Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Base material specification: ASTM Gr 50 - 50W
Welding process: Submerged Arc welding — Power Wave
Manual or machine: Machine
Position of welding: Flat + Horizontal
Filler metal specification: A5-23
Filler metal classification: F8A2-EN1-N1-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 Detaile
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 - PW1 - 67.3 KJ/in

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)] 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])[a]	10 [50]	50 [125]	80 [175]	110 [225]

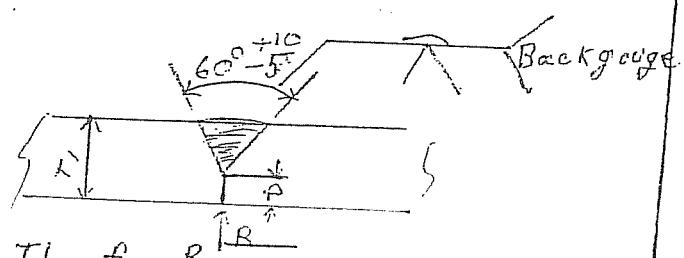
VT - AOT, HYDE PARK
Br. NO. 42
PROJ NO. STP-CUIV (26)
CBSS NO 565

WELDING PROCEDURE

Max Interpass - 460°F

Pass no.	Electrode size	Welding current Amperes	Welding current Volts	Travel speed
AS REQ.	5/32	827	38	28 IPM
		744 TO 910	35 TO 41	24 TO 32

See 5.13
AWS D1-5 Joint detail BL2c-S



T	f	R
1/4 To 1"	1/4 Min	0
1 To 1 1/2	3/8 Min	0
1 1/2 To 2"	1/2 Min	0

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. PW202B ST of VT
Revision no.

Contractor: Casco Bay Steel
Authorized By: Paul E Woodale
Date: 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-ENi1K-Ni1-H8
Flux: Lincoln 960-Elec LA-75
Shielding gas: N/A Flow rate: N/A
Single or multiple pass: Single & Multiple
Single or multiple arc: Single
Welding current: DC
Polarity: DCEP
Welding progression: See Detail
Root treatment: Grind-Wire Brush-Area Free of Slag-Rust & Moisture
Preheat and interpass temperature: See Table
Posfheat temperature: N/A
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]

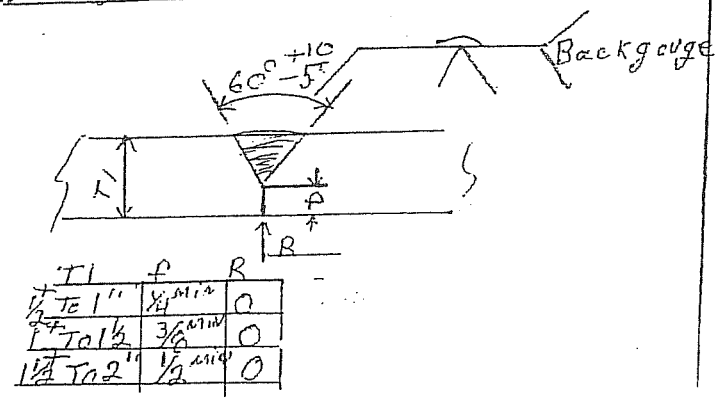
Welding Process (Base Metal)	To 20 mm [3/4 in] Incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
		Thickness of Thickest Part at Point of Welding, mm [in]		
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 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 (26)
CBSS NO 565

WELDING PROCEDURE Max InterPass - 430

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

See 5.13
AWS D1-5 Joint detail BL2c-S



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: 202B ST of VT Contractor: Casco Bay Steel
Revision no: Authorized By: [signature]
April 13-2012

Cresco 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-EN1K-Ni1-H8
Flux Lincoln 960-Elec LA-75
Shielding gas N/A Flow rate N/A
Single or multiple pass Single & Multiple
Single or multiple arc Single
Welding current DC
Polarity DCEP
Welding progression See Detail
Root treatment Grind-wire Brush-Area Free of Slag-Rust & Moisture
Preheat and interpass temperature See Table
Postheat temperature N/A
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)	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)] 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])[a]	10 [50]	50 [125]	80 [175]	110 [225]

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

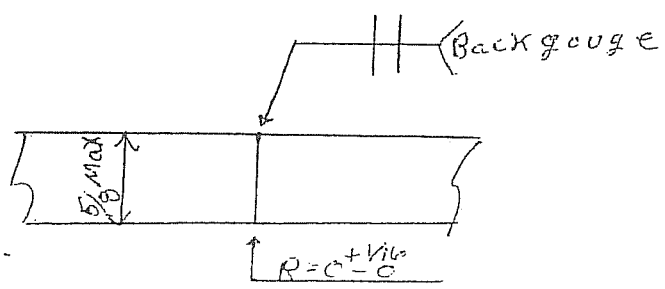
WELDING PROCEDURE

Max InterPass - 430°F

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

See 5.13

AWS D1-5 Joint detail BL1a-S



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 202A ST of VT

Revision no

Contractor Cresco Bay Steel

Authorized By [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-ENi1K-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 DCEP
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)	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)] 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])[a]	10 [50]	50 [125]	80 [175]	110 [225]

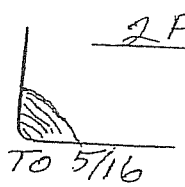
VT - AOT HYDE PAR
Br. NO. 42
PROJ NO. STP-CUIV C
CBSS NO 565

WELDING PROCEDURE

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

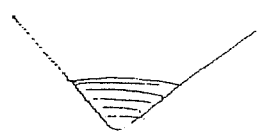
See 5.13
AWS D1-5 Joint detail Fillet

2F



To 5/16

1F



To 1/2

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. 201 - ST of VT Contractor Casco Bay Steel
Paul E. Goodale
April 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-ENi1K-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)	To 20 mm [3/4 in] Incl.	Thickness of Thickest Part at Point of Welding, mm [in]: 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]

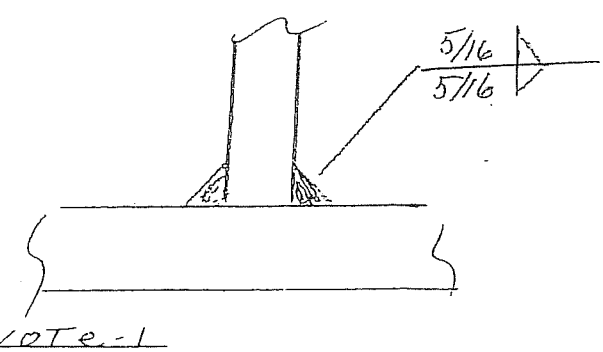
VT - AOT, HYDE PARK
Br. NO. 42
PROJ NO. STP-CULV (2
CBSS NO 565

WELDING PROCEDURE

Max. Interpass - 450°

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

Sec 5-13
AWS D1-5 Joint detail Fillet



NOTE - 1
use for welding Gr5-50W To GrHPS7

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

250 ST of VT

Casco Bay Steel
Paul E Goodell
April 13 - 2012

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50 (345) (FCAW)
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 71A75 Dule
Flux ~A
Shielding gas 75% AR / 25% CO2 Flow rate 35 CFH +8/-4, Eles. stickout 5/8 +-
Single or multiple pass Single & Multiple
Single or multiple arc Single
Welding current DC
Polarity DC EP
Welding progression See Detaile
Root treatment blast Clean - wirebrush - 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

VT - AOT, HYDE PARK
Br. NO. 42
PROJ NO. STP-CULV (26
CBSS NO 565

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

Welding Process (Base Metal)	To 20 mm [3/4 in] Incl.	Thickness of Thickest Part at Point of Welding, mm [in]: 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]
AW; 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]
FCM Gr50	150°F	200°F	225°F	325°F - H8

Max Interpass 400°F

WELDING PROCEDURE

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

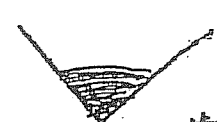
Sec. 5.12.4.2
AWS D1-5

Joint detail Fillet

2F

5/16 To 5/8*

1F



5/16 To 5/8*

* Weld Size May use Multiple Pass

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

Prepared by 10 V-C, ST OF VT AOT
REV #1

Contractor Casco Bay Steel
Paul E. Goodale
1-11 2013

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification: ASTM Gr 50-50W
Welding process: Shielded Metal ABC
Manual or machine: Manual
Position of welding: Flat, Horizontal
Filler metal specification: ANSI/AWS A5.1-A5-5
Filler metal classification: E 7018 - E 8018 C1/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)	To 20 mm [3/4 in] Incl.	Thickness of Thickest Part at Point of Welding, mm [in]: 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]

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

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	7018			
AS	1/8	70 To 120	22-26	
	5/32	120 To 225	22-26	AS
ReQ	3/16	170 To 300	24-27	
	8018			ReQ
	1/8	90 To 160	22-26	
	5/32	120 To 225	22-26	
	3/16	180 To 290	24-27	

AWS D1-5 Joint detail: Fillet

2F

3/16 To 5/16

1F

3/16 To 3/8

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. 401
Revision no.

Contractor: Casco Bay Steel
Authorized By: [signature]
Date: April 13 2012