<br>Over 1-1/2 thru 2-1/2(in.): 300(°F).<br>Over 2-1/2(in.): 350(°F). No welding to be done if ambient temperature in immediate area is below 0(°F) |
| New York SCM | Up to 3/4 ----------100 (F)<br>Over 3/4 to 1-1/2 ----------200 (F)<br>Over 1-1/2 to 2-1/2 --------300 (F)<br>Over 2-1/2 ----------350 (F) |

### TECHNIQUE

| | |
|---|---|
| Supplementary MF control | |
| Peening | |
| Surface preparation | Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust |
| Initial/interpass cleaning | Brushing and Grinding |
| Back gouging method | Grinding or Air Carbon Arc Gouging |

### NOTES

AWS FCM preheats are taken from AWS D1.5 2010 Clause 12 Table 12.4 and are based upon calculated heat input calculated in accordance with section 5.12 with an as welded H8 designation for the electrode combinationwe are using. This higher preheat will be used on non weathering steels also.

**Signature 1**

| Name | Signature |
|---|---|
| Matthew Cote | |
| Date | |
| 6/2/14 | |

Matthew J Cote
CWI 08051341
QC1 EXP. 5/1/2017

**Signature 2**

| Name | Signature |
|---|---|
| | |
| Date | |
| | |

**Signature 3**

| Name | Signature |
|---|---|
| | |
| Date | |
| | |

**Signature 4**

| Name | Signature |
|---|---|
| | |
| Date | |
| | |



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# Casco Bay Steel Structures

One Wallace Avenue, South Portland ME 04106

## AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

| | | | | |
|---|---|---|---|---|
| WPS record number<br>Date | 250<br>6/10/2014 | Revision | Qualified to<br>Company name | AWS D1.5<br>Casco Bay Steel Structures |
| Supporting PQR(s)<br>Reference docs. | SAW FCM 3/32 DC- 5/7/14 | | | |

| | |
|---|---|
| Scope | Fillet, no PWHT (As-welded), impact testing |
| Joint | Joint details for this welding procedure specification in:<br>JOINTS section of this WPS |

### BASE METALS

| | | | |
|---|---|---|---|
| Type | Gr50/Gr50W | P-no. | Grp-no. - |
| Welded to | Gr50/Gr50W | P-no. | Grp-no. - |
| Backing: | Yes | P-no. | Grp-no. |
| Retainers<br>Notes | All A709 with 50 ksi or less are also qualified | | |

THICKNESS RANGE QUALIFIED (in.)

| | As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|
| Complete pen. | - | - | - | - |
| Impact tested | 0.625 | no max. | - | - |
| Partial pen. | - | - | - | - |
| Fillet welds | no min. | no max. | - | - |

DIAMETER RANGE QUALIFIED (in.)

| | As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|
| | N/A | N/A | - | - |

### FILLER METALS

THICKNESS RANGE QUALIFIED (in.)

| | SFA | Classification | F-no. | A-no. | Chemical analysis or Trade name | As-welded Min. | As-welded Max. | With PWHT Min. | With PWHT Max. |
|---|---|---|---|---|---|---|---|---|---|
| SAW | 5.23 | ENi1K | 6 | | LincolnElectric LA-75 | 0.125 | no max. | - | - |
| Flux<br>Sup. filler | 5.23 | F8A2 | | | LIncolnElectric Lincolnweld960 | - Required -<br>- Required - | | | |

| | |
|---|---|
| Flux type | |
| Flux from recrush. slag | No |
| Suppl. filler metal vol. (ft³) | N/A |

### WELDING PROCEDURE

| | |
|---|---|
| Welding process | SAW |
| Type | Machine |
| Minimum preheat/interpass temperature (°F) | See Back Page |
| Maximum interpass temperature (°F) | 400 |
| Filler metal size (in.) | 3/32 |
| Layer number | |
| Position | F,H |
| Current/polarity | DCEN (straight polarity) |
| Amperes | 363.3 |
| Volts | 31.6 |
| Travel speed (in./min) | 12.8 |
| Maximum heat input (kJ/in.) | 53.8138 |
| Wire feed type | Cold wire |
| Wire feed speed (in./min) | N/A |
| String or weave | Stringer |
| C.T.W.D (in.) | |
| Multi/Single pass per side | Single or Multiple passes |
| Multiple or single layer | Single or Multiple layer |
| Oscillation | None |
| Multi/single electrode | Single electrode |
| Electrode angle (deg.) | Varies |
| Maximum pass thickness (in.) | See Back Page |
| Weld deposit chemistry | F8A2-ENi1K-Ni1-H8 |
| Notes | |


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# Casco Bay Steel Structures

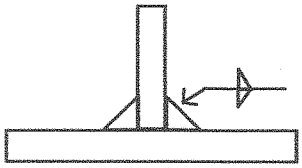
One Wallace Avenue, South Portland ME 04106

## AWS - Welding Procedure Specification (WPS)

WeldOffice WPS

| | | | | |
|---|---|---|---|---|
| WPS record number | 250 | Revision | Qualified to | AWS D1.5 |
| Date | 6/10/2014 | | Company name | Casco Bay Steel Structures |

JOINTS: Typical joint(s). See actual production drawings and engineering specifications for details.



**3/8 single pass flat**
**5/16 single pass Horizontal**

| | Amps | Volts | Travel Speed |
|---|---|---|---|
| AVG | 363.3 | 31.6 | 12.8 |
| MIN | 326.9 | 29.4 | 10.8 |
| MAX | 399.6 | 33.8 | 14.7 |

*** Multiple passes may be used if drawing details call for a larger size fillet weld than noted above in the position welding is being performed**

| | | | | |
|---|---|---|---|---|
| Type of groove | Fillet weld | Minimum groove angle | (deg.) | N/A |
| | | Minimum root opening | (in.) | N/A |
| | | Maximum root face | (in.) | N/A |

PREHEAT TABLE

| Applicable standard | |
|---|---|
| AWS D1.5 Bridge Welding Code | For thickness 1/8 to 3/4(in.): 50(°F). Preheat to 70(°F) if the base metal temperature is below 32(°F).<br>Over 3/4 thru 1-1/2(in.): 70(°F).<br>Over 1-1/2 thru 2-1/2(in.): 150(°F).<br>Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg 85) |
| AWS D1.5 2010 FCM | For thickness 1/8 to 3/4(in.): 100°F).<br>Over 3/4 thru 1-1/2(in.): 200(°F).<br>Over 1-1/2 thru 2-1/2(in.): 300(°F).<br>Over 2-1/2(in.): 350(°F). No welding to be done if ambient temperature in immediate area is below 0(°F) |
| New York SCM | Up to 3/4 ----------100 (F)<br>Over 3/4 to 1-1/2 ----------200 (F)<br>Over 1-1/2 to 2-1/2 --------300 (F)<br>Over 2-1/2 ----------350 (F) |

TECHNIQUE

| | |
|---|---|
| Supplementary MF control | |
| Peening | Not used |
| Surface preparation | Grind/Blast/chemical/wirebrush clean to be free of moisture, slag, millscale, oils, dust |
| Initial/interpass cleaning | Brushing and Grinding |
| Back gouging method | None |

NOTES

AWS FCM preheats are taken from AWS D1.5 2010 Clause 12 Table 12.4 and are based upon calculated heat input calculated in accordance with section 5.12 with an as welded H8 designation for the electrode combination we are using. This higher preheat will be used on non weathering steels also.

| Signature 1 | | Signature 2 | |
|---|---|---|---|
| Name | Signature | Name | Signature |
| Matthew Cote | Matthew J Cote<br>CWI 08051341<br>QC1 EXP. 5/1/2017 | | |
| Date | | Date | |
| 6/10/14 | | | |

| Signature 3 | | Signature 4 | |
|---|---|---|---|
| Name | Signature | Name | Signature |
| | | | |
| Date | | Date | |
| | | | |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# Casco Bay Steel Structures

One Wallace Ave, South Portland ME 04106

## AWS - Prequalified Welding Procedure Specification (pWPS)

WeldOffice WPS

| | |
|---|---|
| Identification # | 480 Rev. |
| Originated by | Matthew Cote |
| Date | 7/22/2014 |
| Authorized by | Matthew J Cote |
| Date | 7/22/2014 |

| | |
|---|---|
| Company name | Casco Bay Steel Structures |
| Welding process | SMAW |
| Process type | Manual |

### Joint design used

| | |
|---|---|
| Joint type | T - T joint |
| Joint design | Fillet Weld |
| Backing | No |
| Backing material | Not Applicable |
| Root opening (R)* (in.) | |
| Root face (f)* (in.) | |
| Groove angle (a)* (deg.) | |
| Radius (J - U)* (deg.) | |
| Back gouging | No |
| Back gouging method | None |

* Datum, As Detailed (As Fit-Up)

### Base metals

| | |
|---|---|
| Spec., type or grade | Gr 50/ Gr50W |
| Thickness: Groove (in.) | |
| Fillet (in.) | 1/8" and above |
| Diameter (Pipe) (in.) | |

### Filler metals

| | |
|---|---|
| AWS Specification | A5.5 |
| AWS Classification | E-8018 H4R |

### Shielding

| | |
|---|---|
| Flux | - |
| Electrode-flux (class) | - |
| Gas composition | - |
| Gas flow rate (cfh) | - |
| Gas cup size (in.) | - |

### Position

| | |
|---|---|
| Welding position: Groove | |
| Fillet | All |
| Vertical progression | Up |

### Electrical characteristics

| | |
|---|---|
| Transfer mode (GMAW) | N/A |
| Current type | Other |
| Other | DC+ and AC |

### Technique

| | |
|---|---|
| Stringer or weave bead | Stringer or Weave |
| Multi/single pass (per side) | Single or Multiple |
| Number of electrodes | Varies |
| Spacing: Longitudinal (in.) | - |
| Lateral (in.) | - |
| Angle (deg.) | - |
| Contact tube to work (in.) | - |
| Peening | Not permitted |
| Interpass cleaning | Brushing or grinding |

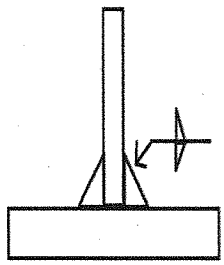
### Preheat

| | |
|---|---|
| Preheat temp.: Min. (°F) | See notes |
| Interpass temp.: Min. (°F) | See notes |
| Max. (°F) | 450 |

### Post weld heat treatment

| | |
|---|---|
| Temperature (°F) | None |
| Time (hrs) | - |

### Welding procedure

| Layer | Pass | Process | Filler metal class | Filler metal diameter (in.) | Current type / polarity | Amps | Wire feed speed (in./min) | Volts | Travel speed (in./min) | Joint details |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | All | SMAW | E-8018 H4R | 1/8 | DCEP | 100-160 | - | n/a | varies |  |
| 1 | All | SMAW | E-8018 H4R | 1/8 | AC | 90-160 | - | n/a | varies | |
| 1 | All | SMAW | E-8018 H4R | 5/32 | DCEP | 140-210 | - | n/a | varies | |
| 1 | All | SMAW | E-8018 H4R | 5/32 | AC | 130-210 | - | n/a | varies | |
| 1 | All | SMAW | E-8018 H4R | 3/16 | DCEP | 200-300 | - | n/a | varies | |
| 1 | All | SMAW | E-8018 H4R | 3/16 | AC | 180-300 | - | n/a | varies | |
| | | | | | | | | Designation | | FILLET |

### Notes

LINCOLN ELECTRIC EXCALIBUR 8018-C3 MR

SEE BACKSIDE FOR MORE DETAILS

### Signature 1

| Name | Signature |
|---|---|
| Matthew J Cote | |
| Date | |
| 7/22/2014 | |

Matthew J Cote
CWI 08051341
QC1 EXP 5/1/2017

### Signature 2

| Name | Signature |
|---|---|
| | |
| Date | |
| | |

### Signature 3

| Name | Signature |
|---|---|
| | |
| Date | |
| | |

### Signature 4

| Name | Signature |
|---|---|
| | |
| Date | |
| | |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| Identification # | 480 | Rev. |
|---|---|---|

AWS D1.5 2010

Single Pass Fillet weld in 1F position, No bigger than 3/8 in a single pass
Single Pass Fillet weld in 2F, 4F position, No bigger than 5/16 in a single pass
Single Pass Fillet weld in 3F position, No biger than 1/2 in a single pass

For thickness 1/8 to 3/4(in.): 50°F). Preheat to 70(°F) if the base metal temperature is below 32(°F).
Over 3/4 thru 1-1/2(in.): 70(°F).
Over 1-1/2 thru 2-1/2(in.): 150(°F).
Over 2-1/2(in.): 225(°F). Refer to AWS D1.5 2010 Table 4.3 (pg85)

FOR FRACTURE CRITICAL WELDS

For thickness 1/8 to 3/4(in.): 125°F).
Over 3/4 thru 1-1/2(in.): 200(°F).
Over 1-1/2 thru 2-1/2(in.): 300(°F).
Over 2-1/2(in.): 350(°F). No welding to be done if ambient temperature in immediate area is below 0(°F)

ALL VERTICAL WELDING SHALL BE DONE UPWARD

IF A GAP FROM 1/16 TO 3/16 IS EVIDENT, INCREASE WELD SIZE 1/16 FOR EACH 1/16 GAP

EX 1/16 GAP IS +1/16 FROM DETAILED SIZE
1/8 GAP IS +1/8 FROM DETAILED SIZE
3/16 GAP IS +3/16 FROM DETAILED SIZE

Preheats to the NYSSCM

| | Gr 50 | Gr 50W |
|---|---|---|
| to 3/4 | 50F | 100F |
| over 3/4 to 1-1/2 | 70F | 200F |
| over 1-1/2 to 2-1/2 | 150F | 300F |
| over 2-1/2 | 225 | 350F |


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# Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification: ASTM Gr. 50 + G-50W
Welding process: Gas Metal ARC Welding (GMAW)
Manual or machine: Semi Auto
Position of welding: Flat + Horizontal
Filler metal specification: AWS-A5.28 ESAB
Filler metal classification: E80C-Ni1
Flux: N A
Shielding gas: 90% AR / 10% $CO^2$ Flow rate: 35 CFH +8/-4, Elec. Stickout 5/8
Single or multiple pass: Single + multiple
Single or multiple arc: Single
Welding current: DC
Polarity: DCEP
Welding progression: See Detail
Root treatment: Blast Clean-wire Brush-Area To be Free of slag-Rust-Moisture
Preheat and interpass temperature: See Table and as Required
Posfheat temperature: As Required
Heat Input Min 24.4 KJ/in Max 38.3 KJ/in P.Q.R. 418-FCM=34.8 KJ/IN
* 35.0 KJ/in Min for single pass

**Minimum Preheat and Interpass Temperature, °C [°F]**

| Welding Process (Base Metal) | To 20 mm [3/4 in] Incl. | Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl. | Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl | Over 65 mm [2-1/2 in] |
|---|---|---|---|---|
| | | Thickness of Thickest Part at Point of Welding, mm [in] | | |
| SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] 345 [50]. | 10 [50] | 20 [70] | 65 [150] | 110 [225] |
| FCM Gr50 | 150°F | 200°F | 225°F | 325°F |
| FCM Gr50W | 150°F | 250°F | 325°F | 350°F |

Preheats to the NYSSCM

| | Gr 50 | Gr 50W |
|---|---|---|
| to 3/4 | 50F | 100F |
| over 3/4 to 1-1/2 | 70F | 200F |
| over 1-1/2 to 2-1/2 | 150F | 300F |
| over 2-1/2 | 225 | 350F |

WELDING PROCEDURE

Max Interpass 440°F

Sec. 5.12.4.2

AWS D1.5 Joint detail Fillet

| Pass no. | Electrode size | Welding current Amperes | Volts | Travel speed |
|---|---|---|---|---|
| AS REQ | .052 | 307 | 29.2 | 15.5 |
| | | 338.7 To 276.3 | 31 To 27 | 17.5 To 13.5 |
| * 1 Pass | .052 | 338.7 to 281.3 | 31 to 28.0 | 17.5 to 13.5 |

2F

To 3/8

To 5/8

To 1/2

1F

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. FCM 610

Revision no.

Contractor Casco Bay Steel

Authorized By Paul E. Goodale

Date 8-1-2013