

Letter of Transmittal

From:

Frank Green, P.E.

Columbia River Crossing Project 700 Washington Street, Suite 300

Vancouver, WA 98660

To:

Washington State Department of

Transportation

Bridge and Structures Engineer

Construction Support P.O. Box 47340

Olympia WA 98504-7340

John Olk Attention:

Date: January 27, 2011

Subject:

Contract 8078, I-5, Columbia River Bridge Temporary Pile Test Program

WA 0.3 to OR MP 308.0

State Project

We are	transmitting	the	foll	owing
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Copies	Description	on		
1	Welding Proce	edure - Pile Splicing		
1	Welding Proce	edure - Driving Shoe Attachmen	nt	
1	Welder Certifi	ications		
These are	transmitted:			
☐ For Y	our Information	For Review and Comment	Resubmit	Other(Specify below):
☐ For A	action	☐ For Signature	Correct and Return	
	pproval	Per Your request	Attach Material	
Comments	3:			

Signature	11	111.		Title Columbia	River	Crossing	Project
	Kuitl	A.	Daly	Assistant	Busin	ess Mar	rager

Distribution: White (Original) -

Canary (Copy) -Pink (Copy) - Project Engineer

Farwest Fabrication Welding Procedure Specific

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	WPS-PWF-AF

	echication	ř
Dame 1 of 7		WPS-PWF-API-SHOE

nips of WIS Service under Innive Speed Josher Notes States of	ByenRass Processes Filler Mela Class (Diamete Gural yagun
WELDING PROCEDURE	WELDING
Temp. Time	Interpass Temp., Min. 150 DEG.F. Max. 450 DEG.F.
POSTWELD HEAT TREATMENT PWHT. Required C.	
`	Over 1-1/2" to 2-1/2" 150 DEG.F.
reening NOI ALLOWED	
TOT ALL OWED	Thickness Up to 3/4" Temperature 150 DEG. F
Control Tube to Work Distance 1.4 1/4"	Preheat Temp., Min. 150 DEG.F.
Electrode Spacing: Longitudinal	Gas Cup Size
Number of Electrodes ONE	Flux (Class) Flow Rate
	B 350 Comp
	Flux Gas COZIARGON
TECHNIQUE	
OKG JPV	EW12K
al Electrone (or you	AWS Classification ER70S3
Time to Electroda (CTAM):	AWS Specification A5.17 A5.17
Current AC LI Deer Bi Been to rusen to	FILLER METALS
	Cranada f. bot at 1
	(11)
Transfer Mode (GMAVI):	•
FI FCTRICAL CHARACTERISTICS	pove (in) 500
Vertical Progression: ☐ Up 🖾 Down	X42/X52 to
Position of Groove IG ROTATED Fillel	Material Spec. API 5L to ASTM A148
POSITION	BASE METALS
	Method
	Back Gouge Yes □ No ☑
	Groove Angle 30 DEG Radius (J-U)
	Root Opening PER DETAIL Root Face Dimension 0
	Backing Material SHOE FLANGE
(SEE PAGE 2 FOR DETAILS)	Backing Yes ⊠ No □
	Type Corner Single & Double Weld D
Joint Detail	JOINT
(2003) CWI 88050191	Supporting PQR(s)
Prequalified L. SKANHON I. TOMEX	Welding Process(es) SAW
Revision 0	Authorized By C. Crites Date 1/11/2004
Type Manual D Mac	WPS No. WPS-FWF-API-SHOE Date 1/11/2004 By Shannon Tomek
Page 1 of 2	Q

Farwest Fabrication

WPS-FWF-API-SHOE

Page 2 of 2

Welding Procedure Specification

Joint Detail Process Welding! WAS Single-bevel-groove-weld (4) Corner joint (C) Designation TC-U4a-S iΩ ≅ (U=untimited) 그 Trickness Base Metal ⊂ DRIVE SHOE MSIDE 72 Œ Opening R =3/8 R=1/4 Root Groove a=310 Argie 品品 Groove Preparation R=+1/16, -0 a=+16.36 (see 3.13.1) As Delaled SPANEIRO (see 3.13.1) +100-50 +1/4,-1/16 As Fit Up Welding Pernitie Position Τ, J. X. V Notes

MEXO

Net proquedited for gas metal are weeting using short circuiting transfer nor GTAW. Refer to Arnex A.

Cyclic load application limits these joints to the horizonal websig position (see 2.27.5). Joint is welded from one side only.

Badgouge not to sound metal before webling second side. SMANY deceiled joins may be used for prequation GMANY (except GMANYS) and FUAN.

welds equal to I.4 To, but need not exceed 3/8 in. [10 mm] If \$34) welds are used in statically baded structures to reinfarre groover welds in corner and Tipinis, these shall be equal to 1/4 Tr. but need not exceed 3/6 in. (10 mm). Groove welds in corner and Tipinits of cyclically beaded shuctures shall be reinfarced with firet Enimum weld size (E) as shown in Table 3.4. S as specified on drawings.

No: Double-groove webts may have grooves of unequal depth, provided these conform to the Imhations of Note E. Also the webt star the thickness of the thirder participed. The crientation of the two members in the joints may vary from 135° to 180° for but lights, or 45° to 135° for corner joints, or 45° to (E) applies individually to each groove.

Double-groove welds may have grooves of unequal depth, but the depth of the shallower groove shall be no less than one-sharth of

P. 026/026

(FAX)425 881 2003

BEST CO P. N. (UHT) [T0S-7S-NAL

ST FARRICATION

The state of the s	Welding Frocedure Specuration	TARWEST FAUNCE Configuration	
ī vne			
Manual	Page 1 of 2	WPS-FI	
Type Manual Machine	of 2	WPS-FWF-API-X52	

_	194-237 A 24-27.8 V 13-17 IPM	.035 DCEP	FR70S-3	MARKU	
	Volts	Filler Metal Class Diameter Cur. Type Amps or WFS	Filler Metal Class	ayer/Pass Process	ayera
	WELDING PROCEDURE	WELDING			
	Темр.	Max 500 DEG. F		Interpass Temp., Min. 50 DEG. F	latte
	ELD HEAL INCATESTS	300 DEG. F		Over 2-1/2*	
	- 11	225 BEG. F	[72*	Over 1-1/2" to 2-1/2"	0
	Internass Cleaning GHIPPING	150 DEG. F	127	Over 3/4" to 1-1/2"	
····	Pagning NOT ALLOWED	50 DEG, F			펉
	Angle 3 Dek	:	50 DEG. E	Temp Min.	Preheat
	Lateral				
	Electrode Spacing: Longitudinal	3/4"	Gas Cup Size	F7A2-FM12K	7
	Number of Electrodes 1	30-40 CEH	_ Controvendi	ESAH 350	ESA
7	Multipass or Single Pass (per side) Multiple	2		Flux	A PIET
	TECHNIQUE				
	Size		FM12K		;
	n Electrode (GTAW		ER70S-3	AWS Classification 6	A S
		A5 17	A5.18		
	Current AC □ DCEP ☑ DCEN □ Pulsed □				
	Short-Circulting D Globular D Spray 🛭	- Unfinited	4	Diameter (Pipe, in)	Dian
	Transfer Mcde (GMAW):		3	Filte1 (in)	
	ELECTRICAL CHARACTERISTICS	- Unlimited	m) 3/16	8	닭:
	Yertical Progression: ☐ Up 🗵 Cown		to		Type
	Position of Groove GROYATED Filet	API 5LX	API 51.X to		
	NOIIISOG			RASE #FTALS	RACE
	200 000 000 000 000 000 000 000 000 000	į	[Method	ţ
	_1=		, ,		9 9
- 1	0,44,74		ָ מ	Crows Angle 60 DEG.	3
		Dimension 0	Soot Face Dimension	<u>۔</u> غ	2 2
J-			ACTU ASS		Backing
		Couble Weld LI	Single 🔯	ΙŒ	Type
	Joint Detail	: :	ļ •		NIO
- 40	OCI EXE-OSBITOUS	52	PQR-FWF-API-X52	Supporting POR(s)	odon
	Prequamier - CWI 88050191	SAW	GMAW	Velding Process(es)	Veldin
	Date 1/17/2009 Revision Semicaura SAMMON I. TOWER	Date 11	TES	uthorized By C.CRITES	sathori
	Туре	Date 1/17/2009 By SHANNON TOMEK	WPS-FWF-APLX52 Da		VPS No.
	rage i c				
	Welding Procedure Specification	ding Procedur	Wel		÷

Welding Procedure Specification FARWEST FABRICATION

WPS-FWF-APEX52 Page 2 of 2

Welding Joint Detail Process Butt joint (B) SAW Designation B-U2-S 햜 (U=unfimited Thickness Base Metal ゴ _ R=3/16 Opening Root a =60° Angle Groove Groove Preparation R=+1/16,-0 a=+10,-0 (see 3.13.1) As Detailed derances (see 3.13.1) <u>+100</u>-50 +1/4,-1/16 AS FII Up Welding Positions Permitted П

ONEM

Not prequalified for gas matel are welding using short circuiting transfer not GTAW. Refer to Annex A Joint is welded from one side only.

Cyclic bad application limits these joints to the nonzontal welding position (see 2.27.5)

Backgouge not to sound metal before weiding second side. SMAW detailed joints may be used for prequatited GMAW (except GMAW-S) and FCAW.

but need not exceed 3/3 in. (10 mm). Groove welds in comer and I-joints of cyclically loaded structures shall be reinforced with filler If first welds are used in statically loaded structures to reinforce groove welds in corner and T-joints, these shall be equal to 1/4 Ti. Vizimum weld size (E) as shown in Table 3.4. S as specifies on drawings.

welds equal to 1/4 T₁, but need not exceed 3/8 in. [10 mm]. Double-grows welds may have growes of unequal depth, but the depth of the shallower grows shall be no less than one-fourth of the trickness of the thanks part joined.

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Mpr. Double-groove welds may have grooves of unequal depth, provided these conform to the similations of Note E. Also the weld size (E) applies individually to each groove. The orientation of the two members in the joints rizy vary from 135° to 180° for butt joints, or 45° to 135° for corner joints, or 45° to

(FAX)425 881 2003

Notes

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81:41 (UHT)110S-7S-NAU BESL CO Ъ. И.

Liocennie Chamiltanou iscorta	Description Description Description	FarWest Faorication
Page 1 of 3	POR-FWE-API-	

ZISA ZOV JOSEM	ONE GMAW ER70S-3 .035 OCEP
ON WES VOILS	al classal Diameter
WELDING PROCEDURE	WELDING
ğ	Time
Peening NOT ALLOWED	POSTWELD HEAT TREATMENT Required CI
<u>,</u>	PREHEAT Preheat Temp., Min. 70 DEG. F
Number of Electrodes ONE	F7A2-EM12K Gas Cup Size 3/4
Stringer or Weave Bead Stringer Multiple	x (Class) Flow Rale 3:
TECHNIQUE	Flux Gas ARUCUZ Camposition 90/10
SizeType	
Tungsten Electrode (GTAW):	AWS Classification ER70S-3 EM12K
₩	AWS Specification A5.18 A5.17
Short-Circuiting ☐ Globular ☐ Spray ☑	Diameter (Pipe, in) 8
ELECTRICAL CHARACTERISTICS	Thickness: Groove (in) .500 Fillet (in)
Vertical Progression: Up ☐ Down Ø	Type or Grade X52 to X52
Position of Groove 1G ROTATED Filet	BASE WETALS 17-1-2-1 Case ABI 51 to ABI 51
	Method
	Back Gouging Yes □ No ⊠
	Groove Angle 60 DEG. Radius (J-U)
	17
	Material A36
₩ QC3 EXP. 03/4 H2012	ng Yes⊠ No[
Joint Detail CWI 88050191	JOINT Type Butt Single ☑ Double Weld □
Reference WPS No. FWF-WPS-01X52 Semi-Auto Suawon T. TOMEN	Welding Process(es) GMAW SAW Reference WP
Date 12/30/2008 Type Manual □ Machine ⊠	Authorized By C.Crites
/ Shannon Tomek	POR No. POR FWF API-X52 Revision 0
Chamileanon Necoin Page 1 of 3	Liocentra Annasoni

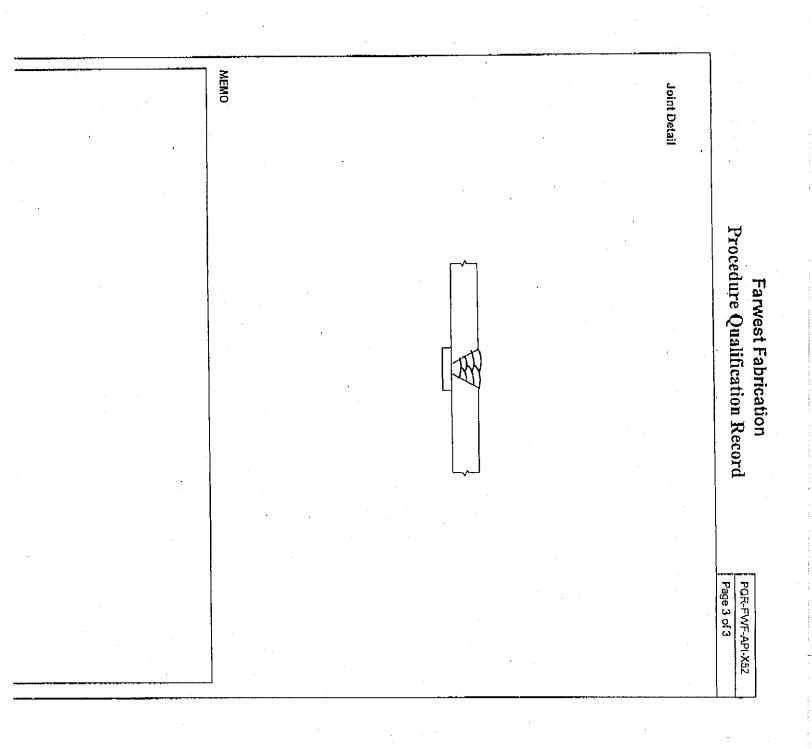
b'W BEST CO

Farwest Fabrication

Procedure Qualification Record

PQR-FWF-API-X52

			TEST	TENCHE TEST		
			TENS	TENSILE TEST		
				Ultimate tensile	Ultimate unit	Character of faiture
Specimen по.	Width	Trickness	Area	load, lb	stress, psi	and location
11	.747	.484	.362	23,850	66,000	BASE MATERIAL
	.740	.484	.358	23,650	66,000	BASE MATERIAL
			GUIDE	GUIDED BEND TEST		
				·		
Specimen no.	Type of bend		Result	Remark	*	
<u> </u>	SIDE		ACCEPTABLE			
2	ades		ACCEPTABLE	•••		
3	SIDE	,	ACCEPTABLE			
4	SIDE		ACCEPTABLE			
VISUAL INSPECTION	ÖN		מב	Radiographic-citrasonic examination	onic examination	
Appearance	ACCEPTABLE	ABLE		RT report no: 85099	99 Result	ACCEPT
Undercut	ACCEPTABLE	ABLE		OT report no:	Result	
Piping parosity	ACCEPTABLE	ABLE		FILE	FILLET WELD TEST RESULTS	ULTS
Convexily	ACCEPTABLE	ABLE		Minimum size multiple pass	-	Maximum size single pass
Test date	12/30/2008	88		Macroetch		Macroelch
Witnessed by	Shannon Tomek	Tornek		1 3		3
Other Test	•			2		2
		CWI 58050191		Al-weld-metal tension test	on test	
		OCT EXP. 05/01/2012	1/2012	Yield point/strength, psi	h, psi	
	•			Floration in 2 in%	,%	
	;			Thompson	.	
Welder's name				Laboratory test no.		
	Mike Kress	io		Laboratory test no. Clock no. MIX	Stamp no. MK	10. MK



Ь. И. BEST CO

NORTHWEST LABORATORIES of Seattle, Incorporated

ESTABLISHED 1896

Technical Services for Incustry, commerce, Legal Profession & Insurance Industry

241 South Holden Street . Seattle, WA 98108-4359 . Phone: (206) 763-8252 . Fax: (206) 763-3949 www. nwlabs1896.com

Report To: Farwest Fabrication

Date: January 13, 2009

Report On: Weld Procedure Qualification

Lab No.: E82737-1

IDENTIFICATION:

Procedure Qualification Tests Per AWS D1.1 06

Base Material: 8" API 5LX52 - API 5LX52 - Pipe

FWF-01-X52

POR No.

Michael Kress, ID #MK

Process: GMAW/SAW

Filler. Position: 1G Rotated EM12K

TRANSVERSE TENSILE TEST

Sample#

Width (in.) Pipe OD (in.)

Thickness (in.)

]] 17

Specified

0.3620.4840.747 8.625 0.484 8.625 0.740

66,000 23,650 0.358

66,000 23,850

Base Material

Base Material

66,000 min.

TRANSVERSE BEND TEST (180° COLD BEND)

Type of Bend

Results

Fracture Location Tensile Strength (psi) Ultimate Load, Lbs. Area (sq. in.)

NO.

44
el e
Side Side Side
Pass – No Visual Defects

within thirty (30) days unless otherwise requested in writing by you. certify, warrant, or guarantee any products manufactured by others. Samples discarded This report applies only to the actual samples tested. Northwest Laboratories does not

NORTHWEST LABORATORIES, INC.

WOTR No. SIDE 3 SIDE 1 Type Film Identification No. Fraclure Test Rool Penetration Inspected By Shannon Tomek Transfer Mode (GMAW): Short-Cir. Process (Table 4.10, Item (2)) GMAWISAW Appearance Material/Spec. API 5LX52 Consumable Insert (GTAVI) Backing [Table 4.10, Item (9)] Position (Table 4.10, Item (5))) 6GR CurrentiPolarity AC [] Number of Electrodes Filler Metal [Table 10, Item (3)] Gas/Flux Type [Table 4.10, Item (4)] COZIAR Weld Progression: (Table 4.10, Item (7)) Up (1) Thickness (Piate): Groove (in) Diameter(Pipe): Groove (in) 8 5/8" Thickness (Pipe/lube): Groove (in) Magual 🗆 MIKE KRESS X52 WPS-FWF-API-X52 Class. Spec. A5.18/A5.17 Record Actual Values Used in Qualification 三年() Machine 🛘 Result Filed (fr.) ACCEPT Result Singte ⊠ ACCEPT ACCEPT Welding Operator Qualification Test Record DCEP 🛭 ER70S3/EM12X Filet (in) Use Backing 🔯 Welder Name Mike Kress KIKOL 1 NORMEN Use Insert 🗇 VISUAL INSPECTION (4.8.1) Acceptable Yes Semi-Auto Ø Revision 0 to API SLX52 Globular 🗆 Multiple 🗆 DCEN II GUIDED BEND TEST RESULTS (4.30.5) Farwest Fabrication Testino. MICX52 APHIC TEST RESULTS (4.30.3.1) et Results (4.30.2.3 and 4.39.4.1) Pulsed [] File Size Spray 🛭 Down 🔯 Audio 🗆 Description Remark SIDE 4 SIDE 2 쓪 6GR 8 0 Qualification Range Short-Circuiting *** GMAW, SAW AS TESTED API 5LX52/ASTM A252 GR3 With Insert 🗆 With Backing ⊠ Single 🗆 Manural 🗆 AS TESTED AS TESTED Organization D 25 5 DCEP 🛭 Machine 🗆 T estand Date 1/6/2009 Farwest Fabrication Interpreted By Paul Shane Guidry ACCEPT Macroetch ACCEPT Resuit Unlimited Unlimited Without Insert Wilhout Backing 🗆 Globular 🗓 Welder Id MK DCEN (II Semi-Auto 🛛 🗎 Auto 🗆 Page 1 of 1 MIXE KRESS X52 큐, 5 Spray 🔯 Date 1/3/2009 Pulsed

P. 015/026

(EVX) 4S2 881 S003

 RADIOGRAPHIC Film Identification Number Results Remarks	Appearance	VISUAL IN Acceptable Guilded Bend Type Type Thesult	Variables Process/Type [Table 4, 10, Item (1)] Electrode (single or multiple) [Table 4, 10, Item (8)] Current/Polarity Position [Table 4, 10, Item (4)] Weld Progression (Table 4, 10, Item (6)] Backing (YES or NO) [Table 4, 10, Item (7)] Material/Spec. Base Metal Thickness: (Plate) Groove Fillet Diameter: (Pipe) Groove Fillet Filler Metal [Table 4, 10, Item (3)] Spec. No. Class F-No. [Table 4, 10, Item (3)] Gas/Flux Type (Table 4, 10, Item (3)] Cher
RADIOGRAPHIC TEST RESULTS (4.30.3.1) Film Identification Remarks Number Results	Fillet Test Results (4.30.2.3 and 4.30.4.1) A Fillet Size	VISUAL INSPECTION (4.8.1) Acceptable YES or NO YES Guided Bend Test Results (4.30.5) Result 13505 (11/16/07	CAMANJ/SAND SINDELE IC. IROTHEED VES APT SLX7010 X70 N/A N/A N/A N/A N/A N/A N/A N/A
Remarks	TO THE COST OF THE	Aesun Aesun	AS TESTED AS TESTED AS TESTED AS TESTED AS TESTED

Welder, Welding Operator, or tack welder qualification test record

ROPH KATOR

Identification No.

Welding Procedure Specification No. FWF-WF5- Rev

37-170

Record Actual Values Used in Qualification

Qualification Range

Phone (253) 813-5970 Fax (253) 813-5971 (880) 280-1376

		10166771616467	
Faryest Fabrications	LAB	113505	11/15/2007
	#O#	5395	
	TIVE	API 5L; Grade X70	
		AMS D1. 1/D1. 1X:2006	80
<i>*</i>	SIZE	24" Dia. X .500" Wall	Wall

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TEST REPORT

Page 1 of !

	113505-1T -2T	ij	11 11 11 11 11 11	Process Yelder	GI.
	🖽	1	U W	4) +-	-
	15108 / Widen 434 / .752 .434 / .756	S12e	eve.	Process: GHAN/SAN Welder : Adam Green	FWF-PQR-37-X70
_	. 326 . 328	Area	Tension (70
<u> </u>			es.		
Him, Req. :	28, 400 28, 900	Tensile (15s)	Tension Testa Figure 4.14		୍ଷ୍ୟ
82,000	87, 100 88, 200	sile (psi)	4.14	ition:	
•	Weld Weld	Fracture Location		The recommendation of	Gty : 1 Welded Pipe
				ij	

Note : Acceptance criteria per API 5L 42nd Edition. Jan 2000 and AVS Di.i Section 4.8.3.5. 113505-15B -358 -456 -25521de Side Type 51de Bend Tests Figure 4.13 Satisfactory Satisfactory Satisfactory Reaulta Satisfactory

Respectfully,

Note : Results conform to specification requirements.

Note | Acceptance criteria per AVS DL.1 Section 4.8.3.3.

9end sample thickness: 0.375*

Bend angle: 180°

Bend Disseter: 2" Ma

Wayne Langley Laboratory Supervisor

Farwest Fabrication Operator Qualification Test

cation
Test Record

Page 1 of 2 FG-01

Mace March	Film Mentification No. Result Remark
\$ (4.30.3.1)	
Organization Farwest Fabrication Bate 12 112010	Inspected By Shannon Tomek Test No. FG-01
D.F.	Fracture Test Root Penetration Description
Macroetch	EXP. 05/01/2012
and 4.30.4.1)	CHI 55050191 Email Tool Book Ht (4.30.2.3 and 4.30.4.1)
	SHAWHON T. TOWER
Result	Type Result Type
	GUIDED BEND TEST RESULTS (4.30.5)
Acceptable Yes	VISUAL INSPECTION (4.8.1) Acceptable Yes
	Other
AS TESTED	Gas/Flux Type (Table 4.10, Item (3)) CO2/AR-EM/2K
	•
AS TESTED	
AS TESTED	Spec. AWS A5.18/5.17
	Filler Metal (Table 10, Item (2))
	Notes
- Unternited and	Fifel ()
	Diameter(Pipe): Grace (in) 8
	Fillet ()
- Unlimited	Thickness (Pipe/tube): Groove (in) .500
	Filet ()
	Thickness (Plate): Groove ()
	Material/Spec. ASTM A252 GR3 to A252 GR3
With Insert Cl Without Insert Cl	Consumable Insert (GTAM) Use Insert (
With Backing ☑ Without Backing ☐	Backing [Table 4.10, Item (7)] Use Backing ☑
Up CI Down 🗵	Weld Progressian: (Table 4.10, Item (6)) Up ☐ Down 图
AS TESTED	Position (Table 4.10, Item (4)) 1G ROTATED
DCEP & CCEN EL CONTROL	CurrentPotarity AC [] DCEP ⊠ DCEN [] Pulsed []
Multiple □	ěro
_	Type Manual ☐ Machine ☐ Semi-Auto 🖾 Auto 🗎
Coular 🗆 Spra	Transfer Mode (GMAW): Short-Cir. Globular Spray Paragram
	Process (Table 4.10, Item (1)) GINAW/SAW
Qualification Range	Variables Record Actual Values Used in Qualification
Date 12/1/2019	
PA LATERANK.	VOTR No. FG-01 Wester Name Fernando Gonzalas
1 5	Welding Operator qualification reserved

Summary: ٢ <u>₹</u> 3 **4**

RADIOGRAPHIC REPORT - WELDS
FORM CC 25A, 0415116

SPECIFICATION ANS W.

REV. 1 REV.

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AWS DI

WELDER BUAL

NDT CONTROL# 93977

ACCEPTANCE ACCEPTANCE PART NAME

MI EXAM REQUIRED

PT EXAM REQUIRED

REV. REV. P.O.#

27 1140

CUSTOMER FARWEST FAIR

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GAMIMA RAYK

JOB NUMBER

156025

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0-6 7-2

REMARKS FG - FEWNES GENTLES

MATERIAL

SPECIFICATION

PAGE | OF

PM TESTING LABORATORTY INC.

DATE: 12-7-10

P. 021/026

27

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Source Location

MOST BE VERIFIED ON THE RADIOGRAPHIC REPORT FOR EACH LOT. ANY DIFFERENCES REQUIRE REVISION.

Penetrameter - E Film Side Pentrameter Shim - Alloy: Film Brand: A & EA Front Screen - Material: Kv: Ma / Curies GEOMETRIC UN-SHARPN Radiographic Contrast (According to the form sour Maximum distance from sour Minimum source to object dis Single or double Development: Automatic	Number o
Penetrameter - E Film Side Stepenframeter Shim - Aloy: Penframeter Shim - Aloy: Film Brand: A GEA- Front Screen - Material: ACTION: CEOMETRIC UN-SHARPNESS A Radiographic Contrast (According to Radiographic Contrast (According to Radiographic Contrast of controls side Minimum source to object distance; Single or double X Development: Automatic	Number of View(s) 3 $(o-i)(i\cdot 1)(e-o)$ Source to Film Distance: 9 " And
Penetrameter - Krim Side Source Side Alloy: 25 Type: Pentrameter Shim - Aloy: Thickness: Pentrameter Shim - Aloy: Thickness: Pilm Type: A GEA Film Size: 7.	-/\(\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)
Ite Alloy: SS Type: ASTEM Thickness: Q Thickness: Q Thickness: Pilm Size: F.S* X.(2) Incos: 1045 Back Screen - Material: fC Exposure Time: Yo SZ Density for THE MANIMUM REQUIREMENTS OF PMT-003-3 TA E 2 PMT 003-3) @ (> \) \(\) Ct to the film (part distance + 1/8" cassette): \(\) \(\) \(\) \(\) or denable. \(\) \(\) Time: \(\)	Angle(5) Angle(5)
Type: ASTAN Size: AS Quality Level: Youce Quality Level: Youce No. Of Films: nn - Material: IC Thickness:	Area of Interest Inichaess: . 5
Penetrameter - E Film Side Source Side Alloy: 23 Type: A5771 Size: 13 Pentrameter Shim - Alloy: Thickness: Thickness: Quality Level: Zuice Film Brand: A 6EA Film Type: b 7 Film Size: 1, 2, 2, 2, 2 Front Screen - Material: Pl Thickness: 1, 1, 1, 2 Film Size: 1, 2, 2, 3 Front Screen - Material: Ro. Of Films: 2 Film Size: 1, 2, 3 Film Si	ress: •5'

	EXPOSURE DEVICE X-RAY	SOAKI	INOTOPE	
	REVISION 12 NDT CONTROL# 93577	RT INSPECTIONS PERFORMED PER PMT 003-3 REVISION	ISPECTIONS PERFOR	RIT
	MODEL	GRADE:	INSPECTION CLASS:	
•	•	SPECIFICATION ALL BY. 10	HICATION ALLE	HEL
	PART NAME		ALLOY CS	717
	PART NUMBER WEGGL OUTL	FAD	CUSTOMER FACILIEST FAD	cus

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Kv Rating

Me Reting
Source / Focal Spot Size:

PM TESTING LABORATORY INC. RADIOGRAPHIC TECHNIQUE – TUBES FORM QC-93A, 01/11/08

JAN-27-2011(THU) 14:19 P.N. BEST CO

WELDING QUALIFICATION TEST Project Number: 689-06014

WPS Number: PNB-PQR-03

Tested For: P.N. Best & Co., Inc.

Spec. Code: AWS D1.1-08

Welders Name: Dennis Garrity

Filler Metal: AWS A5.18/ A5.17, Class ER70S-6/ EM12K

Flux: 90% Argon/ 10% CO2

Preheat: 70°F

SSN: -

Report No: 689-06014-1a Date: January 7, 2010

Plate or Pipe: Pipe Base Metal Spec.: ASTM A252 GR 3

Type of Joint: V-Groove Thickness: 1/2"

Fig. No.: 4.21

Inches: 8" Sch 80

Backing: Yes

Process: GMAW/ SAW

Current: DC

Polarity: Reverse

GROOVE WELD TESTS

Progression: N/A

Volt: 30/ 30-33

Amp: 160/475-500

Single/Multiple Pass: Multiple Single/Double Welded: Single

SAW	3	10, 1-21 210-011. h wob	, F2	rasseu			-	Ĝ
GMAW/	A* × E	2/16* 1 151	40 4 35					;
Qualified	Qualified Qualified	Qualified	Qualified	Side	Face	Roct	Test	Tested
Process	Diameter	Positions Thickness Diameter Process	Positions	itri	Bend Tests		Position Radiographic	Position

Visual Inspection (4.8.1) Acceptable: YES X

City of Portland# 5303

8

Welding Test Conducted/Witnessed By: P.N. Best & Co., Inc. - Mr. Shannon Tomer CWI# 88050191

Mechanical Tests Conducted By:

Professional Service Industries, Inc.

Date:

January 27, 2010

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Steve Moore, Lab Supervisor, Mechanical Testing Services かくをもり

P. 019/026

(FAX)425 881

BEST CO P. N. (UHT) LTOS-YS-NAL

WELDING QUALIFICATION TEST Project Number: 689-06014

WPS Number: PNB-PQR-03

Tested For: P.N. Best & Co., Inc.

Spec. Code: AWS D1.1-08

Welders Name: Jeffery Hobbs

Filter Metal: AWS A5.18/ A5.17, Class ER70S-6/ EM12K

Base Metal Spec.: ASTM A252 GR 3

Type of Joint: V-Groove Plate or Pipe: Pipe

Progression: N/A Single/Multiple Pass: Multiple Single/Double Welded: Single

Fig. No.: 4.21

Amp: 160/475-500

Valt: 30/30-33

Thickness: 1/2"

Backing: Yes

Inches: 8" Sch 80 Preheat: 70°F Flux: 90% Argon/ 10% CO2

SSN: -

Report No: 689-06014-1b Date: January 7, 2010

Process: GMAW/ SAW

Polarity: Reverse

Current: DC

GROOVE WELD TESTS

		S.						
SAW	4" & Up	3/16"-Unl.	1G, 1-2F 3/16*-Unl.	Passed				র
GMAW//								
Qualified	Qualified Qualified	Qualified Qualified	Qualified	Side	Face	Root	Test	Tested
Process	Diameter Process	Positions Thickness	Positions	<i>₽</i>	Bend Tests	. •	Position Radiographic	osition

Visual Inspection (4.8.1) Acceptable: YES X

<u>N</u> City of Portland# 5304

Welding Test Conducted/Witnessed By: P.N. Best & Co., Inc. - Mr. Shannon Tomer CWI# 88050191

Mechanical Tests Conducted By:

Professional Service Industries, Inc.

Date:

January 27, 2010

Steve Moore, Lab Supervisor, Mechanical Testing Services

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P' 020/020 'd

(FAX) 425 881

P. N. (UHT) [10S-7S-NAI



Certifies that Welding Inspector Shannon T Tomek

has complied with the requirements of AWS QC1, Standard for AWS Certification of Welding Inspectors

88050191

May 1 2012 EXPIRATION DATE

