

WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50-50w  
 Welding process Submerged Arc welding Power source NA  
 Manual or machine Machine  
 Position of welding Flat + Horizontal  
 Filler metal specification A5-23  
 Filler metal classification E802-ENi1-Ni1-H8  
 Flux Lincoln 960-Elec. LA 75  
 Shielding gas NA Flow rate NA  
 Single or multiple pass Single - Multiple  
 Single or multiple arc Single  
 Welding current Alternating  
 Polarity AC  
 Welding progression See Details  
 Root treatment Grind - wire brush - Area Free of Slag - RUST - Moisture  
 Preheat and interpass temperature See Table  
 Postheat temperature NA  
 Heat Input Min 47.1 KJ/in Max 74.0 KJ/in PQR - PWT - 69.3 KJ/in

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

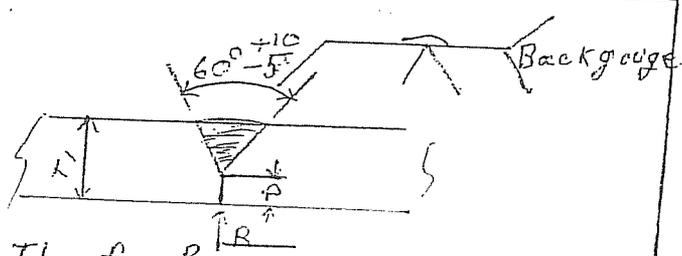
Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	To 20 mm [3/4 in] Incl.	Over 20 mm to 40 mm [3/4 in] to 1-1/2 in] Incl.	Over 40 mm to 65 mm [1-1/2 in] to 2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])	10 [50]	50 [125]	80 [175]	110 [225]

VT - AOT, HYDE PARK  
 BR. NO. 42  
 PROJ. NO. STP-CUIV 626  
 CBSS NO 565

WELDING PROCEDURE

See 5.13  
 Max Interpass = 400° F

AWS D1-5 Joint detail BL2c-s



TI	A	R
1/2" to 1"	1/4" M12	0
1" to 1 1/2"	3/8" M14	0
1 1/2" to 2"	1/2" M16	0

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March 17, 2014

RESUBMIT Approved

BY DATE 03/24/2014

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Procedure no. PW202B ST OF VT  
 Revision no. \_\_\_\_\_

Contractor Casco Bay Steel  
 Authorized By Paul E. Woodale  
 Date April 13 2012

WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50 + 50W  
 Welding process Submerged ARC welding  
 Manual or machine Machine  
 Position of welding Flat + Horizontal  
 Filler metal specification AWS A5-23  
 Filler metal classification F8A2-ENiK-Ni1-H8  
 Flux Lincoln 960-Elec LA-75  
 Shielding gas NA Flow rate NA  
 Single or multiple pass Single + Multiple  
 Single or multiple arc Single  
 Welding current DC  
 Polarity DC EP  
 Welding progression See Detail  
 Root treatment Grind-wire Brush-Area Free of slag-RUST & Moisture  
 Preheat and interpass temperature See Table  
 Postheat temperature NA  
 Heat Input Min 51.3 kJ/in Max 73.4 kJ/in PGR-1 = 64.1 kJ/in

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

Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	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]
SAW; OMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; OMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])	10 [50]	50 [125]	80 [175]	110 [225]

VT - HOT, HYDE PARK  
Br. No. 42  
Proj. No. STP-CUIV (26)  
CASS NO 565

WELDING PROCEDURE

Max InterPass - 430

Pass no.	Electrode size	Welding current		Travel speed
		Amperes	Volts	
<u>5</u> <u>32</u>		<u>620</u>	<u>31</u>	<u>18 IPM</u>
		<u>570</u>	<u>29</u>	<u>15</u>
		<u>TO</u>	<u>TO</u>	<u>TO</u>
		<u>650</u>	<u>33</u>	<u>20</u>

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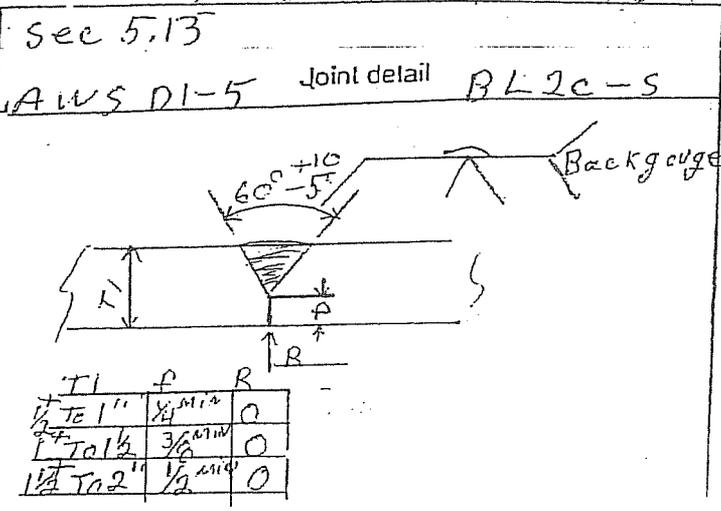
March 17, 2014

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Approved

BY

DATE 03/24/2014



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. 202<sup>B</sup> ST OF VT

Contractor Cresco Bay Steel  
 Authorized By Paul E. [Signature]  
April 13-2012

WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50 #50 W  
 Welding process Submerged ARC welding  
 Manual or machine Machine  
 Position of welding Flat + Horizontal  
 Filler metal specification AWS A5-23  
 Filler metal classification F8A2-ENiK-Ni1-H8  
 Flux Lincoln 960-Elec LA-75  
 Shielding gas NA Flow rate NA  
 Single or multiple pass Single & Multiple  
 Single or multiple arc Single  
 Welding current DC  
 Polarity DC EP  
 Welding progression See Detail  
 Root treatment Grind-wire Brush-Area Free of Slag-RUST & MOISTURE  
 Preheat and interpass temperature See Table  
 Postheat temperature NA  
 Heat Input Min 51.3 kJ/in Max 73.4 kJ/in PGR-1 = 64.1 kJ/in

Minimum Preheat and Interpass Temperature, °C (°F)

Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	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]
SAW; OMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; OMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])	10 [50]	50 [125]	80 [175]	110 [225]

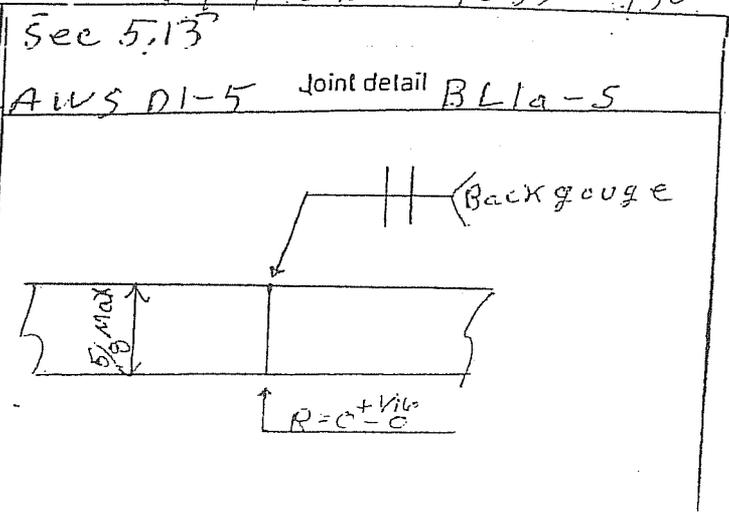
VT - AOT, HYDE PARK  
Br. NO. 42  
Proj. NO. STP-CUIV C26  
CBSS NO 565

WELDING PROCEDURE

Max Interpass - 430°K

Pass no.	Electrode size	Welding current		Travel speed
		Amperes	Volts	
<u>5</u> <u>32</u>		<u>620</u>	<u>31</u>	<u>18 IPM</u>
		<u>570</u>	<u>29</u>	<u>15</u>
		<u>TO</u>	<u>TO</u>	<u>TO</u>
		<u>650</u>	<u>33</u>	<u>20</u>

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 DATE 03/24/2014



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Procedure no. 202<sup>A</sup> ST OF VT  
 Revision no. \_\_\_\_\_

Contractor Casco Bay Steel  
 Authorized By Paul E. [Signature]  
April 13-2012

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

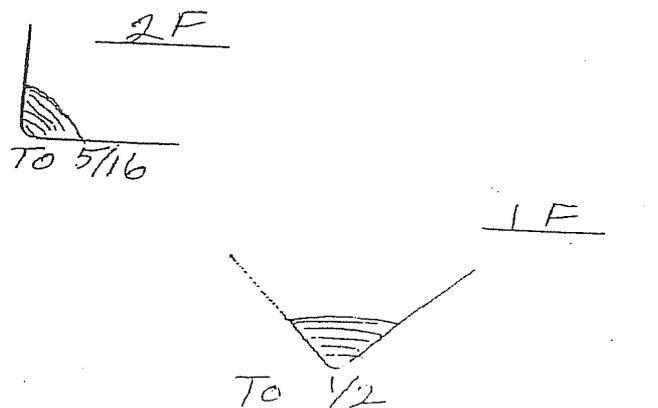
Material specification ASTM Gr 50 + 50W  
 Welding process Submerged ARC welding  
 Manual or machine Machine  
 Position of welding Flat + Horizontal  
 Filler metal specification AWS A5-23  
 Filler metal classification F8A2-ENiK-Ni1-H8  
 Flux Lincoln 960-Elec LA-75  
 Shielding gas NA Flow rate NA  
 Single or multiple pass single + multiple  
 Single or multiple arc single  
 Welding current DC  
 Polarity DC EP  
 Welding progression See Detail  
 Root treatment Grind-wire Brush-Area Free of Slag-Rust & Moisture  
 Preheat and interpass temperature See Table  
 Postheat temperature NA  
 Heat Input Min 51.3 kJ/in Max 73.4 kJ/in PQR-1 = 64.1 kJ/in

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

Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	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]
SAW; OMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Or. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; OMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Or. HPS 485W [HPS 70W], 690 [100], 690W [100W])	10 [50]	50 [125]	80 [175]	110 [225]

VT - AOT, HYDE PAR  
 Br. NO. 42  
 Proj. No. STP-CUIV C  
 CBSS NO 565

### WELDING PROCEDURE

Pass no.	Electrode size	Welding current		Travel speed	Joint detail
		Amperes	Volts		
5 32		620	31	18 IPM	See 5.13 AWS D1-5 Fillet 
		570	29	15	
		TO	TO	TO	
		650	33	20	

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Procedure no. 201 - ST of VT Contractor Casco Bay Steel  
 Paul E. Goodale  
 APR 13 - 2012

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

Material specification ASTM - Gr 50 - 50w NOTE - 1  
 Welding process Submerged ARC welding  
 Manual or machine Machine  
 Position of welding Flat - Horizontal  
 Filler metal specification AWS A5-23  
 Filler metal classification F8A2-ENVIK-Ni1-H8  
 Flux Lincoln 960 - Elec - LA 75  
 Shielding gas NA Flow rate NA  
 Single or multiple pass Single & Multiple  
 Single or multiple arc Single  
 Welding current DC  
 Polarity DCEN  
 Welding progression See Detail  
 Root treatment Grind - wire BRUSH - Area Free of Slag - Rust - Moisture  
 Preheat and interpass temperature See Table  
 Postheat temperature NA  
 Heat Input Min 40.9 KJ/in Max 64.2 KJ/in P.Q.R # 2-58.4 KJ/in

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

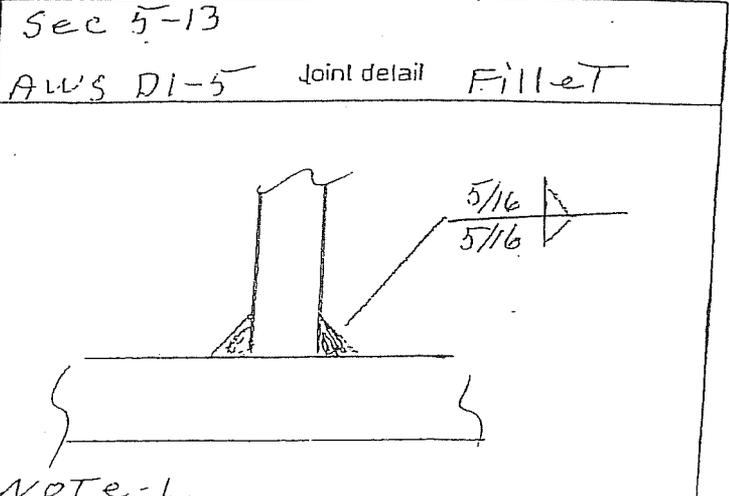
Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]	Thickness of Thickest Part at Point of Welding, mm [in]			
		To 20 mm [3/4 in] Incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)]) Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W]		10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)]) Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W]		10 [50]	50 [125]	80 [175]	110 [225]

VT - HOT HYDE PARK  
 Br. NO. 42  
 Proj No. STP-CUIV G2  
 Cass No. 565

### WELDING PROCEDURE

Max: Interpass - 450°

Pass no.	Electrode size	Welding current		Travel speed
		Amperes	Volts	
	3/32	365	32	12 IPM
		320	30	11
		TO	TO	TO
		350	33	14



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NOTE - 1  
 use for welding Gr 50-50w to C4HPS

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250 ST OF VT

Casco Bay Steel  
 Paul E. Woodell  
 April 13 - 2012

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50 (345) (FCM) IFCAW  
 Welding process Flux Core Arc Welding  
 Manual or machine Semi AUTO  
 Position of welding Flat & Horizontal  
 Filler metal specification AWS 5-21  
 Filler metal classification E71T-1 - Lincoln Ultracore 71A95 D11-8  
 Flux NA  
 Shielding gas 75% AR / 25% CO<sub>2</sub> Flow rate 35 CFH + 8/-4, Elec. 5/8" +/-  
 Single or multiple pass Single & Multiple  
 Single or multiple arc Single  
 Welding current DC  
 Polarity DC EP  
 Welding progression See Details  
 Root treatment blast Clean - wire brush - area free of slag - rust & moisture  
 Preheat and interpass temperature See Table  
 Postheat temperature AS. Req.  
 Heat Input Min 22.4 kJ/in Max 35.2 kJ/in PQR # FCM-SP2, 32 kJ/in

Minimum Preheat and interpass Temperature, °C [°F]

Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	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]
A5, D1AW, FCAW, SMAW (M270M [M270] A 709M [A 709]) Cr. 250 [36], 345 [50], 345W [50], HPS 345W [HPS 50W]	10 [50]	20 [70]	65 [150]	110 [225]

VT - AOT HYDE PARK  
 Br. NO. 42  
 PROJ NO. STP-CUIV (26)  
 CBSS NO 565

FCM-Gr50  
 150<sup>OF</sup> 200<sup>OF</sup> 225<sup>OF</sup> 325<sup>OF</sup> -H8

### WELDING PROCEDURE

Max Interpass 400<sup>OF</sup>

Pass no.	Electrode size	Welding current		Travel speed
		Amperes	Volts	
1 TO 4	1/16	297	29	16.4
		326	31	18.9
		TO	TO	TO
		267.3	27	13.9

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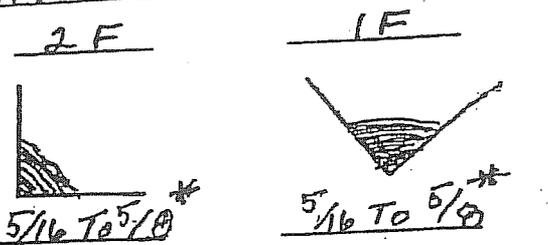
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DATE 03/24/2014

Sec. 5.12.4.2  
 AWS D1-5 Joint detail Fillet  
  
 \* Weld size may use multiple Pass

This procedure may vary due to fabrication sequence (1st pass size, etc.) within the limitation of variables given in applicable A.W.S. codes or contract specifications

101-C ST OF VTAOT  
 REV #1

Casco Bay Steel  
 Paul E. Stoddole  
 1-11-2013

# Casco Bay Steel Structures, Inc.

## WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50-50W  
 Welding process Shielded Metal ARC  
 Manual or machine Manual  
 Position of welding Flat, Horizontal  
 Filler metal specification ANSI/AWS A5.1-A5-5  
 Filler metal classification E7018-E8018 C/C3  
 Flux NA  
 Shielding gas NA Flow rate NA  
 Single or multiple pass single & Multiple  
 Single or multiple arc Single  
 Welding current AC/DC  
 Polarity Straight & Reverse  
 Welding progression See Detail  
 Root treatment Grind-wire brush-Area Free of Slag-RUST-Moisture  
 Preheat and interpass temperature \_\_\_\_\_  
 Postheat temperature NA  
 Heat Input Min NA Max NA

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

Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	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]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M [A 709]] Or. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]

VT - ROT, HYDE PARK  
Br. NO. 42  
PROJ. NO. STP-CUIV (26)  
CASS NO. 565

### WELDING PROCEDURE

Pass no.	Electrode size	Welding current		Travel speed	AWS D1-5 Joint detail
		Amperes	Volts		
AS Req	<u>7018</u>				<u>Fillet</u>
	<u>1/8</u>	<u>70 TO 170</u>	<u>22-26</u>	<u>AS</u>	
	<u>5/32</u>	<u>120 TO 225</u>	<u>22-26</u>		
	<u>3/16</u>	<u>170 TO 300</u>	<u>24-27</u>	<u>Req</u>	<u>3/16 TO 5/16</u>
	<u>8018</u>				
	<u>1/8</u>	<u>90 TO 160</u>	<u>22-26</u>		
<u>5/32</u>	<u>120 TO 225</u>	<u>22-26</u>			
	<u>3/16</u>	<u>180 TO 290</u>	<u>24-27</u>		<u>IF</u>
					
					<u>3/16 TO 3/8</u>

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Procedure no. 401

Revision no. \_\_\_\_\_

Contractor Casco Bay Steel  
 Authorized By J. E. P...  
 Date April 13 2012