G & R Metals
810 Kiwanis Street
Hampton VA 23661
Phone (757) 244-5693 Fax (757 245-1132

WELDING PROCEDURE SPECIFICATION (WPS)

AWS D1.1/D1.1M Structural Welding Code Steel

Welding Procedure Spec. No.	FCAW-L303	Rev:	0	Date:	10-14-10
Supporting PQR No(s).:	FCAW-L303 (ST-37587/37643)	Rev:	0	Date:	10-14-10
Welding Procedure Qualification:	☒ Original Qualification				
Welding Process(es):	FCAW-G (Gas Shielded)	Type(s):	SEMI-AUTOMATIC		
Applicable Qualification Document:	☒ AWS D1.1/D1.1M				
Applicable Fabrication Document:	☒ AWS D1.1/D1.1M				

JOINT DESIGN

Applicable Joint Designs: *(Limited to Requirements of AWS D1.1/D1.1M*

Standard Butt Joints:	Standard Fillet Welded Joints:	Special Joint Designs:
☐ Joints Welded From One Side/No Backing	☒ Partial Penetration Fillets	☒ Not Applicable/None
☒ Joints Welded From One Side/With Backing	☒ Fillet Reinforced Welds	☐ Open Root
☒ Joints Welded From Both Sides	☒ Socket Fillet Welds	☐ Other (see Joint Detail)

Backing Material / Type(s): METAL

JOINT DETAILS AS LISTED IN AWS D1.1/D1.1M
FIGURES 3.3 AND 3.4

*Joint Preparation/Base & Weld Metal Cleaning: Grind,Machine,Wirebrush,Burr,Chipping Hammer

BASE METAL(S)

Group I or II To Group I or II Base Metal Form: Plate,Tube,Pipe,Forgings, Bar,Shapes,Castings

Specification / Type, Class or Grade: See Table 3.1 of AWS D1.1/D1.1M
To Specification / Type, Class or Grade: See Table 3.1 of AWS D1.1/D1.1M

Thickness Range Qualified:
Plate Base Metal Groove: 1/8 to Unlimited Fillet: All

FILLER METAL(S)

Specification: E71T-1MH8, E71T-9MH8
Classification: AWS A5.20
Size of Filler Metals: 1/16" Max. Size Qualified: 1/16"
Flux Trade Name: NA
Flux Specification: NA
Electrode-Flux (Size/Type: NA
Consumable Insert Specification NA Type/Size: NA

WELDING PROCEDURE SPECIFICATION (WPS)
AWS D1.1/D1.1M Structural Welding Code Steel

WPS No.: FCAW-L303 Rev: 0 Date: 10-14-10

POSITION(S) QUALIFIED
Position(s) of Groove: 3G
Position(s) of Fillet: 3F
Position(s) of Socket: NA
Vertical Progression: ☒ Up ☐ Down ☐ N/A

POSTWELD HEAT TREATMENT
PWHT: ☐ Required ☒ Not Required
Holding Time: NA
Temperature Range: NA

PREHEAT
Preheat Temp °F (Min): 60
Interpass Temp °F (Max): 350
Preheat Maintenance: No special maintenance required.

Max Heat Input: Table I

SHIELDING
Shielding Gas(es): Argon/CO2
Composition (%): 75/25
Shielding: Argon/CO2 Flow Range: 30-60 CFH
Purge: NA Flow Range: NA
Trailing: NA Flow Range: NA
Dew point: NA

ELECTRICAL CHARACTERISTICS
Current: ☐ AC ☒ DC ☐ Pulse Polarity: ☒ Reverse ☐ Straight
High Frequency: ☐ Continuous ☐ Start Up ☒ N/A
Amps (Range): 217 to 265 Volts (Range): 22.5 to 26
Tungsten Electrode Size Type: NA Size: NA
Mode of Metal Transfer: ☐ Short-Circuiting ☐ Globular ☒ Spray ☐ Other ☐ N/A
Wire Feed Speed Range (IPM): 211-173
Other Characteristics: Machine Model/Type: Esab Multipower 460 , Wire Feed Model/Type: Miller 22A/24V
Tourch Model/Type: Air Cooled Bernard Model 23015 AE8 XM

TECHNIQUE
Orifice or Gas Cup Size: 1/2" MINIMUM
Stringer Bead (Max Width): NA
Initial and Interpass Cleaning: Grind,Machine,Wirebrush,Burr,Chipping Hammer

Method of Back Gouging: GRIND OR THERMAL WHEN REQUIRED
Electrode Lead or Trail Angle: NA
Oscillation: NA
Electrode Extension/Stick-out: 1/2" MAXIMUM
Multiple or Single Pass (per side): MULTIPLE
Multiple or Single Electrode: SINGLE
Travel Speed (Range): See Table I
Peening: NA
Other: Electrode Lincoln Ultracore TM 71A85

Weld Layer	Welding Process	Filler Metal		Current		Volt Range	Travel Speed Range (IPM)	Other: Technique, Remarks, Comments, etc.
		Spec (Class)	Size (Dia.)	Polarity Type	Ampere Range			
1ST	FCAW	E71T-1MH8 E71T-9MH8	1/16"	DCRP	217-265	22.5-26	See Table I	
FILL	FCAW	E71T-1MH8 E71T-9MH8	1/16"	DCRP	217-265	22.5-26	See Table I	

G & R Metals
810 Kiwanis Street
Hampton VA 23661
Phone (757) 244-5693 Fax (757 245-1132

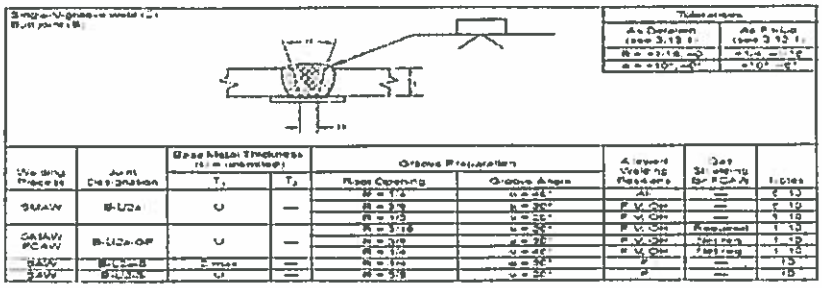
PROCEDURE QUALIFICATION RECORD (PQR)
AWS D1.1/D1.1M

Procedure Qualification Record (PQR) No:	FCAW-L303 (ST-37587/37643)	**Date:**	10-14-10
Weld Procedure Specification (WPS) No(s):	FCAW-L303	**Date:**	10-14-10
Welding Process(es):	FCAW-G (Gas Shielded)	**Transfer Mode:**	NA
Types: Manual, Automatic, Semi-Auto:		Semi-Automatic	
Applicable Fabrication Document:	AWS D1.1/D1.1		

JOINT DESIGN

AWS D1.1/D1.1M: B-U2a-GF	Root Gap: 1/4"	Root Face: 1/16"	Included Angle: 45°
☒ Single Weld ☐ Double Weld	Backing: ☒ Yes ☐ No	Backing Material: Metal	
Back Gouge: ☐ Yes ☒ No	Back Gouging/Cleaning Method(s): NA		

JOINT DETAIL *(Actual)*



*Base Material Preparation Method(s): Machine, Grind, Burr, Sand, Wire Brush

BASE MATERIAL(S)

Specification: ASTM-A572	To ASTM-A572
Type/Grade: Grade 50	To Grade 50
TABLE 3.1 GROUP II	
Base Metal Size/Sch: 12" X 18" Plate, 1.00" Thick	
Thickness of Material: 1.00"	

FILLER METAL(S)

Specification: AWS A5.20	
Classification: E71T-1MH8 E71T-9MH8	
Diameter of Filler Metal: 1/16"	
Flux Spec/Size: NA	Type: NA
Consumable Insert ☐ Yes ☒ No	Type: NA

POSITION(S)

Position(s) of Groove: 3G		
Position(s) of Fillet: NA		
Vertical Progression: ☒ Up	☐ Down	☐ N/A

PREHEAT

Preheat Temp: 60° F
Interpass Temp: 350° F
Preheat Method: NO SPECIAL PRE-HEAT REQUIRED
Max. Heat Input: 59,045 joules per inch

POSTWELD HEAT TREATMENT

Temperature: NA
Holding Time: NA
Welder/Badge No.: 4465

SHIELDING

Type of Gas: Argon/CO2	
Composition: 75/25	
Shielding Gas: Argon/CO2	Flow Rate: 35-40 CFH
Purge/Trail Gas: NA	Flow Rate: NA
Cup Size: 5/8"	Dew Point: NA

ELECTRICAL CHARACTERISTICS

Machine Model/Type: Esab Multipower 460	
Wire Feed Model/Type: Miller 22A/24V	
Wire Feed Speed (IPM): 192	
Amps: 241	Amp Range: 241
Volts: 24.5	Volt Range: 24.5
Polarity: DCRP	High Freq ☐ Yes ☒ No
Tungsten Type/Size: NA	
Electrode Extension/Stick-out: 1/2"	
Other: NA	

TECHNIQUE

Torch Type: Air Cooled Bernard Model 23015 AE8 XM	
Travel Speed: 6-10 IPM	
Avg Bead Width: .250"	☒ Stringer
Multipass or Single Pass (per side): Multiple	
Single or Multiple Electrodes: Single	

NONDESTRUCTIVE AND DESTRUCTIVE TEST RESULTS---SEE ATTACHED REPORTS.
Acceptance Standard: AWS D1.1/D1.1M

Procedure Number (PQR):	FCAW-L303 (ST-37587/37643)	**Date:**	10-14-10
Joint Design (AWS D1.1/D1.1M):	B-U2a-GF	**Welding Position:**	3G (Up Hill)
Base Material(s) Heat/Lot No.:	182P84840		
Filler Material(s) Heat/Lot No.:	LINCOLN ULTRACORE TM 71A85, LOT#12294354		
Welder's Name/Badge No.:	JEFF AMICK #4465		

MECHANICAL TEST REPORT

TENSILE TEST

Test No.	Specimen Type	Ultimate Tensile Strength/ PSI	Fail Site	Results	Type of Failure
1	Transverse	77,729	BOW	Satisfactory AWS D1.1/D1.1M	Ductile
2	Transverse	72,116	BOW	Satisfactory AWS D1.1/D1.1M	Ductile

GUIDED-BEND TEST

Specimen Number	Bend Type	Mandrel Radius	Specimen Width	Specimen Thickness	Results
1	SIDE	.750"	.375"	1.00"	Satisfactory AWS D1.1
2	SIDE	.750"	.375"	1.00"	Satisfactory AWS D1.1
3	SIDE	.750"	.375"	1.00"	Satisfactory AWS D1.1
4	SIDE	.750"	.375"	1.00"	Satisfactory AWS D1.1

CHARPY IMPACT TESTS

Test No.	Notch Location	Notch Type	Impact Strength Required	Test Temperature	Impact Strength Achieved	Results
1	Weld Metal	V-Notch	20 ft-lb	-40° F	100	Satisfactory AWS D1.1
2	Weld Metal	V-Notch	20 ft-lb	-40° F	98	Satisfactory AWS D1.1
3	Weld Metal	V-Notch	20 ft-lb	-40° F	94	Satisfactory AWS D1.1
4	Weld Metal	V-Notch	20 ft-lb	-40° F	90	Satisfactory AWS D1.1
5	Weld Metal	V-Notch	20 ft-lb	-40° F	97	Satisfactory AWS D1.1
1	1mm HAZ	V-Notch	20 ft-lb	-40° F	20	Satisfactory AWS D1.1
2	1mm HAZ	V-Notch	20 ft-lb	-40° F	30	Satisfactory AWS D1.1
3	1mm HAZ	V-Notch	20 ft-lb	-40° F	32	Satisfactory AWS D1.1
4	5mm HAZ	V-Notch	20 ft-lb	-40° F	39	Satisfactory AWS D1.1
5	5mm HAZ	V-Notch	20 ft-lb	-40° F	34	Satisfactory AWS D1.1
6	5mm HAZ	V-Notch	20 ft-lb	-40° F	30	Satisfactory AWS D1.1

ADDITIONAL TESTING

MACROETCH:	☐ Required	☒ Not Required	**FILLET BREAK TEST:**	☐ Required	☒ Not Required
Final Results:	☐ Pass	☐ Fail	Final Results:	☐ Pass	☐ Fail
Lab Report Number:			Lab Report Number:		
VT INSPECTION:	☐ Required	☐ Not Required	**PT/MT INSPECTION:**	☐ Required	☐ Not Required
Final Results:	☒ Pass	☐ Fail	Final Results:	☐ Pass	☐ Fail
Lab Report Number:	SI-TECH VT ST-37587 10-7-10		Lab Report Number:		
UT INSPECTION:	☐ Required	☒ Not Required	**RT INSPECTION:**	☐ Required	☐ Not Required
Final Results:	☐ Pass	☐ Fail	Final Results:	☒ Pass	☐ Fail
Lab Report Number:			Lab Report Number:	SI-TECH RT ST-37587 Dated 10-7-10	
CHEMICAL ANALYSIS	☐ Required	☒ Not Required	**OTHER TESTS PERFORMED:**		☐ N/A
☐ Filler ☐ Base Metal	Results:	☐ Pass ☐ Fail	Description of Test/Results: Charpy Impact, Bends & Tensiles		
Lab Report Number:			Description of Test/Results: TENSILE TEST, BEND TEST, Charpy AWS B4.0 -2007 Report Dated 10-8-10 and 10-14-10		

Tests conducted by:	SI-TECH INC. Lab # ST-37587/37643 Richard Senn	Title:	Level III
*The Mechanical Test documented above are certified to be correct and the weld specimens were prepared and tested in accordance with the requirements of AWS D1.1/D1.1M and ANSI/AWS B4.0.			
Company Name:	G & R Metals		
Certified By:	William Sykes Project Manager	William B. Sykes	10-14-10
	Name Title	Signature	Date

TABLE I

Travel Speed Table (in/min)

Min Heat Input (kJ/in)	35.427
Max Heat Input (kJ/in)	59.045

			Min Volt				Max Volt
		Volts	22.5	23.5	24.5	25.5	26
	Amps						
Min Amp	217		5.0 - 8.2	5.2 - 8.6	5.5 - 9.0	5.7 - 9.3	5.8 - 9.5
	227		5.2 - 8.6	5.5 - 9.0	5.7 - 9.4	5.9 - 9.8	6.0 - 9.9
	237		5.5 - 9.0	5.7 - 9.4	6.0 - 9.8	6.2 - 10.2	6.3 - 10.4
	247		5.7 - 9.4	5.9 - 9.8	6.2 - 10.2	6.5 - 10.6	6.6 - 10.8
	257		5.9 - 9.7	6.2 - 10.2	6.4 - 10.6	6.7 - 11.0	6.8 - 11.3
Max Amp	265		6.1 - 10.0	6.4 - 10.5	6.6 - 10.9	6.9 - 11.4	7.1 - 11.6

Notes: Enter Input Ranges in **yellow** boxes
Heat Input can range from 10-110 kJ/in
Voltage can range from 8-50 Volts
Amperage can range from 60-1000 Amps

SI-TECH / TIDEWATER
804-F Industrial Avenue
Chesapeake, Virginia 23324
(757) 546-2553

SI-TECH TESTING LABS

Visit our web site for a complete list of services at www.si-tech.us

CHARPY IMPACT REPORT

CUSTOMER: G & R Metals	TEST: Charpy V-Notch	P.O. NUMBER 13258
DATE: 10-8-10	ST JOB NUMBER: ST-37587	SUBJECT: L-303
BASE MATERIAL: C/S	CLASS: IAW-WPS-FCAW-L303	FILLER: E71T-1MH8, E71T-9MH8

SPECIMEN NUMBER	LOCATION or HEAT NO.	TEST TEMP-ERATURE Degrees F.	IMPACT VALUES Ft-lbs.	AVERAGE VALUES Ft-lbs.	RESULTS
1	Weld	-40°	100		
2	Weld	-40°	98		
3	Weld	-40°	94	95.8	SAT
4	Weld	-40°	90		
5	Weld	-40°	97		
WPS-FCAW-L803					

INSPECTED BY: _____ DATE: 10-8-10

By signing this certificate, neither the Inspector nor his Employer makes any warranty, expressed or implied, concerning the part described in this data report. Furthermore, neither the Inspector nor his Employer shall be liable in any manner for any personal injury or property damage of any kind resulting from or connected with this inspection. The Accepted and Rejected entries noted on this data report are an interpretation of the radiographic film by the SI-Tech representative, and are not considered final until all film has been reviewed and accepted by the appropriate customer or Government official.

SI-TECH / TIDEWATER
804-F Industrial Avenue
Chesapeake, Virginia 23324
(757) 545-2553

SI-TECH TESTING LABS

Visit our web site for a complete list of services at www.si-tech.us

CHARPY IMPACT REPORT

CUSTOMER: G & R Metals	TEST: Charpy V-Notch	P.O. NUMBER 13298
DATE: 10-14-10	ST JOB NUMBER: ST-37643	SUBJECT: L-303
BASE MATERIAL: C/S	CLASS: M1	FILLER: E71T-1MH8, E71T-9MH8

SPECIMEN NUMBER	LOCATION or HEAT NO.	TEST TEMP-ERATURE Degrees F.	IMPACT VALUES Ft-lbs.	AVERAGE VALUES Ft-lbs.	RESULTS
1	1mm-HAZ	-40°	20		
2	1mm-HAZ	-40°	30	27	SAT
3	1mm-HAZ	-40°	32		
4	5mm-HAZ	-40°	39		
5	5mm-HAZ	-40°	34	34	SAT
6	5mm-HAZ	-40°	30		
WPS-FCAW-L303					
Welder					
Amick #4465					

INSPECTED BY: John Lee DATE: 10-14-10

By signing this certificate, neither the Inspector nor his Employer makes any warranty, expressed or implied, concerning the part described in this data report. Furthermore, neither the Inspector nor his Employer shall be liable in any manner for any personal injury or property damage of any kind resulting from or connected with this inspection. The Accepted and Rejected entries noted on this data report are an interpretation of the radiographic film by the SI-Tech representative, and are not considered final until all film has been reviewed and accepted by the appropriate customer or Government official.

SI-TECH / TIDEWATER
804-F Industrial Avenue
Chesapeake, Virginia 23324
(757) 545-2553

SI-TECH TESTING LABS

Visit our web site for a complete list of services at www.si-tech.us

RADIOGRAPHIC INSPECTION REPORT

CUSTOMER: G & R Metals				JOB NUMBER: ST-37587		RT LOCATION: SI-Tech		DATE: 10-7-10	
ISOTOPE: IR-192	CURIES: 43	KVP: N/A	MA: N/A	FSS: .1 x .1	SFD: 18"	SOD: 16 ¾"	TIME: 24MIN	FILM MFG / TYPE: AGFA D3	
FILM SIZE: 7 x 17"		SL	DL /	ML	CLASS: I	SCREEN TYPE & THICKNESS: PB .010			
VIEWING TECH: Single	MATERIAL: C/S		THICKNESS: 1" Tm		PENTRAMATER SIZE & GROUP: 1ASTMB GRP 1			SENSITIVITY: .010" Wire	
SHIM THICKNESS & MAT'L: N/A	WELDING TECH: FCAW			JOINT DESIGN: V Groove		DRAWING NUMBER: N/A			
ITEM INSPECTED: Weld Procedure Qual	STANDARD: AWS D1.1		ACCEPTANCE: AWS D1.1			PROCEDURE NO: RT 101		PO NO: 13258	

Original 1
Repair ___
Joint Numbere

Exposure No.	Accepted	Rejected	Porosity	Slag	Inc. Fusion	Cracks	Tung. Incl.	Melt Thru	Burn Thru	Surface	Artifact	Root Undercut	Suck Back	Shrinkage	Inc. Pen.	Remarks
																Filler
																E71T-1MH8
																E71T-9MH8
1-2	A		/													
2-3	A		/													

RADIOGRAPHER: Lindy J. Ely DATE: 10-7-10 LEVEL: II

INTERPRETER: [signature] DATE: 10-7-10 LEVEL: III

SI-TECH / TIDEWATER
804-F Industrial Avenue
Chesapeake, Virginia 23324
(757) 545-2553

SI-TECH TESTING LABS

Visit our web site for a complete list of services at **www.si-tech.us**

TENSILE TEST REPORT

AWS B4.0-2007

CUSTOMER: G & R Metals	**ST JOB NUMBER:** ST-37587	**DATE:** 10-8-10
P.O. NUMBER: 13258	**WELDING PROCEDURE:** WPS FCAW-L303	**JOINT DESIGN:** V Groove/WB
BASE MATERIAL: C/S	**FILLER METAL:** E71T-1MH8, E71T-9MH8	**TECHNICIAN:** Jeremy Roberts

TENSILE ID	SPECIMEN #1	SPECIMEN #2	SPECIMEN #3	SPECIMEN #4
SPECIMEN TYPE	Transverse	Transverse		
ULTIMATE TENSILE STRENGTH/PSI	77729	72116		
LOCATION OF FAILURE:	BOW	BOW		
TYPE OF FAILURE:	Ductile	Duotile		

NOTES:

TECHNICIAN: Jeremy Roberts DATE: 10-8-10

SI-TECH / TIDEWATER
804-F Industrial Avenue
Chesapeake, Virginia 23324
(757) 545-2583

SI-TECH TESTING LABS

Visit our web site for a complete list of services at www.si-tech.us

BEND TEST REPORT

AWS B4.0-2007

CUSTOMER: G & R Metals	ST JOB NUMBER: ST-37587	DATE: 10-8-10
P.O. NUMBER: 13258	PROCEDURE: WPS FCAW-L303	JOINT TYPE: V Groove/ WB
BASE MATERIAL: Carbon Steel	FILLER METAL: E71T-1MH8, E71T-9MH8	TEST TEMPERATURE: 62 Degrees
BEND RADIUS: A-T(50/e-1/2)	BEND ANGLE: 180 degrees	TECHNICIAN: Jeremy Roberts
SAMPLE NUMBER	DESCRIPTION	RESULTS
WPS FCAW – L -303		
1	3/8" Side Bend	ACCEPT
2	3/8" Side Bend	ACCEPT
3	3/8" Side Bend	ACCEPT
4	3/8" Side Bend	ACCEPT

TECHNICIAN: _____ LEVEL: II DATE: 10-8-10

The Lincoln Electric Company
22801 St. Clair Avenue
Cleveland, Ohio 44117-1199

CERTIFICATE OF CONFORMANCE
(APPLIES ONLY TO U.S. PRODUCTS)

LINCOLN ELECTRIC

01 Lot Number: 12294354

[1 Year]

Product: UltraCore™ 71A0S
Classification: E71T-1MH8, E71T-9MH8
Specification: AWS A5.20-2005, ASME SFA-5.20
Test Completed: January 22, 2010

This is to certify that the product named above and supplied on the referenced order number is of the same classification, manufacturing process, and material requirements as the material which was used for the test that was concluded on the date shown, the results of which are shown below. All tests required by the specifications shown for classification were performed at that time and the material tested met all requirements. It was manufactured and supplied according to the Quality System Program of the Lincoln Electric Company, Cleveland, Ohio, U.S.A., which meets the requirements of ISO9001, NCA3800, ANSI/AWS A5.01, and other specification and Military requirements, as applicable. The Quality System Program has been approved by ASME, ABS, and VdTUV.

Operating Settings	AWS/ASME Requirements	Results
Electrode Size		1/16 inch
Polarity	DC+	DC+
Shielding Gas (per AWS A5.32)	75-80% Ar , bal CO_2 (SG-AC-25)	25% CO_2, 75% Ar
Voltage V		25
Wire Feed Speed cm/min (in/min)		538 (250)
Current amps		265
Heat Input Avg., kJ/mm (kJ/in.)		1.5 (37)
Contact Tip to Work Distance mm (in.)	(25 - 55)	25 (1)
Passes/Layers		1/17
Preheat Temp °C (°F)	(60 min.)	20 (69)
Interpass Temp °C (°F)	(275-325)	165 (325)
Mechanical properties of the weld deposit (in the as-welded condition)		
Tensile Strength MPa (ksi)	(70 - 95)	540 (93)
Yield Strength, 0.2% offset MPa (ksi)	(58 min.)	550 (80)
Elongation (%)	22 min.	27
Average Hardness (Rockwell B)	Not Required	94
Avg. Charpy V-notch Impact Properties		81 (37)
Joules @ -29 °C (ft-lbf @ -20 °F)	(20 min.)	43,45,64 (32,33,47)
Avg.		93 (68)
Joules @ -18 °C (ft-lbf @ 0 °F)	(20 min.)	80,94,104 (59,62,84)
Chemical composition (weight %)		
C	0.18 max.	0.04
Mn	1.75 max.	1.58
Si	0.90 max.	0.61
S	0.03 max.	0.01
P	0.03 max.	0.01
Diffusible Hydrogen (ml/100g) per AWS A4.3	8.0 max.	5.1
Absolute Humidity (grains moisture/lb dry air)		29

The strength and elongation properties were obtained from 12.5 mm (0.500 in), A4 tensile specimen artificially aged at 105°C (220 °F) for 48 hours, as permitted by AWS A5.20-2005. A naturally aged tensile specimen may take months to achieve the specified properties. See AWS A5.20-2005, paragraph A8.3. The time required for the natural aging of weld deposits is dependant upon ambient conditions, weldment geometry, the metallurgical structure of the weld deposit and other factors.

This electrode diameter required to be tested for this classification is 1/16 inch. The 0.045 and the 0.052 inch sizes will also meet these requirements.
Radiographic Test: Met requirements. Fillet Weld Test: (positions as required): Met requirements.
Test assembly constructed of A571A A36. This certificate complies to the requirements of EN 10204, Type 2.2.
Results below the detection limits of the instrument or lower than the precision required by specification are reported as zero.
Strength values in SI units are reported to the nearest 10 MPa converted from actual data. Preheat and interpass temperature values in SI units are reported to the nearest 5 degrees.

James R. Fogle, Certification Supervisor — January 25, 2010 (Date)

David A. Finke, Manager, Compliance Engineering, Consumables R&D Department — 25 Jan. 2010 (Date)

Cert. No. 17360

AMERICAN ALLOY STEEL

6230 N. HOUSTON ROSSLYN ROAD
HOUSTON, TEXAS 77091
Phone: 713-462-8081 Fax: 713-462-8209

M.T.R. COVER SHEET
01/07/2010

Customer Name	:	G & R METALS	Control Number:		726332
Address	:		Queued By	:	
City, State Zip	:	HAMPTON, VA 23661	Page Number	:	1
Attention	:	CHRIS	Total Pages	:	4
Phone Number	:	757-244-5693	Fax Number	:	757-245-1132
Reference Number	:	358980			
Notes 1	:	P.O. NO. 12569			

THE INFORMATION YOU REQUESTED IS ATTACHED.
THANK YOU FOR YOUR BUSINESS !

AASI PLATE NUMBER	HEAT # / SLAB #	MILL
G65509	182P84840	ARCELORMITTAL

01/07/2010 From: AMERICAN ALLOY STEEL   To: G & R METALS

P.O.# [illegible]12569   S.O.# :358980   AP PL#:G65509

Item :1 (1 PC) 1" X 36" X 36"

ArcelorMittal Burns Harbor Plate

QUALITY ASSURANCE
REPORT OF TEST AND ANALYSES

SHIPMENT NO.	DATE SHIPPED	CAR OR VEHICLE NO.	PAGE
802-40049	10-16-08	EJR-NCHGO-DP-TULSA-LMIC 266007	6

SOLD TO:
AMERICAN ALLOY STEEL INC
PO BOX 40469
HOUSTON TX 77040-0469

SHIP TO:
AMERICAN ALLOY STEEL INC
C/O SAND SPRINGS RAILWAY CO
TRANS LOAD FACILITY
SAND SPRINGS OK

NOTE	SERIAL NUMBER	PAT NO.	HEAT NUMBER	NO. PCS.	THICKNESS INCHES	WIDTH OR DIA. INCHES	LENGTH INCHES	WEIGHT POUNDS	YIELD POINT PSI	TENSILE STRENGTH PSI	ELONG. IN	RED. % %
			181P72890	1	1	96	480	13068	54300	77700	8	25
			182P84840	1	1	96	480	13068	58600	80600	8	24
			182P84840	2	.75	96	480	19602	58400	82200	8	21
			181P72890	2	.625	96	480	16336	57400	80500	8	21

QUALITY STEEL MELTED & MANUFACTURED IN THE U. S. A.
TEST PERFORMED AT A ARCELORMITTAL APPROVED LABORATORY
PLATES - , CSA G40.21-98 GR 50W KLD FINE GRAIN PRAC, ASTM A572-97 GR 50 TYPE 2, ASTM A709-97A GR 50 TYPE 2 --- TEST CERTS ARE PREPARED IN ACCORD WITH PROCEDURES OUTLINED IN EN 10204:2004 PARA 3.1
CO# 77001-OK GH 361-6732

1" A572

Q-QUENCH TEMPERATURE   T-TEMPER TEMPERATURE   N-NORMALIZE TEMPERATURE

SERIAL NUMBER	PAT NO	HEAT NUMBER	HARD-DNH	BEND	THICKNESS INCHES	TYPE	SIZE	DIR	TEST TEMP F	CHARPY IMPACT ENERGY FT LBS 1	2	3	SHEAR (%) 1	2	3	LAT. EXP. MILS 1	2	3

SB 1.7.09
Certified a true copy of the original retained in [illegible]
AMERICAN ALLOY STEEL

HEAT NUMBER	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Ti	Al	B	Ca	N	Sn	MCQUAID GRAIN SIZE
181P72890	.19	1.22	.007	.004	.261	.019	.01	.12	.005	.055	.002	.041	.0003	.001	.005	.006	
182P84840	.19	1.26	.008	.003	.274	.014	.01	.13	.004	.050	.002	.029	.0001	.001	.005	.003	

PLATE # G65509

I certify that the above results are a true and correct copy of actual records contained in records maintained by ArcelorMittal Burns Harbor and are in full compliance with the requirements of the specification cited above. This test record cannot be altered and must be transmitted intact with any subsequent third party test reports, if provided.

D. W. ELWOOD   WNIC

BHPLTRPT.TIF   SUPV, QUALITY ASSURANCE

WELDER QUALIFICATION TEST RECORD
AWS D1.1

	WELDER	IDENTIFICATION NO.
G & R METALS ATTN: BUCK SYKES 810 KWIANIS STREET HAMPTON VA 23661	COBB	XXX-XX-5981
	WELDING PROCESS	TYPE
	FCAW	SEMI-AUTOMATIC
	WELDING PROCEDURE	REVISION
	L-303	-

ESSENTIAL VARIABLES	ACTUAL VALUES used during QUALIFICATION	QUALIFICATION RANGE
ELECTRODE (SINGLE or MULTIPLE):	SINGLE	SINGLE
CURRENT/POLARITY:	DC+	DC+
POSITION:	VERTICAL	Flat, Horizontal, Vertical
WELD PROGRESSION:	N/A	N/A
BACKING (YES/NO)/TYPE:	YES/INTEGRAL	With or Back Gouged
MATERIAL SPECIFICATION BASE METAL:	ASTM A-572	All Group I
THICKNESS (PLATE):		
GROOVE:	0.500"	1/8" thru 1.0"
FILLET:	N/A	All Thickness
THICKNESS (PIPE/TUBE):		
GROOVE:	N/A	1/8" thru 1"
FILLET:	N/A	All Thickness
DIAMETER (PIPE/TUBE):		
GROOVE:	N/A	≥ 24" O.D.
FILLET:	N/A	ALL DIAMETERS
FILLER METAL:		
SPECIFICATION NO.:	A 5.20	A 5.20
CLASS:	E 71T-1	E-7XT-X
F-NUMBER:	6	6
GAS/FLUX TYPE:	75Ar/25CO_2	75Ar/25CO_2

VISUAL INSPECTION

ACCEPTABLE [X] YES [ ] NO

REMARKS: SMOOTH AND UNIFORM: NO CRACKS, CRATERS or UNDERCUT; REINFORCEMENT < 1/8

GUIDED BEND TESTS [ ] N/A

TYPE	RESULTS	TYPE	RESULTS
SIDE	NO REJECTABLE INDICATIONS	SIDE	NO REJECTABLE INDICATIONS

FILLET TEST RESULTS [X] N/A

APPEARANCE	FILLET SIZE	MACROETCH	FRACTURE TEST

(describe the location, nature and size of any crack or tearing of the specimen)

RADIOGRAPHIC TEST RESULTS [X] N/A

FILM IDENTIFICATION	REMARKS/RESULTS	FILM IDENTIFICATION	REMARKS/RESULTS

INSPECTED BY: OSCAR W. WARD III TEST NUMBER: ML 17006-01 A

ORGANIZATION: MET LAB, LLC DATE: March 8, 2017

We the undersigned certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section 4 Part C, Subsection 4.19 and Table 4.9.

MET LAB, LLC

G & R METALS

FORM NO. F 0001

AWS American Welding Society®

Certifies that Welding Inspector

Oscar W Ward III

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

17030491
CERTIFICATE NUMBER

March 1 2020
EXPIRATION DATE

INCORPORATED 1932 NEW YORK

AWS PRESIDENT

AWS QUALIFICATION COMMITTEE CHAIR

AWS CERTIFICATION COMMITTEE CHAIR

Oscar Ward

From: "Orlando Yudice" <oyudice@aws.org>
Date: Wednesday, February 15, 2017 5:54 PM
To: <oward@metlabinternational.com>
Subject: American Welding Society (AWS) Test Results Notification

Oscar W Ward III (781643),

Please do not respond to this email as this is an automatic notification of your test scores for site FL19217. Congratulations, you have achieved a CWI certification. Your certificate # is 17030491. For confidentiality reasons, test scores will NOT be provided over the phone or via email. Your complete test score results will follow by mail.

Within 24 to 48 hours of receiving this automatic email, you may retrieve your test scores online by going through the following steps:

1. Login to www.aws.org
2. Select My Account
3. Select Messages
4. Click on "Test Results Notification"
5. Follow link provided to view score letter

Note: In the event that you may encounter issues viewing the letter, please use the web browser Google Chrome. Or refer to the following link https://support.mozilla.org/en-US/kb/disable-built-pdf-viewer-and-use-another-viewer.

For confidentiality reasons, test scores will NOT be provided over the phone or via email. Your complete test score results will follow by mail.

The American Welding Society would like to invite you to take a brief survey on your recent examination. Your feedback is very important to us and will serve to better improve our services to meet your ongoing certification needs. To fill out a survey, go to the following link: https://www.surveymonkey.com/s/TG2TS59

American Welding Society
305 443-9353, 800 443-9353
www.aws.org