

NOVA TUBE AND STEEL CORPORATION  
 600 Dean Sievers Place  
 Morrisville, PA, 19067  
 Tel: 215-295-8813 Fax: 215-295-8798

T E S T C E R T I F I C A T E

old to:  
 Ship to:

FEDERAL PIPE & STEEL INC  
 FEDERAL PIPE  
 300 GAY ST.  
 MANCHESTER, NH.

DATE SHIPPED: 10/24/02  
 B/L #: 108669  
 P.O. #: 612864  
 SALES ORDER #: 105191

Mechanical Test Results

Heat Number/Size	Yield Strength	Tensile Strength	Elong. %	Hardness
BETH/411K4801 8X4X0.188	47,700	62,500	31.00	
BETH/412N5641 8X4X0.188	53,500	68,500	30.00	
BETH/421N3691 8X4X0.250	52,000	67,500	31.00	
BETH/421N1671 8X4X0.250	53,000	66,500	31.00	
BETH/411N9081 8X4X0.375 ✓	60,000	70,500	28.00	
BETH/402N7971 4X4X0.375	59,000	67,000	30.00	

Authorized by Andrew Hurlbrink, Quality Ctrl Dept

NOV 5, 2002 16:21:04

NO. 170

AMERICAN WELDING CO → 16036416866

10:24

02

FROM: NUCOR STEEL - KUGER PAGE 002 of 003

12/12/2002 TO: 1-101-397-9782

6

NUCOR STEEL - BERKELEY  
P.O. Box 2259  
Mt. Pleasant, S.C. 29464  
Phone: (843) 336-6000

HILL TEST REPORT

2/12/02 10:07  
100% MELTED AND MANUFACTURED IN THE USA  
All beams produced by Nucor-Berkeley are cast  
rolled to a fully killed and fine grain product

Sold To: FEDERAL PIPE & STEEL CORP.  
PO BOX 416  
PLYMOUTH, MI 48170

Ship To: FEDERAL PIPE & STEEL CORP.  
300 GRAY ST  
MANCHESTER, NH 03103

Customer No.: 451 - 7  
B.O.L. No.: 200540

SPECIFICATIONS: Tested in accordance with ASTM specification A6/A6M and A370.  
ASHTO : M270-36-00/M270-50-00  
ASME : SA-36  
ASTM : A36-00/A36-00a/A572-00-50/A709-00-50/A709-01-36/A709-01-50

Description	Heat # Grate(s) Test	Yield/ Tensile Ratio	Yield (PSI) (MPa)	Tensile (PSI) (MPa)	Elong %	C		P		S		Cu		Ni		CEI		
						Cr	Pb	Mn	Ti	Sn	Co	Al	U	V	M	Nb	Zr	CI1
V10x26.0 045' 00.00" V250x38.5 013.7160m	2113125 A992-00	.84	57100 394	68200 470	27.40	.0650	.0220	.8170	.0040	.0070	.0061	.0164	.0001	.0001	.1430	.1330	.0440	.2182 .2475 .1219
12 Piece(s) Customer PO: 611938 Inv# 270933																		
V12x14 035' 00.00" V310x21.0 010.6680m	2112954 A992-00	.83	57100 394	69100 476	29.40	.0710	.0230	.8400	.0020	.0090	.0034	.0140	.0001	.0006	.2260	.0740	.0300	.2251 .2655 .1291
8 Piece(s) Customer PO: 611933 Inv# 270933																		
V12x14 050' 00.00" V310x21.0 015.2400m	1112754 A992-00	.81	53900 372	66500 459	29.61	.0650	.0280	.8220	.0020	.0089	.0048	.0157	.0001	.0003	.2270	.0980	.0310	.2167 .2570 .1226
8 Piece(s) Customer PO: 611933 Inv# 270933																		
V12x14 050' 00.00" V310x21.0 015.2400m	1112751 A992-00	.82	54400 375	66700 460	28.90	.0660	.0280	.8290	.0010	.0102	.0046	.0122	.0001	.0003	.1940	.0760	.0270	.2169 .2517 .1212
1 Piece(s) Customer PO: 611933 Inv# 270933																		
V12x14 050' 00.00" V310x21.0 015.2400m	1112756 A992-00	.83	56100 387	68000 461	31.88	.0720	.0390	.8230	.0040	.0102	.0051	.0157	.0011	.0003	.2170	.1140	.0380	.2280 .2666 .1310
7 Piece(s) Customer PO: 611933 Inv# 270933																		
V12x14 050' 00.00" V310x21.0 015.2400m	2112759 A992-00	.81	54700 377	67600 466	27.80	.0720	.0270	.8280	.0030	.0080	.0068	.0246	.0001	.0003	.2230	.1260	.0390	.2271 .2666 .1334
24 Piece(s) Customer PO: 611933 Inv# 270933																		

MEMO 8355  
P.O. 10057







CHEMICAL AND PHYSICAL TEST REPORT  
MADE IN U.S.A

CARTERSVILLE STEEL MILL DIVISION  
METALLURGICAL DEPARTMENT  
384 OLD GRASSDALE RD NE, CARTERSVILLE, GA 30121

Shippers Number: G-007744

*MEMO 8335  
P.O. 10057*

PRODUCING MILL IS KNOWN BY HEAT ID PREFIX

B=CARTERSVILLE BB, C=CHARLOTTE, G=CARTERSVILLE, J=JACKSONVILLE, K=KNOXVILLE, N=GERDAU COURTICE, O=ORRVILLE BB, V=JACKSON TN

SHIP TO: FEDERAL PIPE AND STEEL CORP 300 GAY STREET 888-606-1837 MANCHESTER NH 03103		INVOICE TO: FEDERAL PIPE & STEEL CORP. ACCTS PAYABLE 1331 GRAHAM BELL BOULDERVILLE CO J48 6A1		SHIP DATE 09/30/02	
				CUST. ACCOUNT NO 40128077	

SHAPE AND SIZE		GRADE		SPECIFICATION												SALES ORDER		CUSTOMER P.O. NUMBER			
HEAT ID NO	C	MN	P	S	V	SI	CR	CU	NI	SN	AL	MO	N	NB	CEQ	YIELD PT LBS/SQ IN	TENSIL LBS/SQ IN	% ELONG 8 IN	BEND	DEF.	% LIGHT HEAVY
WY 10 X 19W																	2040220	812712			
G2-4762	.17	.02	.011	.033	.019	.25	.10	.28	.10	.011	.003	.024	.0080	.002		40	58000	74300	22.8		
METRIC EQUIVALENT: YIELD = 389.24 MPA; TENSILE = 512.28 MPA; %ELONG/200MM = 22.8 DEF. = MM																					
WY 10 X 19W																	2040220	812712			
G2-4762	.17	.02	.011	.033	.019	.25	.10	.28	.10	.011	.003	.024	.0080	.002		40	57000	75300	24.9		
METRIC EQUIVALENT: YIELD = 389.00 MPA; TENSILE = 519.18 MPA; %ELONG/200MM = 24.9 DEF. = MM																					
WY 10 X 19W																	2040220	812712			
G2-4759	.15	.03	.011	.034	.019	.23	.10	.31	.10	.012	.001	.020	.0100	.001		39	53100	73000	23.7		
METRIC EQUIVALENT: YIELD = 368.11 MPA; TENSILE = 509.52 MPA; %ELONG/200MM = 23.7 DEF. = MM																					
WY 10 X 19W																	2040220	812712			
G2-4762	.15	.03	.011	.034	.019	.23	.10	.31	.10	.012	.001	.020	.0100	.001		39	54300	73700	22.0		
METRIC EQUIVALENT: YIELD = 374.39 MPA; TENSILE = 508.14 MPA; %ELONG/200MM = 22.0 DEF. = MM																					
WY 10 X 19W																	2040220	812712			
G2-4760	.15	.02	.012	.033	.019	.21	.11	.28	.09	.012	.001	.022	.0080	.001		38	55200	73300	24.4		
METRIC EQUIVALENT: YIELD = 380.59 MPA; TENSILE = 505.39 MPA; %ELONG/200MM = 24.4 DEF. = MM																					
WY 10 X 19W																	2040220	812712			
G2-4762	.15	.02	.012	.033	.019	.21	.11	.28	.09	.012	.001	.022	.0080	.001		39	54000	70700	24.4		
METRIC EQUIVALENT: YIELD = 372.32 MPA; TENSILE = 487.46 MPA; %ELONG/200MM = 24.4 DEF. = MM																					
C 10 X 15.3W																	2040220	812712			
G2-4717	.17	.04	.012	.030	.015	.21	.11	.41	.09	.012	.002	.017	.0080	.001		42	55300	78400	23.0		
METRIC EQUIVALENT: YIELD = 387.49 MPA; TENSILE = 540.55 MPA; %ELONG/200MM = 23.0 DEF. = MM																					

This material, including the billets, was produced and manufactured in the United States of America.

A. J. Turner  
Quality Assurance Manager

THE ABOVE FIGURES ARE CORRECT EXTRACTS FROM THE ORIGINAL CHEMICAL AND PHYSICAL TEST REPORT AS CONTAINED IN THE PERMANENT RECORDS OF THE COMPANY.

*[Signature]*

# HUTA KATOWICE

## S P Ó Ł K A A K C Y J N A

41-308 DABROWA GORNICZA  
AL. JOZEFA PRUSKIEGO 92

POLAND  
Centre: tel.: (048-32) 794 53 33  
fax: (048-32) 795 52 00  
TXJ tel.: (048-32) 792 80 52  
fax: (048-32) 795 54 86



### TEST REPORT

EN10204/2...

No 2120/E/2002

QUALITY SYSTEM OF OUR COMPANY HAS BEEN CERTIFIED BY THE TÜV CERT ACC. DIN EN ISO 9002

Exporter : S T A L E X P O R T S.A.

40-085 KATOWICE

MICKIEWICZA 29

Importer : WIRTH STEEL

Order : P.O. 6816-M/MONTREAL

CANADA

Contract No. : PL/271936361/21-1011

Manuf. Order No. : 2740052/01

Advice No. : P-16700796/1

Version No. : 315154976106

PLVU : 27.10.70-13.00

KTM : 2710701300-DC0410-A9442-6.

Product description as per contract:

STEEL GRADE: 50W/AS72 GR.50 TYPE2/A992

*MEMO 8335  
P.O. 10057*

Product description as per standard: 'U' - SHAPES

Dimension : U8 X18

ASTM A 6/A 6M-00

Length : 40FT

ASTM A 992/A 992H-98

Steel grade:

Quantity	Weight	Heat No.	Chemical composition - %											Mechanical Properties								
			C	Mn	Si	P	S	Cu	Cr	Ni	N	Mo	Sn	Nb	V	CE	Re	R <sub>m</sub>	R <sub>p0.2</sub>	A <sub>200</sub>	EP <sub>2</sub>	EP <sub>1</sub>
5/70	22702	210256	0,18	0,77	0,17	0,018	0,015	0,02	0,03	0,02	0,006	0,009	0,003	0,001	0,050	0,83	400	529	28,2	394	529	24,6
/	/	210256																				
2/28	9080	280809	0,20	0,73	0,19	0,023	0,027	0,03	0,02	0,01	0,007	0,010	0,004	0,001	0,050	0,34	394	531	21,1	400	538	20,7
/	/	280809																				
6/84	27242	280310	0,18	0,70	0,20	0,019	0,015	0,03	0,02	0,01	0,007	0,003	0,003	0,001	0,060	0,32	396	527	23,1	405	526	21,0
/	/	280310																				

18/182 59024

THIS IS TO CERTIFY, THAT THE A. K. PRODUCTS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE INDICATED SPECIFICATIONS AND COMPLY WITH THEIR REQUIREMENT

Certificate Section HEAD OF ATTESTATION

Prepared by: IDZ1 DIVISION

Checked by: IDZ1 Jan ROST N. Sc. Eng.

DABROWA GORNICZA

21-Jan-2002

DELEGATED BY THE HUTA KATOWICE SA BOARD

- 34 -

Quality Control Manager

JERZY HAJKA K. Sc. Eng.



BALANCE

NUCOR STEEL - BERKELEY  
P.O. Box 2259  
Mt. Pleasant, S.C. 29464  
Phone: (843) 336-6000

Sold To: FEDERAL PIPE & STEEL CORP.  
PO BOX 416  
PLYMOUTH, MI 48170

MILL TEST REPORT

Ship To: FEDERAL PIPE & STEEL CORP.  
300 CAY ST  
MANCHESTER, NH 03103

1/07/02 11:39:26  
All beams produced by Nucor-Berkeley are cast and  
rolled to a fully killed and fine grain practice.

Customer #: 451 - 7  
Customer PO: 611996  
B.O.L. #: 209124  
Invoice #: 284830

SPECIFICATIONS: Tested in accordance with ASTM specification A6/AG4 and A370.  
AASHTO : M270-38  
ASTM : A992-00/A36-00A/A572-00-50/A709-00-50/A709-01-36/A709-01-50  
ASTM : TRI-CERT:/A36-00A/A572-00-50/A709-00-50/A709-01-36/A709-01-50

Description	Heat# Grade(s) Test	Yield/ Tensile Ratio	Yield (PSI) (MPa)	Tensile (PSI) (MPa)	Elong %	C Cr Pb	Mn Mo Ti	P Sn Ca	S Al O	Si V N	Cu Mn Zr	Ni CI	CE1 CK2 Pcm
WBX10 040' 00.00" W200X15.0 012.1920m	2112377	.80	55400	68900	23.78	.0700	.8290	.0095	.0104	.2180	.1010	.0360	.2259
	A992-00	.82	59700	72800	22.75	.0360 .0042	.0060 .0012	.0083 .0027	.0022 .0005	.0009 .0051	.0130 .0000	2.9286	.2648 .1291
WBX10 040' 00.00" W200X15.0 012.1920m	2114357	.82	55600	68000	26.33	.0650	.8310	.0081	.0165	.2310	.1080	.0370	.2209
	A992-00	.83	59100	70800	24.69	.0340 .0042	.0040 .0013	.0044 .0001	.0002 .0002	.0007 .0060	.0128 .0000	3.0563	.2619 .1233
WBX10 060' 00.00" W200X15.0 018.2880m	2114282	.82	56000	67900	24.03	.0720	.8660	.0085	.0138	.1740	.1240	.0340	.2362
	A992-00	.84	58600	70100	24.48	.0390 .0044	.0050 .0013	.0044 .0001	.0006 .0003	.0008 .0065	.0142 .0000	2.8793	.2680 .1318
WBX10 040' 00.00" W200X26.6 012.1920m	2114106	.82	56400	68600	24.54	.0630	.8830	.0112	.0182	.2060	.0980	.0370	.2227
	A992-00	.83	60100	72300	25.80	.0310 .0000	.0030 .0015	.0043 .0006	.0010 .0005	.0004 .0061	.0313 .0000	2.8793	.2633 .1228
WBX10 040' 00.00" W200X26.6 012.1920m	2114107	.83	57000	68300	29.49	.0690	.8270	.0061	.0140	.1890	.1140	.0410	.2235
	A992-00	.84	57100	68300	29.83	.0250 .0037	.0050 .0015	.0053 .0001	.0009 .0004	.0016 .0063	.0258 .0000	3.0710	.2601 .1267
WBX10 040' 00.00" W200X26.6 012.1920m	2114117	.83	58300	70400	28.18	.0750	.8940	.0066	.0151	.2340	.1250	.0370	.2435
	A992-00	.83	57800	69700	28.26	.0390 .0031	.0040 .0013	.0048 .0001	.0004 .0004	.0006 .0068	.0309 .0000	3.3487	.2887 .1386

memo 8334  
P.O. 10057

Identification: 45608





CHEMICAL AND PHYSICAL TEST REPORT

MADE IN U.S.A.

CARTERSVILLE STEEL MILL DIVISION  
 METALLURGICAL DEPARTMENT  
 384 OLD GRASSDALE RD NE, CARTERSVILLE, GA 30121  
 PRODUCING MILL IS KNOWN BY HEAT ID PREFIX

Shippers Number: G-008735

*MEMPHIS PC 10057*

B=CARTERSVILLE BB, C=CHARLOTTE, G=CARTERSVILLE, J=JACKSONVILLE, K=KNOXVILLE, N=GERDAU COURTOISE, O=ORRVILLE BB, V=JACKSON TN

SHIP TO:  
 FEDERAL PIPE AND STEEL CORP  
 300 GAY STREET  
 608-666-1887  
 MANCHESTER

NH 03103

INVOICE TO:  
 FEDERAL PIPE & STEEL CORP  
 ACCTS PAYABLE  
 1331 GRAHAM BELL  
 BOUCHERVILLE

PG J48 8A1

SHIP DATE  
 09/30/02

CUST. ACCOUNT NO  
 40128027

SHAPE AND SIZE		GRADE		SPECIFICATION																SALES ORDER		CUSTOMER P.O. NUMBER		
HEAT ID NO	C	UN	P	S	V	SI	CR	CU	NI	SN	AL	MO	N	NB	B	ZR	C EQL	YIELD FT LBS/ SQ IN	TENSILE LBS/ SQ IN	% ELONG 0.1N	DEF	% LIGHT HEAVY		
G 8 X 13.75		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01, ASTM A709 GR38-01A																2040220	612712			
G25290	.18	.93	.014	.034	.018	.21	.07	.32	.08	.009	.001	.017	.0080	.001				.37	53900	78000	28.8			
METRIC EQUIVALENT: YIELD = 388.18 MPA; TENSILE = 624.00 MPA; %ELONG/200MM = 25.6; DEF = MM																								
G 8 X 18.75		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01, ASTM A709 GR38-01A																2040220	612712			
G25243	.18	1.04	.017	.031	.018	.18	.10	.30	.08	.010	.002	.018	.0080	<.008				.40	63800	75000	21.9			
METRIC EQUIVALENT: YIELD = 370.94 MPA; TENSILE = 523.31 MPA; %ELONG/200MM = 21.9; DEF = MM																								
G 8 X 18.75		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01, ASTM A709 GR38-01A																2040220	612712			
G25243	.18	1.04	.017	.031	.018	.18	.10	.30	.08	.010	.002	.018	.0080	<.008				.40	51800	75000	23.0			
METRIC EQUIVALENT: YIELD = 367.84 MPA; TENSILE = 521.24 MPA; %ELONG/200MM = 23.0; DEF = MM																								
G 8 X 18.75		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01																2040220	612712			
G24278	.17	1.03	.012	.031	.017	.21	.08	.32	.08	.011	.001	.020	.0080	.001				.39	56800	78000	27.1			
METRIC EQUIVALENT: YIELD = 383.35 MPA; TENSILE = 637.78 MPA; %ELONG/200MM = 27.1; DEF = MM																								
G 8 X 18.75		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01																2040220	612712			
G24278	.17	1.03	.012	.031	.017	.21	.08	.32	.08	.011	.001	.020	.0080	.001				.39	53800	78000	24.0			
METRIC EQUIVALENT: YIELD = 371.63 MPA; TENSILE = 630.21 MPA; %ELONG/200MM = 24.0; DEF = MM																								
G 10 X 15.37		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01, ASTM A709 GR38-01A																2040220	612712			
G24713	.17	.93	.011	.031	.018	.23	.11	.35	.08	.011	.002	.021	.0070	.002				.38	58400	78500	22.9			
METRIC EQUIVALENT: YIELD = 381.97 MPA; TENSILE = 541.24 MPA; %ELONG/200MM = 22.9; DEF = MM																								
G 10 X 15.37		A36/572350		ASTM A36-01, ASTM A572 GR50-01, SA-36-01, ASTM A709 GR38-01A																2040220	612712			
G24713	.17	.93	.011	.031	.018	.23	.11	.35	.08	.011	.002	.021	.0070	.002				.39	56800	78000	23.7			
METRIC EQUIVALENT: YIELD = 384.73 MPA; TENSILE = 544.00 MPA; %ELONG/200MM = 23.7; DEF = MM																								

This material, including the billets, was produced and manufactured in the United States of America.

A. J. Turner  
 Quality Assurance Manager  
 311 Office

THE ABOVE FIGURES ARE CORRECT EXTRACTS FROM THE ORIGINAL CHEMICAL AND PHYSICAL TEST REPORT AS CONTAINED IN THE PERMANENT RECORDS OF THE COMPANY

*A. J. Turner*

Sent by: Ameristeel

8006289831

10/15/2002 1:13PM; #788; Page 5/8

Identification: 47423



CHEMICAL AND PHYSICAL TEST REPORT  
MADE IN U.S.A.

Shippers Number: G-088735

CARTERSVILLE STEEL MILL DIVISION  
METALLURGICAL DEPARTMENT  
384 OLD GRASSDALE RD NE, CARTERSVILLE, GA 30121  
PRODUCING MILL IS KNOWN BY HEAT ID PREFIX

*mill 8534 P.O. 10057*

B=CARTERSVILLE BB, C=CHARLOTTE, G=CARTERSVILLE, J=JACKSONVILLE, K=KNOXVILLE, N=GERDAU COURTICE, O=ORRVILLE BB, V=JACKSON TN

SHIP TO:  
FEDERAL PIPE AND STEEL CORP  
300 GAY STREET  
888-686-1887  
MANCHESTER

INVOICE TO:  
FEDERAL PIPE & STEEL CORP.  
ACCTS PAYABLE  
1331 GRAHAM BELL  
BOUCHERVILLE

SHIP DATE  
09/30/02  
CUST. ACCOUNT NO.  
40128027

PQ JB 6A1

SHAPE AND SIZE		GRADE		SPECIFICATION														SALES ORDER	CUSTOMER P.O. NUMBER				
HEAT ID. NO.	C	MN	P	S	V	S	CR	CU	N	SN	AL	MO	N	NB	B	ZR	CEQU	YIELD PT LBS./SQ. IN.	TENSILE LBS./SQ. IN.	% ELONG. 8 IN.	DEF.	% LIGHT HEAVY	
W 8 X 16 1/2																		37	55300	75200	21.6		
G2-8182	.17	.83	.013	.028	.017	.20	.08	.28	.08	.010	.002	.013	.0130	.001					2040220	812712			
METRIC EQUIVALENT: YIELD = 381.28 MPA; TENSILE = 518.49 MPA; %ELONG./200MM = 21.5 DEF. = MM																				2040220	812712		
W 8 X 16 1/2																		37	55100	73800	21.2		
G2-8182	.17	.93	.013	.028	.017	.20	.08	.28	.08	.010	.002	.013	.0110	.001					2040220	812712			
METRIC EQUIVALENT: YIELD = 379.80 MPA; TENSILE = 523.31 MPA; %ELONG./200MM = 21.2 DEF. = MM																				2040220	812712		
C 8 X 11 5/8																		39	54100	78400	23.8		
G2-8281	.18	.88	.012	.032	.018	.20	.08	.28	.08	.009	.002	.017	.0090	.002					2040220	812712			
METRIC EQUIVALENT: YIELD = 373.01 MPA; TENSILE = 523.31 MPA; %ELONG./200MM = 23.8 DEF. = MM																				2040220	812712		
C 8 X 11 5/8																		39	53300	73600	24.1		
G2-8281	.18	.88	.012	.032	.018	.20	.08	.28	.08	.009	.002	.017	.0080	.002					2040220	812712			
METRIC EQUIVALENT: YIELD = 373.01 MPA; TENSILE = 506.08 MPA; %ELONG./200MM = 23.8 DEF. = MM																				2040220	812712		
C 8 X 11 5/8																		38	55100	78400	25.3		
G2-8287	.18	.82	.012	.030	.015	.21	.10	.28	.08	.008	.001	.015	.0080	.001					2040220	812712			
METRIC EQUIVALENT: YIELD = 378.90 MPA; TENSILE = 528.78 MPA; %ELONG./200MM = 25.3 DEF. = MM																				2040220	812712		
C 8 X 11 5/8																		38	55100	78300	25.7		
G2-8287	.18	.82	.012	.030	.015	.21	.10	.28	.08	.008	.001	.015	.0080	.001					2040220	812712			
METRIC EQUIVALENT: YIELD = 378.90 MPA; TENSILE = 528.07 MPA; %ELONG./200MM = 25.7 DEF. = MM																				2040220	812712		
C 8 X 13 7/8																		37	54200	75800	28.7		
G2-8249	.18	.83	.014	.034	.014	.21	.07	.30	.09	.009	.001	.017	.0080	.001					2040220	812712			
METRIC EQUIVALENT: YIELD = 373.70 MPA; TENSILE = 522.82 MPA; %ELONG./200MM = 28.7 DEF. = MM																				2040220	812712		

This material, including the billets, was produced and manufactured in the United States of America.

A. J. Turner  
Quality Assurance Manager  
MM Group

ALL FIGURES ARE CORRECT EXTRACTS FROM THE ORIGINAL CHEMICAL AND PHYSICAL TEST REPORT AS CONTAINED IN THE PERMANENT RECORDS OF THE COMPANY

*A. J. Turner*

Sent by: Ameristeel  
8008288931  
10/15/2002 11:37AM WED, PAGE 6 OF 8

**AMERISTEEL**



**CHEMICAL AND PHYSICAL TEST REPORT**

MADE IN U.S.A.

CARRERSVILLE STEEL MILL DIVISION

METALLURGICAL DEPARTMENT

384 OLD GRASSDALE RD NE, CARRERSVILLE, GA 30121

PRODUCING MILL IS KNOWN BY HEAT ID PREFIX

B=CARRERSVILLE BB, C=CHARLOTTE, G=CARRERSVILLE, J=JACKSONVILLE, K=KNOXVILLE, N=GERDAU COURCE, O=ORRVILLE BB, V=JACKSON TN

INVOICE TO: FEDERAL PIPE & STEEL CORP.  
FACTS PAYABLE  
1331 GRAYMAN BELL  
BOUCHERVILLE

FEDERAL PIPE AND STEEL CORP.  
300 GAY STREET  
606-666-1867  
MANCHESTER NH 03103

SHIP DATE: 08/30/02  
CUST. ACCOUNT NO. 4012027  
PO #BB 6A1

Shippers Number: **G-088735**

*Metric 8334 P.O. 10057*

SHAPE AND SIZE		GRADE		SPECIFICATION													CUSTOMER P.O. NUMBER								
HEAT	ID. NO.	C	MAN	P	S	V	SI	CR	CU	N	SN	AL	MO	N	MB	B	Z1	CEQ1	YIELD PT	TENSILE	% ELONG	BEND	DEF.	% LIGHT	HEAVY

W X 1/4		A36/A92		ASTM A36/A92/A99-01 ASTM A572 GR50-01 ASTM A709 GR50-01													2040220									
METRIC EQUIVALENT YIELD = 281.28 MPa TENSILE = 518.49 MPa %ELONG./20MM = 21.5 DEF. = MIN		17	83	013	029	017	020	08	28	08	010	022	013	0119	001					55300	75200	21.5				
W X 1/4		A36/A92		ASTM A36/A92/A99-01 ASTM A572 GR50-01 ASTM A709 GR50-01													2040220									
METRIC EQUIVALENT YIELD = 279.80 MPa TENSILE = 526.78 MPa %ELONG./20MM = 25.1 DEF. = MIN		16	83	012	032	016	20	08	28	08	008	002	017	0090	002					54100	73400	23.8				
C 8 X 11.5#		A36/A92/A99-01		ASTM A36/A92/A99-01 ASTM A572 GR50-01 SA-36 01 ASTM A709 GR50-01													2040220									
METRIC EQUIVALENT YIELD = 373.01 MPa TENSILE = 508.08 MPa %ELONG./20MM = 23.8 DEF. = MIN		10	83	012	032	018	20	08	28	08	009	002	017	0090	002					53300	73600	24.1				
C 8 X 11.5#		A36/A92/A99-01		ASTM A36/A92/A99-01 ASTM A572 GR50-01 SA-36 01 ASTM A709 GR50-01													2040220									
METRIC EQUIVALENT YIELD = 367.48 MPa TENSILE = 508.74 MPa %ELONG./20MM = 24.1 DEF. = MIN		10	82	012	030	015	21	10	28	08	009	001	015	0090	001					55100	74400	25.3				
C 8 X 11.5#		A36/A92/A99-01		ASTM A36/A92/A99-01 ASTM A572 GR50-01 SA-36 01 ASTM A709 GR50-01													2040220									
METRIC EQUIVALENT YIELD = 378.90 MPa TENSILE = 526.78 MPa %ELONG./20MM = 25.1 DEF. = MIN		16	82	012	030	015	21	10	28	08	009	001	015	0090	001					55100	73900	24.7				
C 8 X 11.5#		A36/A92/A99-01		ASTM A36/A92/A99-01 ASTM A572 GR50-01 SA-36 01 ASTM A709 GR50-01													2040220									
METRIC EQUIVALENT YIELD = 373.70 MPa TENSILE = 522.82 MPa %ELONG./20MM = 25.7 DEF. = MIN		16	83	014	031	018	21	07	30	09	008	001	017	0090	001					35200	75900	28.7				
C 8 X 11.5#		A36/A92/A99-01		ASTM A36/A92/A99-01 ASTM A572 GR50-01 SA-36 01 ASTM A709 GR50-01													2040220									

*[Signature]*

THE ABOVE FIGURES ARE CORRECT EXTRACTS FROM THE ORIGINAL CHEMICAL AND PHYSICAL TEST REPORT AS CONTAINED IN THE PERMANENT RECORDS OF THE COMPANY

This material, including the labels, was produced and manufactured in the United States of America.  
A. J. Turner  
Quality Assurance Manager  
MHI Group

002 15:54 FAX 514 939 2233

ACIER WIRTE STEEL

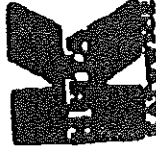
# HUTA KATOWICE

## S P Ó Ł K A A K C Y J N A

41-508 DABROWA GÓRNICZA  
AL. POLSKA WILNO 100 52

POLAND

TEL (048-32) 794 53 33  
FAX (048-32) 795 53 00  
TEL (048-32) 792 54 52  
FAX (048-32) 795 54 56



### TEST REPORT

EN10204/Z.2

NO 10926/E/2002

QUALITY SYSTEM OF OUR COMPANY HAS BEEN CERTIFIED BY THE TÜV CERT ACC. DIN EN ISO 9002

WIRTE STEEL S.A. S.A.

40-085 KATOWICE

WIRTE STEEL

MICKIEWICZA 29

CANADA

P.O. 6888-M/MONTREAL

CONTACT No. : PL/271990361/22-1005

MANUF. ORDER No. : 2610137/02

ADVISE No. : P-15/05253/3

VADWA No. : 815139039102

PKWU : 27.10.70-13.00

STK : 2710701300-DC0030-A9442-6.

WEL DESCRIPTION AS PER CONTRACT:

WEL GRADE: SDV/A572 GR50. TYPE 2/A992

Product description as per standard: 'U' - SHAPES

width : 41.3" X35

with :

Steel grade: 40FT

ASTM A 67A 6M-00

ASTM A 992/A 992H-98

Quantity	Weight	Unit No.	Chemical composition - %										Mechanical Properties						
			C	Mn	Si	P	S	CU	Cr	NI	N	NO	Sn	Pb	DE	RE	DEPL	DEPL	DI
2/14	376	29807	0.18	0.78	0.19	0.011	0.012	0.08	0.02	0.01	0.006	0.008	0.009	0.001	0.050	0.32	385	500	28.9
1		210607														375	494	24.7	

MEMO 8336  
P.O. 10057

2/14 3876

THIS IS TO CERTIFY THAT THE ABOVE PRODUCTS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE INDICATED SPECIFICATIONS AND COMPLY WITH THESE REQUIREMENTS.

Responsible Section: HEAD OF ATTESTATION  
Prepared by: JEN  
Checked by: JEN

DABROWA GÓRNICZA  
19-Mar-2002

RELEASED BY THE AREA MANAGER SA 8042  
- 24 -  
Quality Control Manager  
JENNY WUJIA M.Sc. Eng.

Bill To: FEDERAL PIPE & STEEL CORP.  
 P.O. BOX 416  
 PLYMOUTH  
 48170

Ship To: 10  
 FEDERAL PIPE & STEEL  
 300 GAY ST  
 300 GAY ST  
 MANCHESTER  
 US

Order Date: 02/06/2002  
 PO No: 612280FF  
 Mill Order No: 2352554  
 Load No: 733785  
 Manifest No: 1469553

**CERTIFIED MATERIAL TEST**  
**DIAPHRAGM STEEL**  
 300 W  
 Midlothian  
 76065-96  
 (972) 775-8241

SPECIFICATIONS  
 ASTM A6-01, A992-00, A572-00A

HEAT NO: 30102880

CHEMICAL ANALYSIS	
	UNIT
C	.08
Mn	.89
P	.006
S	.035
SI	.21
CU	.28
NI	.10
CR	.05
MO	.020
SN	.012
V	.000
AL	.000
NB	.009

PHYSICAL PROPERTIES

Yield Strength		Tensile Strength		Specimen Area		Elongation		Bend Test	
KSI	Mpa	KSI	Mpa	Sq In	Sq cm	%	Gage Length	Dia.	Result
53.2	366.8	66.9	461.3	0.376	2.43	28.4	8 In	200 mm	1
56.0	386.1	69.1	476.4	0.373	2.41	28.3	8 In	200 mm	1

*MEMO 8336  
 P.O. 10057*

All manufacturing processes of this product, including melting and casting, occurred in the U.S.A.

"I hereby certify that the contents of this report are correct and accurate. All tests and operations performed by this material manufacturer or its sub-contractors, when applicable, are in compliance with the requirements of the material specifications and applicable purchaser designated requirements."

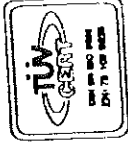
Signed: Tom L. Harrington Date: May. 07, 2002  
 Quality Assurance Manager

Notary Public (if applicable)

# HUTA KATOWICE SPÓŁKA AKCYJNA

41-308 DĄBROWA GÓRNICZA  
AL. JÓZEFA PIŁSUDSKIEGO 92  
POLAND

Center tel.: (048-32) 794 53 33  
fax: (048-32) 795 52 00  
TK tel.: (048-32) 792 60 52  
fax: (048-32) 795 54 86



## TEST REPORT

EMIC004012

NO 21731/E/1002

QUALITY SYSTEM OF OUR COMPANY HAS BEEN CERTIFIED BY THE TÜV CERT ACC. DIN EN ISO 9002

Exporter : S T A L E X P O R T S.A. HICKIEWICZA 29  
40-085 KATOWICE

CANADA

Importer : WIRTH STEEL

Order : P.O. 7016-M/MONTREAL

Contract No. : PL/271936361/22-1022  
Manuf. Order No. : 6620058/02  
Advice No. : P-15/09570/6  
Wagon No. : 815139091798  
PKWILL : 27-10-70-13.00  
CIN : 2710701300-DC0200-A9442-6.

Product description as per contract:  
STEEL GRADE 50B/AS72 GR.50 TYPE2/A933

Product description as per standard: 'U' - SHAPES

Dimension : 200x10x12  
Length : 55F1  
Steel grade:

ATH A 6/A 6M-00  
ATH A 992/A 992M-98

Quantity	Weight	Heat No.	Chemical composition - %										Mechanical Properties										
			C	Mn	Si	P	S	Ca	P	N	As	NO		ST	W	CE	Re	R <sub>0.2</sub>	R <sub>m</sub>	AZ <sub>15</sub>	IK		
12/ 84	46829	281929	0,18	0,75	0,18	0,012	0,022	0,05	0,02	0,02	0,02	0,02	0,005	0,008	0,006	0,001	0,060	0,35	411	516	24	24	
/		281929																	417	522			
12/ 84	46829																						

memo 8336  
P.O. 10057

THIS IS TO CERTIFY, THAT THE A.M. PRODUCTS HAVE BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH THE INDICATED SPECIFICATIONS AND COMPLY WITH THEIR REG. DELEGATED BY THE HUTA KATOWICE

Certificate Section:  
Presented by: DDB  
Checked by: DDB

HEAD OF ATTESTATION  
DIVISION  
Jan ROSTEK M.Sc.Eng.

Quality Control Manager  
Jerzy HAJKA M.Sc.Eng.

08/12/81 16:23 FROM:

MUCOR STEEL

843-336-6188

PAGE 004 OF 005

MUCOR STEEL - BERKELEY

P.O. Box 2259

MT. Pleasant, S.C. 29464

Phone: (404) 336-6000

Sold to: FEDERAL PIPE & STEEL CORP

PO Box 416

PLYMOUTH, MI 48170

MUNCHESTER, MI 48103

Customer H.: 451 - 7

U.O.L.H.: 184394

SPECIFICATIONS: Tested in accordance with ASTM specification A6/AM and A370.

ASTM: A992-00/A36-00A/A572-00-50/A709-00-50/A709-01-36/A709-01-50

CSN: G40.21-58V

*Memo 8336 P.O. 10057*

MILL TEST REPORT

Test	Grade(s)	Yield/ Tensile (PSI)	Ratio (MPa)	Elong	C	CI	PH	T1	CO	B	H	ZI	CI	PCM
Yield/ Tensile <td>2910357</td> <td>55800</td> <td>68600</td> <td>24.56</td> <td>.0870</td> <td>.0550</td> <td>.0080</td> <td>.0070</td> <td>.0080</td> <td>.0170</td> <td>.1560</td> <td>.1220</td> <td>.0420</td> <td>.2468</td>	2910357	55800	68600	24.56	.0870	.0550	.0080	.0070	.0080	.0170	.1560	.1220	.0420	.2468
Ratio (MPa)	A992-00	385	473		.0290	.0020	.0070	.0010	.0070	.0010	.0020	.0280		.2784
Elong	A992-00	55700	67900	26.51	.0010	.0010	.0010	.0001	.0001	.0002	.0052			.1395
Yield/ Tensile	2910359	53000	68000	28.05	.0800	.0890	.0090	.0160	.0090	.0160	.1660	.1220	.0430	.2456
Ratio (MPa)	A992-00	365	469		.0280	.0020	.0070	.0010	.0070	.0010	.0020	.0310		.2794
Elong	A992-00	53500	66900	27.86	.0010	.0010	.0010	.0001	.0001	.0002	.0052			.1395
Yield/ Tensile	2910243	60800	72900	24.78	.0830	.0880	.0070	.0260	.0070	.0260	.2200	.1010	.0290	.2331
Ratio (MPa)	A992-00	419	503		.0250	.0080	.0050	.0010	.0050	.0010	.0010	.0250		.2748
Elong	A992-00	62800	73500	24.28	.0020	.0020	.0020	.0002	.0002	.0002	.0049			.1391
Yield/ Tensile	2109020	53900	66700	24.64	.0670	.0710	.0118	.0168	.0118	.0168	.1600	.0900	.0350	.2105
Ratio (MPa)	A992-00	372	460		.0270	.0060	.0053	.0001	.0053	.0001	.0001	.0179		.2407
Elong	A992-00	53100	65100	23.94	.0001	.0008	.0004	.0003	.0004	.0003	.0057			.1192
Yield/ Tensile	2109022	54200	66700	24.73	.0720	.0710	.0115	.0159	.0115	.0159	.1670	.0840	.0280	.2144
Ratio (MPa)	A992-00	374	460		.0280	.0040	.0044	.0007	.0044	.0007	.0004	.0290		.2481
Elong	A992-00	55100	66400	24.78	.0000	.0033	.0000	.0004	.0000	.0004	.0058			.1245
Yield/ Tensile	2109008	50700	60700	25.04	.0720	.0860	.0271	.0266	.0271	.0266	.1470	.1390	.0530	.2533
Ratio (MPa)	A992-00	350	450		.0450	.0090	.0081	.0001	.0081	.0001	.0001	.0261		.2230
Elong	A992-00	50500	61000	25.48	.0001	.0012	.0001	.0004	.0001	.0004	.0080			.1339

Description	Test	Grade(s)	Yield/ Tensile (PSI)	Ratio (MPa)	Elong	C	CI	PH	T1	CO	B	H	ZI	CI	PCM
Yield/ Tensile	2910357	55800	68600	24.56	.0870	.0550	.0080	.0070	.0080	.0170	.1560	.1220	.0420	.2468	
Ratio (MPa)	A992-00	385	473		.0290	.0020	.0070	.0010	.0070	.0010	.0020	.0280		.2784	
Elong	A992-00	55700	67900	26.51	.0010	.0010	.0010	.0001	.0001	.0002	.0052			.1395	
Yield/ Tensile	2910359	53000	68000	28.05	.0800	.0890	.0090	.0160	.0090	.0160	.1660	.1220	.0430	.2456	
Ratio (MPa)	A992-00	365	469		.0280	.0020	.0070	.0010	.0070	.0010	.0020	.0310		.2794	
Elong	A992-00	53500	66900	27.86	.0010	.0010	.0010	.0001	.0001	.0002	.0052			.1395	
Yield/ Tensile	2910243	60800	72900	24.78	.0830	.0880	.0070	.0260	.0070	.0260	.2200	.1010	.0290	.2331	
Ratio (MPa)	A992-00	419	503		.0250	.0080	.0050	.0010	.0050	.0010	.0010	.0250		.2748	
Elong	A992-00	62800	73500	24.28	.0020	.0020	.0020	.0002	.0002	.0002	.0049			.1391	
Yield/ Tensile	2109020	53900	66700	24.64	.0670	.0710	.0118	.0168	.0118	.0168	.1600	.0900	.0350	.2105	
Ratio (MPa)	A992-00	372	460		.0270	.0060	.0053	.0001	.0053	.0001	.0001	.0179		.2407	
Elong	A992-00	53100	65100	23.94	.0001	.0008	.0004	.0003	.0004	.0003	.0057			.1192	
Yield/ Tensile	2109022	54200	66700	24.73	.0720	.0710	.0115	.0159	.0115	.0159	.1670	.0840	.0280	.2144	
Ratio (MPa)	A992-00	374	460		.0280	.0040	.0044	.0007	.0044	.0007	.0004	.0290		.2481	
Elong	A992-00	55100	66400	24.78	.0000	.0033	.0000	.0004	.0000	.0004	.0058			.1245	
Yield/ Tensile	2109008	50700	60700	25.04	.0720	.0860	.0271	.0266	.0271	.0266	.1470	.1390	.0530	.2533	
Ratio (MPa)	A992-00	350	450		.0450	.0090	.0081	.0001	.0081	.0001	.0001	.0261		.2230	
Elong	A992-00	50500	61000	25.48	.0001	.0012	.0001	.0004	.0001	.0004	.0080			.1339	

8/12/01  
 100% MELTED AND MANUFACTURED IN THE US  
 All beams produced by Nucor-Berkeley are cold rolled to a fully killed and fine grain practice

**CHEMICAL AND PHYSICAL TEST REPORT**

MADE IN U.S.A

CARTERSVILLE STEEL MILL DIVISION  
METALLURGICAL DEPARTMENT

304 OLD GRASSDALE RD NE, CARTERSVILLE, GA 30121  
PRODUCING MILL IS KNOWN BY HEAT ID PREFIX

*MEMO 8336 P.O. 1057*

**ARMENSTEEL**



Shippers Number: G-006828

Page 3 of

SHIP TO: FEDERAL PIPE & STEEL CORP 300 GAY STREET 603-622-0172 MANCHESTER		INVOICE TO: FEDERAL PIPE & STEEL CORP ACCTS PAYABLE 1331 GRAHAM BELL BOUCHERVILLE	
SHIP DATE 08/05/02		CUST ACCOUNT NO. 40128027	
SALES ORDER		CUSTOMER P.O. NUMBER	

SHIP AND SIZE		SPECIFICATION																								
HEAT	ID. NO.	C	MN	P	S	V	SI	CR	CU	NI	SN	AL	MO	N	NB	B	ZR	C EQU	YIELD PT	TENSILE	% ELONG	BEND	DEF.	% LIGHT	% HEAVY	
W 6 X 12#	G2-3508	18	92	008	034	016	20	07	25	13	000	000	040	0000	<	008	39	5100	203114	75500	22.7					
METRIC EQUIVALENT YIELD = 351.69 MPA. TENSILE = 487.11 MPA. %ELONG./200MM = 22.5 DEF. = MM																										
W 6 X 12#	G2-3508	16	92	008	034	016	20	07	25	13	000	000	040	0000	<	008	39	5100	203114	75500	22.7					
METRIC EQUIVALENT YIELD = 358.89 MPA. TENSILE = 520.55 MPA. %ELONG./200MM = 22.7 DEF. = MM																										
W 6 X 12#	G2-3510	16	96	009	035	017	21	08	32	11	000	000	050	0000	<	008	41	5600	203114	77300	22.1					
METRIC EQUIVALENT YIELD = 389.35 MPA. TENSILE = 532.95 MPA. %ELONG./200MM = 22.1 DEF. = MM																										
W 6 X 12#	G2-3510	18	96	009	035	017	21	08	32	11	000	000	050	0000	<	008	41	5600	203114	77300	21.2					
METRIC EQUIVALENT YIELD = 373.01 MPA. TENSILE = 532.28 MPA. %ELONG./200MM = 21.2 DEF. = MM																										
W 12 X 14#	G2-3740	10	92	011	034	019	21	10	23	09	000	000	020	0000	<	008	39	59100	203114	77000	26.4					
METRIC EQUIVALENT YIELD = 402.48 MPA. TENSILE = 535.12 MPA. %ELONG./200MM = 26.4 DEF. = MM																										
W 12 X 14#	G2-3740	16	92	011	034	019	21	10	23	09	000	000	020	0000	<	008	39	60700	203114	79000	21.3					
METRIC EQUIVALENT YIELD = 418.51 MPA. TENSILE = 544.09 MPA. %ELONG./200MM = 21.3 DEF. = MM																										
W 12 X 19#	G2-3696	14	82	008	028	019	23	07	32	09	000	000	030	0000	<	008	37	58100	203114	78100	24.8					
METRIC EQUIVALENT YIELD = 400.59 MPA. TENSILE = 524.09 MPA. %ELONG./200MM = 24.8 DEF. = MM																										

This material, including the billets, was produced and manufactured in the United States of America

A. J. Turner  
Quality Assurance Manager  
MFL Group

THE ABOVE FIGURES ARE CORRECT EXTRACTS FROM THE ORIGINAL CHEMICAL AND PHYSICAL TEST REPORT AS CONTAINED IN THE PERMANENT RECORDS OF THE COMPANY.



24 pcs. = 7872

HEAT# P5154  
DATE SHIPPED 11/05/2002  
SHIPMENT# 0209902  
SIZE: CH 6 X 8.2  
ORDER ITEM# 12512B/01  
SOLD TO: FEDERAL PIPE and STEEL CO

### CERTIFIED TEST REPORT

## NUCOR

BAR HILL - AUBURN  
NUCOR STEEL AUBURN, INC.

P.O. BOX 2008

AUBURN, NY 13021

CUST. P.O. 612880

PART #:

GRADE : ASTM A36-00A/A709 GR.36

SPEC CSA G40.21-98 44W

SUPP. REQ:

SHIP TO: FEDERAL PIPE - NH

FAX # 6036416866

### CHEMICAL ANALYSIS %

C	MN	SI	P	S	CU	NI	CR	MO	SN	V	CB	TI	B	N2	O2
.190	.710	.210	.008	.050	.240	.1000	.130	.031	.011	.002	.0020	.0015	.0003	XXX	.001

### MECHANICAL RESULTS

YIELD	TENSILE	GAUGE	%	BEND	%
K.S.I.	K.S.I.	LENGTH	ELONG	PIN. DIA	R.A.
47.50	71.20	8	33.8	.0	.0
48.70	72.50	8	32.5	.0	.0
MPa	MPa	GAUGE	%	BEND	
		LENGTH	ELONG	PIN. DIA	R.A.

### CHARPY IMPACT TEST

TEMP. F	FT./LB.	%SHEAR	LAT.EXP.MILS

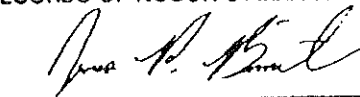
I CERTIFY THESE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

JIM BIERNAT, METALLURGIST  
STATE OF NEW YORK SS.  
COUNTY OF CAYUGA

Jim Biernat

(print)

AFTER BEING DULY SWORN BY ME, DECLARES THAT: THESE RESULTS ARE CORRECT AS CONTAINED IN THE RECORDS OF NUCOR STEEL AUBURN, INC



(sign)

SUBSCRIBED AND SHOWN BEFORE ME

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

L.S. \_\_\_\_\_

THIS CERTIFICATE IS NOTARIZED ONLY WHEN REQUESTED

Grain Size XXX    Reduction Ratio XXX    As Rolled Hardness XXX    D.I. XXX    C.E. XXX    C.I. XXX

### JOMINY END-QUENCH HARDENABILITY RESULTS (HRC)

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32

ALL MANUFACTURING PROCESSES FOR THIS STEEL, INCLUDING MELTING FROM SCRAP AND HOT ROLLING HAVE BEEN PERFORMED IN THE U.S.A. NO WELD REPAIR PERFORMED, STEEL NOT EXPOSED TO MERCURY OR ANY LIQUID ALLOY WHICH IS LIQUID AT AMBIENT TEMPERATURES.

CUSTOMER SPECIAL INSTRUCTIONS:

CE/01280  
124000

Manufacturing 47545



AMERISTEEL®

CHEMICAL AND PHYSICAL TEST REPORT

MADE IN U.S.A.

CARTERSVILLE STEEL MILL DIVISION

Shippers Number: G-006708

METALLURGICAL DEPARTMENT

384 OLD GRASSDALE RD NE, CARTERSVILLE, GA 30121

MEMO 8333 P.O. 10057

PRODUCING MILL IS KNOWN BY HEAT ID PREFIX

B-CARTERSVILLE BB, C-CHARLOTTE, G-CARTERSVILLE, J-JACKSONVILLE, K-KNOXVILLE, N-GERDAU COURTICE, O-ORRVILLE BB, V-WEST TENNESSEE

SHIP TO: FEDERAL PIPE & STEEL CORP 300 GAY STREET 603-622-0172 MANCHESTER		INVOICE TO: FEDERAL PIPE & STEEL CORP ACCTS PAYABLE 1331 GRAHAM BLDG BOUCHERVILLE		SHIP DATE 07/31/02		CUST. ACCOUNT NO. 40128027	
H# 03103		PQ J4B 6A1					

SHAPE AND SIZE				GRADE		SPECIFICATION										SALES ORDER		CUSTOMER P.O. NUMBER			
HEAT ID NO	C	MN	P	S	V	SI	CR	CU	NI	SN	AL	MO	N	NB	C EQU	YIELD PT LBS/SQ IN	TENSIL LBS/SQ IN	% ELONG 8 IN	BEND	DEF	% LIGHT HEAVY
W 12 X 19#						A36/A992	ASTM A36-01	ASTM A992-01	ASTM A572 GR50-01	SA-36-01							2031114	612620			
G2-3689	.16	.90	.010	.026	.019	.22	.11	.23	.09	.000	.000	.030	.0000	< .008	.38	58300	76900	23.3			
METRIC EQUIVALENT: YIELD = 401.96 MPA; TENSILE = 530.21 MPA; %ELONG./200MM = 23.3 DEF. = MM																					
W 12 X 19#						A36/A992	ASTM A36-01	ASTM A992-01	ASTM A572 GR50-01	SA-36-01							2031114	612620			
G2-3689	.16	.90	.010	.026	.019	.22	.11	.23	.09	.000	.000	.030	.0000	< .008	.39	62500	79500	23.9			
METRIC EQUIVALENT: YIELD = 430.92 MPA; TENSILE = 548.13 MPA; %ELONG./200MM = 23.9 DEF. = MM																					
W 12 X 19#						A36/A992	ASTM A36-01	ASTM A992-01	ASTM A572 GR50-01	SA-36-01							2031114	612620			
G2-3687	.15	.92	.012	.027	.019	.22	.12	.24	.09	.000	.000	.020	.0000	< .008	.38	58800	77800	23.3			
METRIC EQUIVALENT: YIELD = 405.41 MPA; TENSILE = 536.41 MPA; %ELONG./200MM = 23.3 DEF. = MM																					
W 12 X 19#						A36/A992	ASTM A36-01	ASTM A992-01	ASTM A572 GR50-01	SA-36-01							2031114	612620			
G2-3687	.15	.92	.012	.027	.019	.22	.12	.24	.09	.000	.000	.020	.0000	< .008	.38	58700	77700	21.4			
METRIC EQUIVALENT: YIELD = 404.72 MPA; TENSILE = 535.72 MPA; %ELONG./200MM = 21.4 DEF. = MM																					
W 12 X 19#						A36/A992	ASTM A36-01	ASTM A992-01	ASTM A572 GR50-01	SA-36-01							2031114	612620			
G2-3685	.18	.84	.011	.032	.019	.23	.12	.24	.11	.000	.000	.030	.0000	< .008	.40	54800	75900	21.9			
METRIC EQUIVALENT: YIELD = 377.83 MPA; TENSILE = 521.24 MPA; %ELONG./200MM = 21.9 DEF. = MM																					
W 12 X 19#						A36/A992	ASTM A36-01	ASTM A992-01	ASTM A572 GR50-01	SA-36-01							2031114	612620			
G2-3685	.16	.84	.011	.032	.019	.23	.12	.24	.11	.000	.000	.030	.0000	< .008	.40	58200	76900	22.6			
METRIC EQUIVALENT: YIELD = 401.27 MPA; TENSILE = 530.21 MPA; %ELONG./200MM = 22.6 DEF. = MM																					
W 12 X 19#						A36/A992	ASTM A36-00A	ASTM A992-98	ASTM A572 GR50-00	SA-36-01							2031114	612620			
G2-3024	.18	.93	.012	.035	.020	.22	.08	.34	.12	.000	.000	.030	.0000	< .008	.40	58700	78000	23.8			
METRIC EQUIVALENT: YIELD = 404.72 MPA; TENSILE = 544.69 MPA; %ELONG./200MM = 23.8 DEF. = MM																					

This material, including the billets, was produced and manufactured in the United States of America.

A. J. Turner  
Quality Assurance Manager  
Mill Group

THE ABOVE FIGURES ARE CORRECT EXTRACTS FROM THE ORIGINAL CHEMICAL AND PHYSICAL TEST REPORT AS CONTAINED IN THE PERMANENT RECORDS OF THE COMPANY.

Specification 43811



Steel Tube Institute  
 3 Clark Street, Harrow, Ontario, Canada N0R 1G0  
 Tel: (519) 738-8000 Fax: (519) 738-5004

**Material Test Report**

Ref: RL 80102803  
 Date: 10-02-2002  
 Customer: 811

Federal Pipe and Steel Corporation  
 300 Gay Street  
 MANCHESTER NH 03103  
 USA

Shipped to  
 Federal Pipe and Steel Corporation  
 300 Gay Street  
 MANCHESTER NH 03103  
 USA

*MEMO 9969 P.O. 11180*

Material: 12.0x12.0x500x30"0"(2x1) CTMIL CSA Material No. 120120500

Heat No	C	Mn	P	S	Si	AI	Sales order	Purchase Order
4773A	0.200	0.830	0.008	0.005	0.010	0.041	104240	612804 SD
Bundle No	Yield	Tensile	Eln.2in	Certification				
0001027542	050750 Psi	055340 Psi	33.9 %	CSA G40.21 50W				

Material Note:  
 Sales Or.Note:

Material: 12.0x12.0x500x48"0"(2x1) ✓ Material No. 1201205004800

Heat No	C	Mn	P	S	Si	AI	Sales order	Purchase Order
5991A	0.170	0.760	0.014	0.008	0.010	0.036	104240	612804 SD
Bundle No	Yield	Tensile	Eln.2in	Certification				
M200107551	061267 Psi	074089 Psi	30.6 %	ASTM A500 GR.B & C				

Material Note:  
 Sales Or.Note:

Material: 12.0x12.0x500x48"0"(2x1) Material No. 1201205004800

Heat No	C	Mn	P	S	Si	AI	Sales order	Purchase Order
5991A	0.170	0.760	0.014	0.008	0.010	0.036	104240	612804 SD
Bundle No	Yield	Tensile	Eln.2in	Certification				
M200107550	061267 Psi	074089 Psi	30.6 %	ASTM A500 GR.B & C				

Material Note:  
 Sales Or.Note:

Material: 12.0x12.0x500x48"0"(2x1) Material No. 1201205004800

Heat No	C	Mn	P	S	Si	AI	Sales order	Purchase Order
5991A	0.170	0.760	0.014	0.008	0.010	0.036	104240	612804 SD
Bundle No	Yield	Tensile	Eln.2in	Certification				
M200107549	061267 Psi	074089 Psi	30.6 %	ASTM A500 GR.B & C				

Material Note:  
 Sales Or.Note:

Material: 12.0x12.0x500x48"0"(2x1) Material No. 1201205004900

Heat No	C	Mn	P	S	Si	AI	Sales order	Purchase Order
5991A	0.170	0.760	0.014	0.008	0.010	0.036	104240	612804 SD
Bundle No	Yield	Tensile	Eln.2in	Certification				
M200107547	061267 Psi	074089 Psi	30.6 %	ASTM A500 GR.B & C				

Material Note:  
 Sales Or.Note:

*[Signature]*

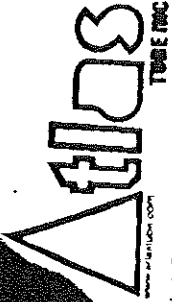
Authorized by Quality Assurance:



**Steel Tube Institute**  
 U.S. & CANADA

**Steel Service Center Institute**

Standards Council of Canada  
 Institut canadien de normalisation



200 Clark Street, Harrow, Ontario, Canada NOR 1G0  
Tel. (519) 278-6000 Fax (519) 738-5004

Federal Pipe and Steel Corporation  
300 Gay Street  
MANCHESTER NH 03103  
USA

# Material Test Report

Ref. B/L: 80104240  
Date 11/09/2002  
Customer: 811

Shipped to  
Federal Pipe and Steel Corporation  
300 Gay Street  
MANCHESTER NH 03103  
USA

*MEMO 940480  
P.D. 10080*

**Material:** 10.0x10.0x250x36"0"0"(1x1)REC  
**Heat No** C Mn P S  
 660810 0.190 0.790 0.016 0.005  
**Bundle No** Yield Tensile  
 B653728 058550 Psi 073060 Psi

**Material Note:**  
**Sales Or. Note:**

**Material No.** SI AI  
 100100250  
**Sales order** 100475  
**Certification** ASTM A500 GR.B & C  
**Made in Canada** Purchase Order 612884

**Material:** 3.0x3.0x188x40"0"0"(6x4)  
**Heat No** C Mn P S  
 0617X 0.180 0.770 0.008 0.008  
**Bundle No** Yield Tensile  
 M100162926 065670 Psi 078980 Psi

**Material Note:**  
**Sales Or. Note:**

**Material No.** SI AI  
 300301884000  
**Sales order** 106373  
**Certification** ASTM A500 GR.B & C  
**Made in Canada** Purchase Order 612878

**Material:** 3.0x3.0x188x40"0"0"(6x4)  
**Heat No** C Mn P S  
 0617X 0.180 0.770 0.008 0.008  
**Bundle No** Yield Tensile  
 M100162927 065670 Psi 078980 Psi

**Material Note:**  
**Sales Or. Note:**

**Material No.** SI AI  
 300301884000  
**Sales order** 106373  
**Certification** ASTM A500 GR.B & C  
**Made in Canada** Purchase Order 612878

**Material:** 6.0x6.0x375x24"0"0"(3x3)  
**Heat No** C Mn P S  
 7500A 0.200 0.910 0.008 0.007  
**Bundle No** Yield Tensile  
 M100166654 074900 Psi 081330 Psi

**Material Note:**  
**Sales Or. Note:**

**Material No.** SI AI  
 600603752400  
**Sales order** 106279  
**Certification** ASTM A500 GR.B & C  
**Made in Canada** Purchase Order 612878

**Material:** 6.0x6.0x375x48"0"0"(3x2)  
**Heat No** C Mn P S  
 7425A 0.200 0.820 0.009 0.008  
**Bundle No** Yield Tensile  
 M100166707 073010 Psi 081430 Psi

**Material Note:**  
**Sales Or. Note:**

**Material No.** SI AI  
 600603754800  
**Sales order** 106279  
**Certification** ASTM A500 GR.B & C  
**Made in Canada** Purchase Order 612878

*[Handwritten signature]*

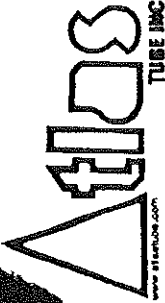
Authorized by Quality Assurance:



Steel Tube Institute  
OF NORTH AMERICA

Steel Service Center Institute

Standards Committee  
Comité des Normes



200 Clark Street, Harrow, Ontario, Canada N0R 1G0  
 Tel. (519) 738-5000 Fax (519) 738-6004

Sold to

Federal Pipe & Steel

300 Gay Street

MANCHESTER NH 03103

USA

**Material Test Report**

Ref.B/L:80085192

Date:11.02.2001

Customer:811

Shipped to  
 Federal Pipe & Steel  
 300 Gay Street  
 MANCHESTER NH 03103  
 USA

*MEMO 9970  
 P.O. 10080*

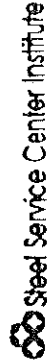
Material: 10.0x6.0x250x48"0"(2x3). ✓ Material No. 1000602504800  
 Heat C Min P S 0.170 0.790 0.007 0.007 0.015 0.044 0.035 0.005 0.003 0.019  
 P.order S.Order Bundle No M200047401 058957 Psi 071389 Psi 27.0 %  
 611894 86034 86034  
 Certification  
 ASTM A500 GR.B & C

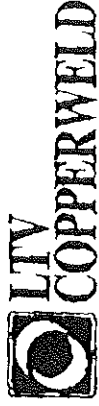
Material Note:  
 Sales Or.Note:

Material: 3.0x2.0x188x24"0"(7x5).-D Material No. 0300201882400-D  
 Heat C Min P S 0.170 0.670 0.009 0.007 0.017 0.036 0.030 0.020 0.010 0.010  
 P.order S.Order Bundle No M300027521 062667 Psi 067894 Psi 28.0 %  
 611894 86034 86034  
 Certification  
 ASTM A500 GR.B & C

Material Note:  
 Sales Or.Note:

Authorized by Quality Assurance: *Joe Chisholm*  
 Shipping Clerk





TUBULAR PRODUCTS

Internal Order No. 536325

TEST REPORT

Invoice No. 17045823

Date 08/22/01

ERWELD CANADA INC.  
SOLTYB AVENUE  
HAMPTON, ONTARIO L6X 2M3  
CANADA

Customer Order No.

11818

Customer:

FEDERAL PIPE & STEEL  
P.O. BOX 925  
521 N. 1ST STREET  
PEOTONE, IL 60468

*MEMO 9995*  
*P.O. 10680*

Specification:

8 IN, 6 IN, 5/16  
48 Ft  
ASTM A500 GRB 99

CHEMICAL ANALYSIS, %

HEAT NO.		C	Mn	P	S	SI	AL	V	CU	NI	CR
4142056	C.E. .35	.22	.75	.010	.011	.01	.069	.00	.020	.010	.020

MECHANICAL PROPERTIES

HEAT NO.	LAB NO.	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION %	HARDNESS Rb
4142056	20182	61300	77600	35	

YIELD STRENGTH IS 0.2% OFFSET - ELONGATION IN 2 INCHES

Other Tests

*Jim Clark*  
JIM CLARK, METALLURGIST

LTV Copperweld certifies that the material purchased on this order meets all chemical and physical requirements in accordance with the latest applicable ASTM standards.



**LTV  
COPPERWELD**  
TUBULAR PRODUCTS

WELD CANADA INC.  
1000 BAY AVENUE  
WILLOWDALE, ONTARIO M2H 2M3  
CANADA

**TEST REPORT**

Customer Order No. 11425

446848

Interpad Order No. 17021612

Invoice No. \_\_\_\_\_

Date 11/24/00

Specification:

8 IN, 6 IN, 5/16  
40 FT  
ASTM A500 GRB 99

Customer:

FEDERAL PIPE & STEEL CORP.  
P.O. BOX 925  
521 N. 1ST STREET  
PEOTONE, IL 60468

*MEMO 9995  
P.O. 10080*

CHEMICAL ANALYSIS, %

HEAT NO.	C	Mn	P	S	SI	AL	CB	V	CU	NI	CR
122208	.21	.82	.006	.006	.04	.054	.001	.00	.110	.040	.050
C.E.	.36										

MECHANICAL PROPERTIES

HEAT NO.	LAB NO.	TENSILE STRENGTH		ELONGATION %	HARDNESS R <sub>b</sub>
		YIELD STRENGTH PSI	TENSILE STRENGTH PSI		
122208	15279	59800	74400	37	

YIELD STRENGTH IS 0.2% OFFSET - ELONGATION IN 2 INCHES

Other Tests

*Jim Clark*  
JIM CLARK, METALLURGIST

LTV Copperweld certifies that the material purchased on this order meets all chemical and physical requirements in accordance with the latest applicable ASTM standards.

NORTH CROSSMAN RD  
P.O. Box 249  
SAYREVILLE, NJ, USA  
08871-0249

- PHYSICAL PROPERTIES - METALLURGICAL PROPERTIES - CHEMICAL ANALYSIS

393878

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, THIS REPORT RELATES ONLY TO THE ITEMS TESTED.  
THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS  
ASTM E 415 AND/OR ASTM E 1019.

FAX: (732)721-8874

TEL: (732)721-6600

PO 10401 J-338

S  
H  
I  
P  
  
T  
O  
  
AMERICAN STEEL & ALUMINUM CORP  
115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA  
04106 1ME  
Attn:CRYSTAL

*John J. Berggren*

**CO-STEEL**  **SAYREVILLE**

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE AFOREMENTIONED COMPANY, IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW.

Plant Metallurgical Engineer

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN U.S.A.

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.
SQUARE BARS 3/4 INCH SQUARE(20 FT) TEST RESULTS FOR HEAT N29308 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	71255001	M0513863
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .14 .77 .016 .035 .23 .46 .18 .15 .05 .031 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 51288.0 PSI, TENSILE: 72274.0 PSI %ELONGATION: 28.5 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 51515.0 PSI, TENSILE: 72727.0 PSI %ELONGATION: 29.0 GUAGE LENGTH: 8 IN			
FLATS 1 1/2 x 1/4(20 FT) TEST RESULTS FOR HEAT N31668 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	71308301	M0514065
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .14 .71 .005 .030 .17 .35 .15 .10 .04 .020 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 49196.0 PSI, TENSILE: 71616.0 PSI %ELONGATION: 26.0 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 50042.0 PSI, TENSILE: 71412.0 PSI %ELONGATION: 28.0 GUAGE LENGTH: 8 IN			
FLATS 1 1/2 x 1/4(20 FT) TEST RESULTS FOR HEAT N32574 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	71308301	M0514065
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .16 .74 .006 .022 .21 .39 .11 .10 .03 .021 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 52809.0 PSI, TENSILE: 72305.0 PSI %ELONGATION: 25.5 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 51189.0 PSI, TENSILE: 71993.0 PSI %ELONGATION: 26.0 GUAGE LENGTH: 8 IN			
ROUND BARS 1/2 " ROUNDS(20 FT) TEST RESULTS FOR HEAT N30922 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	71308302	M0514065
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .16 .76 .011 .033 .19 .41 .12 .10 .03 .026 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 54384.0 PSI, TENSILE: 74576.0 PSI %ELONGATION: 24.0 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 53114.0 PSI, TENSILE: 74479.0 PSI %ELONGATION: 24.0 GUAGE LENGTH: 8 IN			

AMERICAN STEEL & ALUMINUM CORP.  
YOUR P.O. NO. 10401  
OUR P.O. NO. 05-12035  
M. Berggren





# ROANOKE ELECTRIC STEEL CORPORATION

P. O. BOX 13948

ROANOKE, VIRGINIA 24038-3948

## Test and Inspection Report

NO. 41486-0

ROANOKE

AMERICAN STEEL & ALUM SO PRT  
115 WALLACE AVE  
SOUTH PORTLAND ME 4106-0000

Date 10/14/02

HEAT NUMBER	SIZE	1-YIELD PT. KSI	ULTIMATE KSI	ELONG 8 IN.	BEND TEST	ABS-GRA				
JD2549	ANGLES 3 X 2 X 3/16	44.5	63.8	33.1		ABS-GRA				
PURCHASE ORDER NUMBER										
M0514072	83 PIECES 20'	46.6	66.3	31.9		ABS-GRA				
HEAT NUMBER	SIZE	1-YIELD PT. MPA	ULTIMATE MPA	ELONG 203mm	BEND TEST	ABS-GRA				
JD2549	ANGLES 76.2 X 50.8 X 4.8	306.8	439.9	33.1		ABS-GRA				
PURCHASE ORDER NUMBER										
M0514072	83 PIECES 20'	321.3	457.1	31.9		ABS-GRA				
C	MN	S	P	SI	CR	NI	MO	CU	V	NE
.11	.75	.025	.007	.20	.07	.09	.03	.23	.002	.002

SHIP BY

AMERICAN STEEL & ALUMINUM CORP  
 YOUR P.O. NO. 10403  
 OUR P.O. NO. 05-12073  
 CUSTOMER *M. B. ...*

ALL ASTM A36 MATERIAL PRODUCED TO THE LATEST REVISION.

M222 AND M223-50 ASSHTO  
AND NC CLASS 2, 10CFR50 APPENDIX B AND NQA-1 (1989 ED), 10CFR21, AND ANSI 45.2. NO WELD REPAIR HAS BEEN PERFORMED.

CHAPPY IMPACT TESTING M222 AND M223-50 ASSHTO IN ACCORDANCE WITH 2/D.5.0

AND NC CLASS 2, 10CFR50 APPENDIX B AND NQA-1 (1989 ED), 10CFR21, AND ANSI 45.2. NO

Approved ABS QA Mill. Certificate No. 00NN10108-X.

This material was melted and manufactured in the USA by basic Electric Furnace processes to meet specification: ASTM A36-01 ASME SA36 QQS741D A709-00A GR36

The tensile values stated in either inch-pound units or SI units are to be regarded as separate as defined in the ASTM scope for this material. Unless a metric specification is ordered, this material has been tested and meets the requirements of the inch-pound ranges.

This is to certify the above to be a true and accurate report as contained in the records of this company.

Engineer of Tests: Charles R. Charlton

268 pcs.= 4556

CERTIFIED TEST REPORT

HEAT# P6703  
DATE SHIPPED 12/02/2007  
SHIPMENT# 0211144  
SIZE: FL 1 X 1/4  
ORDER ITEM# 124505/01  
SOLD TO: AMERICAN STEEL and ALUM.

**NUCOR**  
BAR MILL-AUBURN  
NUCOR STEEL AUBURN, INC.  
P.O. BOX 2008  
AUBURN, NY 13021

CUST. P.O. M0514196  
PART #:  
GRADE : ABS GR A ASTM A36-00A  
SPEC MILS22698C AMD#1&2 A CL.U  
SUPP. REQ:  
SHIP TO: AMERICAN STEEL - BIW  
FAX # 2077720359

CHEMICAL ANALYSIS %

C	MN	SI	P	S	CU	NI	CR	MO	SN	V	CB	TI	B	N2	O2
.140	.630	.160	.017	.033	.250	.0600	.130	.025	.011	.003	.0010	.0021	.0002	XXX	.001

MECHANICAL RESULTS

YIELD	TENSILE	GAUGE	%	BEND	%
K.S.I.	K.S.I.	LENGTH	ELONG	PIN. DIA	R.A.
42.90	59.60	8	27.5	0	0
41.60	60.20	8	26.3	0	0
MPa	MPa	GAUGE	%	BEND	
		LENGTH	ELONG	PIN. DIA	R.A.

CHARPY IMPACT TEST

TEMP. F	FT./LB.	%SHEAR	LAT EXP. MILS

I CERTIFY THESE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

JIM BIERNAT, METALLURGIST  
STATE OF NEW YORK SS.  
COUNTY OF CAYUGA

Jim Biernat

(print)

AFTER BEING DULY SWORN BY ME, DECLARES THAT: THESE RESULTS ARE CORRECT AS CONTAINED IN THE RECORDS OF NUCOR STEEL AUBURN, INC

*Jim Biernat*  
(sign)

SUBSCRIBED AND SHOWN BEFORE ME

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

L.S. \_\_\_\_\_

THIS CERTIFICATE IS NOTARIZED ONLY WHEN REQUESTED

EJ/06071  
105200

Grain Size      Reduction Ratio      As Rolled Hardness      D.I.      C.E.      C.I.  
XXX                      XXX                      XXX                      XXX                      XXX                      XXX

JOMINY END-QUENCH HARDENABILITY RESULTS (HRC)

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32

ALL MANUFACTURING PROCESSES FOR THIS STEEL, INCLUDING MELTING FROM SCRAP AND HOT ROLLING HAVE BEEN PERFORMED IN THE U.S.A. NO WELD REPAIR PERFORMED, STEEL NOT EXPOSED TO MERCURY OR ANY LIQUID ALLOY WHICH IS LIQUID AT AMBIENT TEMPERATURES.

DUAL CERTIFICATION

SHIP BY

CUSTOMER SPECIAL INSTRUCTIONS:  
A36 IS DUAL CERTIFIED TO EB-2909 H  
ON A588 MATERIAL OVER 1/2" CHARPY IMPACT TEST REQ.

AMERICAN STEEL & ALUMINUM CORP  
YOUR P.O. # .....  
OUR P.O. NO. 10405  
CUSTOMER m Brady 05-12073

HOPKINS STREET SOUTH  
WHITBY, ON, CAN  
L1N 5T1

- PHYSICAL PROPERTIES - METALLURGICAL PROPERTIES - CHEMICAL ANALYSIS

384500

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, THIS REPORT RELATES ONLY TO THE ITEMS TESTED.  
THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS  
ASTM E 415 AND/OR ASTM E 1019.

FAX: (905)668-4536

TEL: (905)668-8811

PO 10546 J-1873

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AMERICAN STEEL & ALUMINUM CORP  
115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA  
04106 1ME  
Attn:CRYSTAL



**CO-STEEL LASCO**

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE AFOREMENTIONED COMPANY, IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW.

Q/A Manager

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN CANADA.

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.
FLATS 4 X 1/4(20 FT) TEST RESULTS FOR HEAT B18544 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	70104504	M0513371
SAMPLE C MN P S SI CU NI CR MO CB V 1 .17 .72 .006 .016 .16 .34 .11 .13 .03 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 55207.0 PSI, TENSILE: 78740.0 PSI %ELONGATION: 30.0 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 55400.0 PSI, TENSILE: 78754.0 PSI %ELONGATION: 30.0 GUAGE LENGTH: 8 IN			
FLATS 4 X 3/8(20 FT) TEST RESULTS FOR HEAT B18548 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	70197205	M0513422
SAMPLE C MN P S SI CU NI CR MO CB V 1 .16 .72 .010 .023 .16 .49 .09 .13 .02 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 53466.0 PSI, TENSILE: 76161.0 PSI %ELONGATION: 27.2 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 52453.0 PSI, TENSILE: 75850.0 PSI %ELONGATION: 27.9 GUAGE LENGTH: 8 IN			
FLATS 4 X 3/8(20 FT) TEST RESULTS FOR HEAT B18549 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	70197205	M0513422
SAMPLE C MN P S SI CU NI CR MO CB V 1 .16 .72 .008 .024 .18 .46 .09 .13 .02 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 53657.0 PSI, TENSILE: 76890.0 PSI %ELONGATION: 26.2 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: .0 PSI, TENSILE: .0 PSI %ELONGATION: .0 GUAGE LENGTH: 8 IN			
FLATS 4 X 3/8(20 FT) TEST RESULTS FOR HEAT B18548 HEAT SEQ 1	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	70197220	M0513423
SAMPLE C MN P S SI CU NI CR MO CB V 1 .16 .72 .010 .023 .16 .49 .09 .13 .02 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 53488.0 PSI, TENSILE: 76161.0 PSI %ELONGATION: 27.2 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 52453.0 PSI, TENSILE: 75850.0 PSI %ELONGATION: 27.9 GUAGE LENGTH: 8 IN			

SHIP BY

AMERICAN STEEL & ALUMINUM CORP.

YOUR P.O. NO. 10366

OUR P.O. NO. 0509483

CUSTOMER *embassy*

HOPKINS STREET SOUTH  
WHITBY, ON, CAN  
L1N 5T1

**TESTING LABORATORY REPORT**

BILL OF LADING

384500

- PHYSICAL PROPERTIES    - METALLURGICAL PROPERTIES    - CHEMICAL ANALYSIS

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, THIS REPORT RELATES ONLY TO THE ITEMS TESTED.  
THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS  
ASTM E 415 AND/OR ASTM E 1019.

FAX : (905)668-4536

TEL : (905)668-8811

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AMERICAN STEEL & ALUMINUM CORP  
115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA  
04106 1ME  
Attn: CRYSTAL



Q/A Manager.

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE AFOREMENTIONED COMPANY, IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN CANADA

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.								
FLATS 3 X 1/2(20 FT)	ASTM: A36 - 97a ASTMA709- 97b ASME: SA36 (ASTM A36-96)	70197225	M0513423								
TEST RESULTS FOR HEAT B18532 HEAT SEQ 1											
SAMPLE	C	MN	P	S	SI	CU	NI	CR	MO	CB	V
1	.17	.72	.007	.032	.19	.40	.10	.08	.02	.000	.000
MECHANICAL TESTS		SAMPLE NUMBER 2	YIELD: 66700.0 PSI, TENSILE: 76190.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN								
		SAMPLE NUMBER 1	YIELD: 51584.0 PSI, TENSILE: 75779.0 PSI %ELONGATION: 30.0 GUAGE LENGTH: 8 IN								

HOPKINS STREET SOUTH  
WHITBY, ON, CAN  
L1N 5T1

**TESTING LABORATORY REPORT**

BILL OF LADING

401149

- PHYSICAL PROPERTIES - METALLURGICAL PROPERTIES - CHEMICAL ANALYSIS

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, THIS REPORT RELATES ONLY TO THE ITEMS TESTED. THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS ASTM E 415 AND/OR ASTM E 1019.

FAX : (905)668-4536

TEL : (905)668-8811

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AMERICAN STEEL & ALUMINUM CORP  
115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA  
04106 1ME  
Attn: CRYSTAL



Q/A Manager.

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE AFOREMENTIONED COMPANY, IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW.

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN CANADA.

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.
ANGLES - STRUCTURAL 3 X 3 X 1/4(20 FT) TEST RESULTS FOR HEAT B20141 HEAT SEQ 1	ASTM: A36 - 97a ASTM A709 - 97b ASME: SA36 (ASTM A36-06)	70065936	M0513330
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .17 .75 .007 .025 .21 .39 .10 .13 .03 .012 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 55931.0 PSI, TENSILE: 77166.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 54210.0 PSI, TENSILE: 76459.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN			
ANGLES - STRUCTURAL 3 X 3 X 3/16(20 FT) TEST RESULTS FOR HEAT B20046 HEAT SEQ 1	ASTM: A36 - 97a, ASTM A709 - 97b ASME: SA36 (ASTM A36-06)	70065939	M0513330
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .16 .69 .006 .037 .18 .40 .10 .10 .02 .013 .000 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 52173.0 PSI, TENSILE: 74117.0 PSI %ELONGATION: 31.2 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 52009.0 PSI, TENSILE: 74316.0 PSI %ELONGATION: 30.0 GUAGE LENGTH: 8 IN			
ANGLES - STRUCTURAL 4 X 4 X 1/2(40 FT) TEST RESULTS FOR HEAT B19303 HEAT SEQ 1	ASTM: A36 - 97a ASTM A709 - 97b ASME: SA36 (ASTM A36-06)	71514301	M0514194
SAMPLE C MN P S SI CU NI CR MO SN CB V 1 .23 .95 .009 .041 .21 .32 .09 .12 .02 .014 .007 .000			
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 53405.0 PSI, TENSILE: 77664.0 PSI %ELONGATION: 23.8 GUAGE LENGTH: 8 IN SAMPLE NUMBER 1 YIELD: 54038.0 PSI, TENSILE: 77842.0 PSI %ELONGATION: 23.1 GUAGE LENGTH: 8 IN			

SHIP BY

AMERICAN STEEL & ALUMINUM CORP,

YOUR P.O. NO. 10366

OUR P.O. NO. 0569483

CUSTOMER me baby



# ROANOKE ELECTRIC STEEL CORPORATION

P.O. BOX 13948 • ROANOKE, VIRGINIA 24038

Test and Inspection Report  
NO. 41413-0  
ROANOKE

AMERICAN STEEL & ALUM SO PRT  
115 WALLACE AVE  
SOUTH PORTLAND ME 4106-0000

Date 10/11/02

HEAT NUMBER	SIZE	1-YIELD Pct. KSI	ULTIMATE KSI	ELONG 8 IN	BEND TEST	GRADE			
JD2S07	ANGLES 9 X 3 X 1/4	48.3	70.9	31.3		ABS-GR A			
PURCHASE ORDER NUMBER PIECES									
2-YIELD PT. KSI		ULTIMATE KSI		ELONG 8 IN		BEND TEST			
-----									
M0514159	477 PIECES 20'	48.2	71.2	32.0		ABS-GR A			
HEAT SIZE									
1-YIELD Pct. MPA		ULTIMATE MPA		ELONG 203mm		BEND TEST			
-----									
JD2S07	ANGLES 76.2 X 76.2 X 6.4	333.0	488.8	31.3		ABS-GR A			
PURCHASE ORDER NUMBER PIECES									
2-YIELD PT. MPA		ULTIMATE MPA		ELONG 203mm		BEND TEST			
-----									
M0514159	477 PIECES 20'	332.3	490.9	32.0		ABS-GR A			
C HR S P SI CR NI MO CU V NB									
.15	.70	.031	.015	.22	.10	.02	.35	.002	.003

SHIP BY  
 10391  
 00-11/78  
 CUST. ORDER # 10391  
 CONTRACTOR # 00-11/78



ALL ASTM A36 MATERIAL PRODUCED TO THE LATEST REVISION.  
 AND NC CLASS 2. 10CFR50 APPENDIX B AND NCA-1 (1989 ED). 10CFR21. AND ANSI 45 2 NO  
 WELD REPAIR HAS BEEN PERFORMED.  
 CHARTER IMPACT TESTING WAIVED IN ACCORDANCE WITH 2/D 5 3  
 AND NC CLASS 2. 10CFR50 APPENDIX B AND NCA-1 (1989 ED). 10CFR21. AND ANSI 45 2 NO

Approved ABS QA Mill. Certificate No. 00NN10108-X.  
 This material was melted and manufactured in the USA by basic Electric Furnace  
 processes to meet specification: ASTM A36-01 ASME SA36 005741D A709-00A GR36  
 ABS-00 GrA

The tensile values stated in either inch-pound units or SI units are to be  
 regarded as separate as defined in the ASTM scope for this material. Unless a  
 metric specification is ordered, this material has been tested and meets the  
 requirements of the inch-pound ranges.

This is to certify the above to be a true and accurate report as contained in  
 the records of this company.

Engineer of Tests: Charles R. Charlton

2944

CERTIFIED TEST REPORT

NUCOR

NUCOR MILL-AUBURN  
NUCOR STEEL AUBURN, INC.

P.O. BOX 2008

AUBURN, NY 13021

CHEMICAL ANALYSIS %

C	.160	.670	.160	.012	.035	.210	.0800	.100	.021	.014	.002	.0020	.0000	.0000	.011	.001
MN	SI	P	S	CU	NI	CR	MO	SN	V	CB	TI	B	N2	O2		

MECHANICAL RESULTS

YIELD	TENSILE	GAUGE	%	BEND	%	K.S.I.	K.S.I.	LENGTH	ELONG	PIN. DIA	R.A.
49.00	71.30	8	28.8	.0	.0	49.00	71.30	8	28.8	.0	.0
49.60	71.30	8	28.8	.0	.0	49.60	71.30	8	28.8	.0	.0
MPa	MPa	GAUGE	%	BEND	%	MPa	MPa	LENGTH	ELONG	PIN. DIA	R.A.

CHARPY IMPACT TEST

TEMP. F	FT./LB.	%SHEAR	LAT. EXP. MILS

I CERTIFY THESE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

JIM BIERNAT, METALLURGIST

STATE OF NEW YORK

COUNTY OF CAYUGA

Jim Biernat

(print)

AFTER BEING DULY SWORN BY ME, I DECLARE THAT THESE RESULTS ARE CORRECT AS CONTAINED IN THE RECORDS OF NUCOR STEEL AUBURN, INC.

*(Signature)*

(Sign)

SUBSCRIBED AND SHOWN BEFORE ME

02 - C 16710

ALL MANUFACTURING PROCESSES FOR THIS STEEL, INCLUDING MELTING FROM SCRAP AND HOT ROLLING HAVE BEEN PERFORMED IN THE U.S.A. NO WELD REPAIR PERFORMED, STEEL NOT EXPOSED TO MERCURY OR ANY LIQUID ALLOY WHICH IS LIQUID AT AMBIENT TEMPERATURES.



*(Handwritten initials)*

EJ/06090  
105000

L.S. \_\_\_\_\_  
THIS CERTIFICATE IS NOTARIZED ONLY WHEN REQUESTED

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

CUSTOMER SPECIAL INSTRUCTIONS:

WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE TO THE APPLICABLE SPECIFICATION BY THE ELECTRIC FURNACE PROCESS (STATE PROCESS) AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF AMERICAN BUREAU OF SHIPPING RULES.

COMPTE RENDU DU LABORATOIRE D'ESSAI

HOPKINS STREET SOUTH  
WHITBY, ON, CAN  
L1N 5T1

- PHYSICAL PROPERTIES      - METALLURGICAL PROPERTIES      - CHEMICAL ANALYSIS
- PROPRIETES PHYSIQUES      - PROPRIETES METALLURGIQUES      - ANALYSE CHIMIQUE

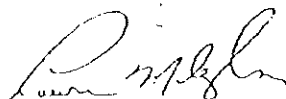
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THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS  
ASTM E 415 AND/OR ASTM E 1019.

FAX: (905)668-4535      TEL: (905)668-3311

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Customer Name Not Available



Q.A. Manager

**GERDAU AMERISTEEL Whitby**

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE ACCREDITED COMPANY IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW

THIS PRODUCT HAS BEEN MIELTED AND MANUFACTURED IN CANADA

MATERIAL TESTED MATERIAU EPROUVÉ	GRADE NGANCE	CONTROL NO. NO. DE CONTROLE	CUSTOMER P.O. NO. NO DE COM DU CLIENT									
ANGLES - STRUCTURAL 4 X 4 X 3/8	ASTM A36 - 97a    ASTM A709 - 97b    ASME SA36 (ASTM A36-96)											
TEST RESULTS FOR HEAT B19388 HEAT SEQ 1												
SAMPLE	C	MI	P	S	SI	CU	NI	CR	MO	SN	CB	V
1	.16	1.01	.006	.020	.21	.36	.09	.08	.02	.012	.000	.000
MECHANICAL TESTS		SAMPLE NUMBER 2		YIELD: 53596.0 PSI, TENSILE: 77607.0 PSI %ELONGATION: 25.2 GUAGE LENGTH: 8 IN								
		SAMPLE NUMBER 1		YIELD: 49627.0 PSI, TENSILE: 77914.0 PSI %ELONGATION: 26.2 GUAGE LENGTH: 8 IN								

CORE

10423

0513707

McBrady

DEC-11-2002 WED 03:27 PM CO-STEEL SALES      FAX NO. 9056653724      P. 01





# ROANOKE ELECTRIC STEEL CORPORATION

P.O. BOX 13940 - ROANOKE, VIRGINIA 24030

Test and Inspection Report  
NO 43982-4  
ROANOKE

AMERICAN STEEL & ALUM SO PRT

115 WALLACE AVE  
SOUTH PORTLAND ME 4106-0000

Date 12/13/02

HEAT NUMBER	SIZE	1-YIELD P2 KSI	ULTIMATE KSI	ELONG 8 IN	BEND TEST	GRADE
JD2708	FLATS 3/8 X 4	50.0	70.7	26.3		ABS-GRA
PURCHASE ORDER NUMBER PIECES						
2-YIELD PT KSI		ULTIMATE KSI		ELONG 8 IN		BEND TEST
-----						
MCS14527	102 PIECES 20'	48.0	69.6	27.5		ABS-GRA
PURCHASE ORDER NUMBER PIECES						
1-YIELD FT. MPA		ULTIMATE MPA		ELONG 200MM		BEND TEST
-----						
JD2708	FLATS 9.5 X 101.6	344.7	487.5	26.3		ABS-GRA
PURCHASE ORDER NUMBER PIECES						
2-YIELD PT MPA		ULTIMATE MPA		ELONG 200MM		BEND TEST
-----						
MCS14527	102 PIECES 20'	331.0	479.9	27.5		ABS-GRA
PURCHASE ORDER NUMBER PIECES						
C	MN S P SI CR NI	NO	CU	V	MB	
15	.74 .021 .010 .24 .09 .11	.03	.33	.003	.003	

SHIP BY

AMERICAN STEEL & ALUM SO PRT

10783  
0513707  
mcbroady

ALL ASTH A36 MATERIAL PRODUCED TO THE LATEST REVISION.

M222 AND M223-50 ASSHTO  
AND NC CLASS 2 10CFR50 APPENDIX B AND HQA-1 (1989 ED) 10CFR501 AND ANSI 45 2 40  
WELD REPAIR HAS BEEN PERFORMED  
CHARPY IMPACT TESTING UNPAID IN ACCORDANCE WITH 270 5 3  
M222 AND M223-50 ASSHTO  
AND NC CLASS 2 10CFR50 APPENDIX B AND HQA-1 (1989 ED) 10CFR501 AND ANSI 45 2 40

Approved ABS QA Mill. Certificate No. 00NH10108-X

This material was melted and manufactured in the USA by Besip Electric Furnace processes to meet specification: ASTM A36-01 ASME SA36 Q057110 A709-03A GR36

**ABS-00 GRA**

The tensile values stated in either inch-pound units or SI units are to be regarded as separate as defined in the ASTM scope for this material unless a metric specification is ordered. This material has been tested and meets the requirements of the inch-pound ranges

This is to certify the above to be a true and accurate report as contained in the records of this company.

Engineer of Tests: Charles R Charlton

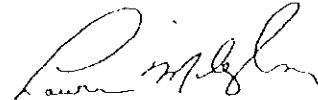
- PHYSICAL PROPERTIES      - METALLURGICAL PROPERTIES      - CHEMICAL ANALYSIS

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THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS  
ASTM E 415 AND/OR ASTM E 1019.

FAX (905)668-4536      TEL: (905)668-8811

PO 10424 / J 1838

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AMERICAN STEEL & ALUMINUM CORP  
115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA  
04106 1ME  
Attn: CRYSTAL



**CO-STEEL**  **LASCO**

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE AFOREMENTIONED COMPANY, IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW

Q/A Manager

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN CANADA

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.
ANGLES - STRUCTURAL 3 X 3 X 3/8 (20 FT)	ASTM: A36 - 97a    ASTM A709- 97b    ASME: SA36 (ASTM A36-96)	70065930	M0513330
TEST RESULTS FOR HEAT B20195 HEAT SEQ 1			
SAMPLE	C    MN    P    S    SI    CU    NI    CR    MO    SN    CB    V		
1	.18   .73   .006   .024   .14   .34   .11   .11   .02   .011   .000   .000		
MECHANICAL TESTS	SAMPLE NUMBER 2    YIELD: 54127.0 PSI, TENSILE: 76203.0 PSI    %ELONGATION: 26.2    GUAGE LENGTH: 8 IN		
	SAMPLE NUMBER 1    YIELD: 52049.0 PSI, TENSILE: 75532.0 PSI    %ELONGATION: 25.0    GUAGE LENGTH: 8 IN		
CHANNEL 8 @ 11.50(40 FT)	ASTM: A36 - 97a    ASTM A709- 97b    ASME: SA36 (ASTM A36-96)	71158205	M0513961
TEST RESULTS FOR HEAT B20159 HEAT SEQ 1			
SAMPLE	C    MN    P    S    SI    CU    NI    CR    MO    SN    CB    V		
1	.14   .70   .009   .022   .18   .42   .13   .14   .03   .014   .000   .019		
MECHANICAL TESTS	SAMPLE NUMBER 2    YIELD: 59409.0 PSI, TENSILE: 77335.0 PSI    %ELONGATION: 22.5    GUAGE LENGTH: 8 IN		
	SAMPLE NUMBER 1    YIELD: 57813.0 PSI, TENSILE: 76725.0 PSI    %ELONGATION: 23.8    GUAGE LENGTH: 8 IN		
CHANNEL 5 @ 6.70(20 FT)	ASTM: A36 - 97a    ASTM A709- 97b    ASME: SA36 (ASTM A36-96)	71178301	M0513980
TEST RESULTS FOR HEAT B20081 HEAT SEQ 1			
SAMPLE	C    MN    P    S    SI    CU    NI    CR    MO    SN    CB    V		
1	.21   .81   .006   .022   .18   .31   .10   .12   .03   .011   .000   .000		
MECHANICAL TESTS	SAMPLE NUMBER 2    YIELD: 55385.0 PSI, TENSILE: 78579.0 PSI    %ELONGATION: 22.5    GUAGE LENGTH: 8 IN		
	SAMPLE NUMBER 1    YIELD: 58832.0 PSI, TENSILE: 77579.0 PSI    %ELONGATION: 24.0    GUAGE LENGTH: 8 IN		
ANGLES - BAR 2 1/2 X 2 1/2 X 3/16 (20 FT)	ASTM: A36 - 97a    ASTM A709- 97b    ASME: SA36 (ASTM A36-96)	71290201	M0514055
TEST RESULTS FOR HEAT B19943 HEAT SEQ 1			
SAMPLE	C    MN    P    S    SI    CU    NI    CR    MO    SN    CB    V		
1	.20   .78   .015   .041   .17   .36   .09   .13   .02   .028   .010   .000		
MECHANICAL TESTS	SAMPLE NUMBER 2    YIELD: 54734.0 PSI, TENSILE: 74722.0 PSI    %ELONGATION: 32.5    GUAGE LENGTH: 8 IN		
	SAMPLE NUMBER 1    YIELD: 54492.0 PSI, TENSILE: 74514.0 PSI    %ELONGATION: 32.5    GUAGE LENGTH: 8 IN		

SHIP BY  
AMERICAN STEEL & ALUMINUM CO.  
YOUR P.O. NO. 10424  
OUT P.O. NO. 0513794  
CUSTOMER *McBrady*

355

75 pcs. = 5100

HEAT# P5326  
DATE SHIPPED 10/09/2002  
SHIPMENT# 0208591  
SIZE: FL 4 X 1/4  
ORDER ITEM# 123312/ 03  
SOLD TO: AMERICAN STEEL and ALUM

CERTIFIED TEST REPORT

**NUCOR**

BAR HILL - AUBURN  
NUCOR STEEL AUBURN, INC.

P.O. BOX 2008

AUBURN, NY 13021

CUST. P.O. M0514007

PART #:

GRADE : ABS GR A ASTM A36-00A

SPEC MILS22698C AMD#1&2 A CL-U

SUPP. REQ:

SHIP TO: AMERICAN STEEL - BIW

FAX # 2077720359

CHEMICAL ANALYSIS %

C	MN	SI	P	S	CU	NI	CR	MO	SN	V	CB	TI	B	N2	O2
.140	.580	.170	.011	.030	.280	.0900	.130	.030	.012	.002	.0010	.0017	.0002	XXX	.001

MECHANICAL RESULTS

YIELD	TENSILE	GAUGE	%	BEND	%
K.S.I.	K.S.I.	LENGTH	ELONG	PIN. DIA	R.A.
50.90	68.80	8	28.8	.0	.0
50.00	68.80	8	30.0	.0	.0
MPa	MPa	GAUGE	%	BEND	
		LENGTH	ELONG	PIN. DIA	R.A.

CHARPY IMPACT TEST

TEMP. F	FT./LB.	%SHEAR	LAT.EXP.MILS

I CERTIFY THESE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.

JIM BIERNAT, METALLURGIST  
STATE OF NEW YORK SS.  
COUNTY OF CAYUGA

Jim Biernat

(print)

AFTER BEING DULY SWORN BY ME, DECLARES THAT: THESE RESULTS ARE CORRECT AS CONTAINED IN THE RECORDS OF NUCOR STEEL AUBURN, INC

*Jim A. Biernat*  
(sign)

SUBSCRIBED AND SHOWN BEFORE ME

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

L.S. \_\_\_\_\_

THIS CERTIFICATE IS NOTARIZED ONLY WHEN REQUESTED

EJ/06078  
105000

Grain Size: XXX    Reduction Ratio: XXX    As Rolled Hardness: XXX    D.I.: XXX    C.E.: XXX    C.I.: XXX

JOMINY END-QUENCH HARDENABILITY RESULTS (HRC)

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32

ALL MANUFACTURING PROCESSES FOR THIS STEEL, INCLUDING MELTING FROM SCRAP AND HOT ROLLING HAVE BEEN PERFORMED IN THE U.S.A. NO WELD REPAIR PERFORMED, STEEL NOT EXPOSED TO MERCURY OR ANY LIQUID ALLOY WHICH IS LIQUID AT AMBIENT TEMPERATURES. 0309780

CUSTOMER SPECIAL INSTRUCTIONS:

05/3/04  
M-B



*J. Gallagher*



# ROANOKE ELECTRIC STEEL CORPORATION

P.O. BOX 13948

ROANOKE, VIRGINIA 24038-3948

PO 104 6  
J - 1830

## Test and Inspection Report

NO. 41486-0

ROANOKE

AMERICAN STEEL & ALUM SO PRT

115 WALLACE AVE  
SOUTH PORTLAND ME 4106-0000

Date 10/14/02

HEAT NUMBER	SIZE	1-YIELD PT. KSI	ULTIMATE KSI	ELONG 8 IN.	BEND TEST	GRADE					
JD2549	ANGLES 3 X 2 X 3/16	44.5	63.8	33.1		ABS-GRA					
PURCHASE ORDER NUMBER											
M0514072	83 PIECES 20'	46.6	66.3	31.9		ABS-GRA					
HEAT NUMBER	SIZE	1-YIELD PT. MPA	ULTIMATE MPA	ELONG 203mm	BEND TEST	GRADE					
JD2549	ANGLES 76.2 X 50.8 X 4.8	306.8	439.9	33.1		ABS-GRA					
PURCHASE ORDER NUMBER											
M0514072	83 PIECES 20'	321.3	457.2	31.9		ABS-GRA					
C	MN S P SI CR NI MO CU V NB	.75	.025	.007	.20	.07	.09	.03	.23	.002	.002

SHIP BY

AMERICAN STEEL & ALUMINUM CORP.

YONGE ST. ROANOKE, VA 24012

CO. TEL: 540-785-3097

FAX: 540-785-3097

ALL ASTM A36 MATERIAL PRODUCED TO THE LATEST REVISION.

M222 AND M223-50 ASSHTO AND NC CLASS 2. 10CFR50 APPENDIX B AND NQA-1 (1989 ED). TO PERFORM AND ANSI 45.2. NO WELD REPAIR HAS BEEN PERFORMED. CHAFFY IMPACT TESTING WAIVED IN ACCORDANCE WITH 2/D.5.1. M222 AND M223-50 ASSHTO AND NC CLASS 2. 10CFR50 APPENDIX B AND NQA-1 (1989 ED). TO PERFORM AND ANSI 45.2. NO

Approved ABS QA Mill. Certificate No. 00NN10108-X.

This material was melted and manufactured in the USA by basic Electric Furnace processes to meet specification: ASTM A36-01 ASME SA36 Q00010 A709-00A GR36

The tensile values stated in either inch-pound units or SI units are to be regarded as separate as defined in the ASTM scope for this material. Unless a metric specification is ordered, this material has been tested and meets the requirements of the inch-pound ranges.

This is to certify the above to be a true and accurate report as contained in the records of this company.

Engineer of Tests: Charles R. Charlton

J. 1033  
P. 16477

**AMERICAN**

STEEL AND ALUMINIUM CORPORATION

115 Wallace Ave. - South Portland, Maine 04106 (207)772-4641 FAX (207)772-0359

1/3/2002

**Certificate of Compliance**

Your Purchase Order# 10422

Our Work Order# 0513349

Hr Sq Tube 3 x 3/16 x 24' EWST

I certify that the material and process employed, to the best of my knowledge, comply with all requirements of your order, including relevant specifications and standards.

American Steel & Aluminum



Q.A. Manager

30 pcs. = 4920

HEAT # P5224  
 DATE SHIPPED 11/07/2002  
 SHIPMENT # 0210071  
 SIZE: AN 4 X 4 X 10  
 ORDER ITEM# 125050/01  
 SOLD TO: AMERICAN STEEL and ALUM -

**CERTIFIED TEST REPORT**

**NUCOR**

BAR MILL-AUBURN  
 NUCOR STEEL AUBURN, INC.

P.O. BOX 2008  
 AUBURN, NY 13021

CUST. P.O. M0514284  
 PART #:  
 GRADE : ASTM A36-00A/A709 GR.36  
 SPEC : CSA G40 .21-98 44W  
 SUPP. REQ:  
 SHIP TO: AMERICAN STEEL - P  
 FAX # 2077720359

C	MN	SI	P	S	CU	NI	CR	MO	SN	V	CB	TI	B	N2	O2
.170	.670	.190	.008	.046	.260	.0700	.100	.029	.011	.003	.0020	.0017	.0002	XXX	.001

**CHEMICAL ANALYSIS %**

YIELD	TENSILE	GAUGE	%	BEND	R.A.
49.40	70.70	8	30.0	.0	.0
49.90	70.50	8	33.8	.0	.0
K.S.I.	K.S.I.	LENGTH	ELONG	PIN. DIA	R.A.
MPa	MPa	GAUGE	%	BEND	R.A.
LENGTH	ELONG	PIN. DIA	R.A.		

**MECHANICAL RESULTS**

TEMP. F	FT./LB.	%SHEAR	LAT.EXP.MILS

**CHARPY IMPACT TEST**

!CERTIFY THESE RESULTS TO BE  
 CORRECT AS CONTAINED IN THE  
 RECORDS OF THE COMPANY.

JIM BIERNAT, METALLURGIST  
 STATE OF NEW YORK  
 COUNTY OF CAYUGA

Jim Biernat

(print)

AFTER BEING DULY SWORN BY ME,  
 DECLARES THAT: THESE RESULTS  
 ARE CORRECT AS CONTAINED IN THE  
 RECORDS OF NUCOR STEEL AUBURN, INC

*Jim Biernat*

(Sign)

SUBSCRIBED AND SHOWN BEFORE ME

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32

**JOMINY END-QUENCH HARDENABILITY RESULTS (HRC)**

Grain Size	Reduction Ratio	As Rolled Hardness	D.I.	C.E.	C.I.
xxx	xxx	xxx	xxx	xxx	.xxx

ALL MANUFACTURING PROCESSES FOR THIS STEEL, INCLUDING MELTING FROM SCRAP AND HOT  
 ROLLING HAVE BEEN PERFORMED IN THE U.S.A. NO WELD REPAIR PERFORMED, STEEL NOT  
 EXPOSED TO MERCURY OR ANY LIQUID ALLOY WHICH IS LIQUID AT AMBIENT TEMPERATURES.

**CUSTOMER SPECIAL INSTRUCTIONS:**

SHIP BY

NUCOR CORP.

10422  
 0513349

CF/01553  
 105000

THIS CERTIFICATE IS NOTARIZED ONLY  
 WHEN REQUESTED

L.S.

THIS DAY OF

**AMERICAN**

STEEL AND ALUMINIUM CORPORATION

115 Wallace Ave. - South Portland, Maine 04106 (207)772-4641 FAX (207)772-1359

1/3/2002

Certificate of Compliance

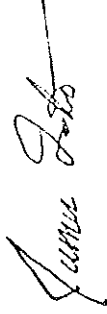
Your Purchase Order# 10422

Our Work Order# 0513349

Hr Angle 5 x 5 x 3/8 x 20' A36

I certify that the material and process employed, to the best of my knowledge, comply with all requirements of your order, including relevant specifications and standards.

American Steel & Aluminum



Q.A. Manager

2844

486 pcs. = 30996

HEAT# N6497

DATE SHIPPED 2/07/2002

SHIPMENT# 0196426

SIZE: AN 2 X 2 X 1/4

ORDER ITEM# 114025/03

SOLD TO: AMERICAN STEEL and ALUM -

CERTIFIED TEST REPORT

NUCOR

BAR MILL-AUBURN

NUCOR STEEL AUBURN, INC.

P.O. BOX 2008

AUBURN, NY 13021

CUST. P.O. M0512324

PART #:

GRADE : ABS GR A ASTM A36-00A

SPEC MILS22698C AMD#1&2 A CL-U

SUPP. REQ:

SHIP TO: AMERICAN STEEL - P

FAX # 2077720359

CHEMICAL ANALYSIS %

C	MN	SI	P	S	CU	NI	CR	MO	SN	V	CB	TI	B	N2	O2
.160	.670	.160	.012	.035	.210	.0800	.100	.021	.014	.002	.0020	.0000	.0000	.011	.001

MECHANICAL RESULTS

YIELD	TENSILE	GAUGE	%	BEND	R.A.
K.S.L.	K.S.L.	LENGTH	ELONG	PN. DIA	R.A.
49.00	71.30	8	28.8	.0	.0
48.60	71.30	8	28.8	.0	.0
MPa	MPa	GAUGE	%	BEND	R.A.
LENGTH	ELONG	PN. DIA	R.A.		

CHARPY IMPACT TEST

TEMP. F	FT./LB.	%SHEAR	LAT.EXP.MILS
		ST.P BY	

AMERICAN STEEL & ALUMINUM CORP

10426

05-14056

CUSTOMER

M. Brady

Grain Size

XXX

Reduction Ratio

XXX

As Rolled Hardness

XXX

D.I.

XXX

C.E.

JOMINY END-QUENCH HARDENABILITY RESULTS (HRC)

J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
----	----	----	----	----	----	----	----	----	-----	-----	-----

J13	J14	J15	J16	J18	J20	J22	J24	J26	J28	J30	J32
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

ALL MANUFACTURING PROCESSES FOR THIS STEEL, INCLUDING MELTING FROM SCRAP AND HOT ROLLING HAVE BEEN PERFORMED IN THE U.S.A. NO WELD REPAIR PERFORMED, STEEL NOT EXPOSED TO MERCURY OR ANY LIQUID ALLOY WHICH IS LIQUID AT AMBIENT TEMPERATURES.



*Handwritten signature*

CUSTOMER SPECIAL INSTRUCTIONS: WE HEREBY CERTIFY THAT THE MATERIAL DESCRIBED HEREIN HAS BEEN MADE TO THE APPLICABLE SPECIFICATION BY THE ELECTRIC FURNACE PROCESS (STATE PROCESS) AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF AMERICAN BUREAU OF SHIPPING RULES.

02 - C16710

THIS DAY OF \_\_\_\_\_

L.S.

THIS CERTIFICATE IS NOTARIZED ON \_\_\_\_\_

WHEN REQUESTED

EJ/06090  
105000

SUBSCRIBED AND SHOWN BEFORE ME \_\_\_\_\_

(Sign)

*Handwritten signature*

AFTER BEING DULY SWORN BY ME, I DECLARE THAT THESE RESULTS ARE CORRECT AS CONTAINED IN THE RECORDS OF NUCOR STEEL AUBURN, INC.

(print)

Jim Biernat

COUNTY OF CAYUGA

STATE OF NEW YORK  
JIM BIERNAT, METALLURGIST

I CERTIFY THESE RESULTS TO BE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY.



AMERICAN STEEL & ALUMINUM CORP  
115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA  
04106 1ME  
Attn:CRYSTAL

*[Signature]*  
Q/A Manager

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE RECORDS PREPARED AND MAINTAINED BY THE AFORESAID COMPANY, IN COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW.

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN CANADA.

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.
-----------------	-------	-------------	---------------

FLATS 7 X 1/2(20 FT)  
ASTM A36 ASME SA-36, A572 T2 GR50, CSA G40.21 44W, CSA G40.21 50W, ASTM A528 G  
69437101 69437101 M0512992

TEST RESULTS FOR HEAT B18522 HEAT SEQ 1  
SAMPLE C MN P S SI CU NI CR MO V  
1 1.6906 .71316 .01347 .02072 .16436 .38552 .09900 .34961 .01536 .02326  
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 54601.0 PSI, TENSILE: 76101.0 PSI %ELONGATION: 23.8 GUAGE LENGTH: 8 IN  
SAMPLE NUMBER 1 YIELD: 54438.0 PSI, TENSILE: 78038.0 PSI %ELONGATION: 23.8 GUAGE LENGTH: 8 IN  
FLATS 4 X 1/2(20 FT)

TEST RESULTS FOR HEAT B17621 HEAT SEQ 1  
SAMPLE C MN P S SI CU NI CR MO V  
1 1.4612 .88746 .00574 .02733 .18069 .40540 .20906 .07349 .03893 .00000  
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 50151.0 PSI, TENSILE: 73592.0 PSI %ELONGATION: 28.8 GUAGE LENGTH: 8 IN  
SAMPLE NUMBER 1 YIELD: 50908.0 PSI, TENSILE: 73029.0 PSI %ELONGATION: 28.8 GUAGE LENGTH: 8 IN  
ANGLES - STRUCTURAL 3 X 3 X 3/8(20 FT)  
ASTM A36 - 97A ASTM A709 - 97B ASME SA36 (ASTM A36-96)  
70065914 M0513329

TEST RESULTS FOR HEAT B18069 HEAT SEQ 1  
SAMPLE C MN P S SI CU NI CR MO V  
1 1.8658 .76884 .00263 .01641 .17774 .24594 .08284 .06612 .02501 .00000 .00000  
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 51792.0 PSI, TENSILE: 76488.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN  
SAMPLE NUMBER 1 YIELD: 52619.0 PSI, TENSILE: 76394.0 PSI %ELONGATION: 26.2 GUAGE LENGTH: 8 IN  
ANGLES - STRUCTURAL 4 X 3 X 3/8(20 FT)  
ASTM A36 - 97A ASTM A709 - 97B ASME SA36 (ASTM A36-96)  
70363506 M0513512

TEST RESULTS FOR HEAT B17516 HEAT SEQ 1  
SAMPLE C MN P S SI CU NI CR MO V  
1 1.7625 .71511 .00442 .02635 .17972 .31868 .14116 .07987 .04265 .00000 .00000  
MECHANICAL TESTS SAMPLE NUMBER 2 YIELD: 50521.0 PSI, TENSILE: 74777.0 PSI %ELONGATION: 25.0 GUAGE LENGTH: 8 IN  
SAMPLE NUMBER 1 YIELD: 48667.0 PSI, TENSILE: 73595.0 PSI %ELONGATION: 23.8 GUAGE LENGTH: 8 IN

TESTING LABORATORY REPORT

PHYSICAL PROPERTIES METALLURGICAL PROPERTIES CHEMICAL ANALYSIS

379502

BILL OF LADING

**TESTING LABORATORY REPORT**

BILL OF LADING

379502

- PHYSICAL PROPERTIES - METALLURGICAL PROPERTIES - CHEMICAL ANALYSIS

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, THIS REPORT RELATES ONLY TO THE ITEMS TESTED.  
THE CHEMISTRY ANALYSIS WAS DETERMINED IN ACCORDANCE WITH TEST METHODS  
ASTM E 415 AND/OR ASTM E 1019.

CERTIFIES THAT THE RESULTS BELOW ARE A TRUE AND CORRECT COPY OF THE  
RECORDS PREPARED AND MAINTAINED BY THE REFERENCED COMPANY, IN  
COMPLIANCE WITH THE REQUIREMENTS OF THE SPECIFICATIONS CITED BELOW.

**CO-STEEL LASCO**

*[Signature]*  
Q/A Manager

THIS PRODUCT HAS BEEN MELTED AND MANUFACTURED IN CANADA

AMERICAN STEEL & ALUMINUM CORP

115 WALLACE AVE.  
SOUTH PORTLAND, ME, USA

04106 1ME  
Attn:CRYSTAL

S  
H  
I  
P  
I  
T  
O

MATERIAL TESTED	GRADE	CONTROL NO.	CUSTOMER P.O.
ANGLES - STRUCTURAL 4 X 3 X 1/2(20 FT)	ASTM: A36 - 97a ASTM A709- 97b ASME: SA36 (ASTM A36-96)	70369507	M0513512
CHANNEL B @ 14.50(20 FT)	ASTM: A36 - 97a ASTM A709- 97b ASME: SA36 (ASTM A36-96)	70464401	M0513264

TEST RESULTS FOR HEAT B17513 HEAT SEQ 1

ASTM: A36 - 97a ASTM A709- 97b ASME: SA36 (ASTM A36-96)

SAMPLE C MN P S SI CU NI CR MO CB V  
YIELD: 48644.0 PSI, TENSILE: 75590.0 PSI %ELONGATION: 21.2 GUAGE LENGTH: 8 IN  
YIELD: 47730.0 PSI, TENSILE: 74620.0 PSI %ELONGATION: 21.2 GUAGE LENGTH: 8 IN  
MECHANICAL TESTS SAMPLE NUMBER 2  
SAMPLE C MN P S SI CU NI CR MO CB V  
YIELD: 17883 .75309 .00474 .01986 .16341 .35556 .11093 .09125 .02984 .00000 .00000  
YIELD: 56309.0 PSI, TENSILE: 77566.0 PSI %ELONGATION: 26.2 GUAGE LENGTH: 8 IN  
YIELD: 54719.0 PSI, TENSILE: 75677.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN  
MECHANICAL TESTS SAMPLE NUMBER 1

TEST RESULTS FOR HEAT B18130 HEAT SEQ 1

ASTM: A36 - 97a ASTM A709- 97b ASME: SA36 (ASTM A36-96)

SAMPLE C MN P S SI CU NI CR MO CB V  
YIELD: 14937 .68920 .00547 .02673 .24680 .35830 .12581 .06580 .03243 .00000 .01814  
YIELD: 56309.0 PSI, TENSILE: 77566.0 PSI %ELONGATION: 26.2 GUAGE LENGTH: 8 IN  
YIELD: 54719.0 PSI, TENSILE: 75677.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN  
MECHANICAL TESTS SAMPLE NUMBER 2  
SAMPLE C MN P S SI CU NI CR MO CB V  
YIELD: 14937 .68920 .00547 .02673 .24680 .35830 .12581 .06580 .03243 .00000 .01814  
YIELD: 56309.0 PSI, TENSILE: 77566.0 PSI %ELONGATION: 26.2 GUAGE LENGTH: 8 IN  
YIELD: 54719.0 PSI, TENSILE: 75677.0 PSI %ELONGATION: 27.5 GUAGE LENGTH: 8 IN  
MECHANICAL TESTS SAMPLE NUMBER 1

**AMERICAN**

STEEL AND ALUMINUM CORPORATION

115 Wallace Ave. ~ South Portland, Maine 04106 (207)772-4641 FAX (207)772-0359

1/9/2003

Certificate of Compliance

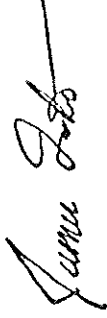
Your Purchase Order# 10426

Our Work Order# 0514050

Hr Sq Tube 3 x 3/16x 24' EWST

I certify that the material and process employed, to the best of my knowledge, comply with all requirements of your order, including relevant specifications and standards.

American Steel & Aluminum



Q.A. Manager

The Lincoln Electric Company  
2801 St. Clair Avenue  
Cleveland, Ohio 44117-1199

**CERTIFICATE OF PERFORMANCE**  
*(APPLIES ONLY TO U.S. PRODUCTS)*  
SUPPLIED TO:  
Order No.:  
Production Code No.:  
Size:



Product: Outershield<sup>2</sup> MC-710XL  
Classification: E70C-6M (\*)  
Specification: AWS A5.18-93 ASME SFA-5-18  
Date completed: March 14, 2001

[ 1 Year ]

It is to certify that the material furnished 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 conducted 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, NCA 9400, ASME, AWS, ABS, and other specification and Military requirements, as applicable. The Quality System Program has been approved by ASME, ABS, and MIL-STD-161.

Parameter	Required	Information Only	Required	Information Only
Electrode Diameter	.045	.045	.045	.045
Wire Feed Speed (in/min)	350	350	374	374
Current (amps) DC-	230	230	19/9	19/9
Voltage (volts)	30	28	70	70
Shielding Gas	75%AR/25%CO2	90%AR/10%CO2	325	325

Mechanical Properties of the weld deposit (in the as-welded condition) and Chemical Analyses of the weld deposit were as follows:

	AWS/ASME REQUIREMENTS	REQUIRED 045 75%AR/25%CO2	Information Only 045 90%AR/10%CO2
Tensile Strength	70,000 min	79,800	86,500
Yield Strength	58,000 min	68,500	75,700
Elongation, % in 2"	22 min.	31	28
Hardness, Rockwell B (avg)	Not Required	86	91
Impact Properties (Charpy V-notch), ft-lbs. @ -20 °F	20 min.	91 (86, 88, 100)	71 (64, 74, 76)

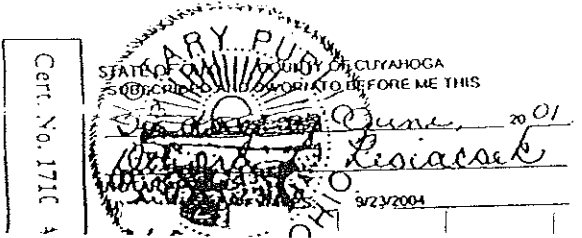
(%)	AWS/ASME REQUIREMENTS	REQUIRED 045 75%AR/25%CO2	Information Only 045 90%AR/10%CO2
C	.12 max.	.06	.06
Mn	1.75 max.	1.36	1.57
Si	.90 max.	.53	.58
S	.03 max.	.018	.018
P	.03 max.	.009	.010
Cu (total)	.50 max.	.01	.01
Diffusible Hydrogen (1) (AWS A4.3-93): ml/100 g	Requirement	.045 75%AR/25%CO2	.045 90%AR/10%CO2
	Not Required	4.8	5.3

RADIOGRAPHIC TEST: Met requirements. **FILLET WELD TEST:** Met requirements.  
(\*) Also meets the requirements of E70C-G when tested with 90%AR / 10%CO2.

The strength and elongation properties were obtained from a .505" tensile specimen artificially aged at 220°F (104°C) for 48 hours, as permitted by AWS A5.18-93. A naturally aged tensile specimen may take months to achieve the specified properties. See AWS A5.18-93 paragraph A8.3. The time required for the natural aging of weld deposits is dependent upon ambient conditions, weldment geometry, the metallurgical structure of the weld deposit and other factors.

(1) Test atmospheric condition of 22% Relative Humidity at 73 °F.  
Total of 24 grams of moisture per pound of dry air

The electrode diameter required to be tested for this classification is either .045" or 1/16". The .051" and 1/16" sizes will also meet these requirements.



*Donald L. Bill*  
DONALD L. BILL, CERTIFICATION SUPERVISOR  
*David A. Firk*  
DAVID A. FIRK, MANAGER, MATURE PRODUCTS  
CONSULTANT R & D. DEPT.

Lincoln Electric Company  
 5700 Clear Avenue  
 Cleveland, Ohio 44117-1119

**CERTIFICATE OF CONFORMANCE**  
 (APPLIES ONLY TO U.S. PRODUCTS)  
 SUPPLIED TO:  
 Order No.:  
 Production Code No.:  
 Size:



JUN. 5. 2001 11:05AM

LINCOLN ELECTRIC WELD TECH

NO. 585 P. 2/2

Collection # MC-710XI  
 I.I.X. 6M (\*)  
 AWS AS 18.93, ASME SFA-5.18  
 March 14, 2001

(1 Year)

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 test that was conducted 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, NCA3100, AWS A5.18, AS 18.93, and other applicable and Military requirements, as applicable. The Quality System Program has been approved by ASME, ABS, and VOTUV.

Welding Settings	Required	Information Only	Required	Information Only
Shielding Gas	045°	045°	045°	045°
Welding Speed (in/min)	360	360	316	314
Current (amps) DC+	245	230	190	190
Voltage (volts)	30	28	70	70
Shielding Gas	75%AR/25%CO2	90%AR/10%CO2	Interpass Temp. (°F)	325

Mechanical Properties of the weld deposit (in the as-welded condition) and Chemical Analyses of the weld deposit were as follows:

	AWS ASME REQUIREMENTS	REQUIRED 045 75%AR/25%CO2	Information Only 045 90%AR/10%CO2
Min Strength	70,000 min.	75,000	68,500
Elongation, % in 2"	58,000 min	68,500	75,700
Reduction, % in 2"	22 min	31	20
Rockwell B (2mm)	Not Required	85	91
Impact Properties Charpy V-notch at -20 °F	20 min.	51 (86, 83, 100)	71 (64, 74, 76)

(%)	AWS ASME REQUIREMENTS	REQUIRED 045 75%AR/25%CO2	Information Only 045 90%AR/10%CO2
C	.12 max	.06	.06
Mn	1.75 max	1.75	1.57
Si	.90 max	.53	.58
S	.03 max	.018	.018
P	.03 max	.018	.030
Cu (total)	.50 max	.01	.01
Diffusible Hydrogen (1) (AWS A5.18.93) ml/100 g	Requirement	045 75%AR/25%CO2	045 90%AR/10%CO2
	Not Required	4.8	5.3

MECHANICAL TEST: Met requirements. FRACTURE TEST: Met requirements. Also meets the requirements of EPOC-G when tested with 90%AR/10%CO2.

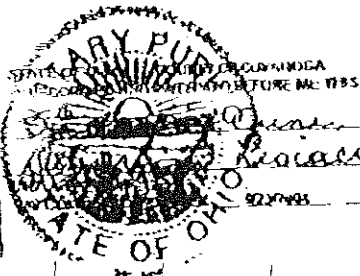
Strength and elongation properties were obtained from a .505" tensile specimen with a gage length of 2.00" and a diameter of .075" and a hardness of 220HV. A naturally aged tensile specimen may take months to achieve the required properties. See AWS AS 18.93 paragraph A3.3. The time required for the natural aging of weld deposits is dependent upon ambient conditions, weld size and geometry, the metallurgical structure of the weld deposit and other factors.

(1) Test atmospheric condition of 22% Relative Humidity at 73 °F. Total of 24 grams of moisture per pound of dry air.

Electrode diameter required to be tested on this electrode holder is 1/8" or 1/4". The 1/8" and 1/4" sizes will also meet the requirements.

*Donald L. Bill*  
 DONALD L. BILL, DISTRIBUTION SUPERVISOR

*David Erik*  
 DAVID ERIK, MANAGER, FUTURE PRODUCTS  
 CONSUMER HEAD OFFICE



Co. No. 171034



# HOBART

## Fabshield 21B

NWSA 633-4

INDEX 850115

REPLACES 872800

### AWS E71T-11      General Purpose Multi Pass Wire for Ease of Operation in all Positions

#### DESCRIPTION:

Fabshield 21B is an easy to use, general purpose self shielded tubular wire (AWS E71T-11). It offers a wide range of diameters to choose from (.045 thru 3/32) along with a smooth spray arc transfer and low spatter levels. These features make this a versatile wire for many different applications while still maintaining excellent operator appeal. Fabshield 21B can be used in all positions — flat, horizontal, vertical down, and overhead. The smaller diameters .045, 1/16 and .068 are recommended for vertical up welding.

#### APPLICATIONS:

Fabshield 21B is suitable for single or multipass applications. It is especially suited for fillet and lap welds of thin gauge mild or galvanized steel. Typical applications include fabrication of machinery parts, tanks, prefab construction, light structurals and other similar welded parts. Other applications include short assembly welds, railroad car repairs, and other general fabrication.

#### FEATURES AND BENEFITS:

- Excellent operator appeal
- X-ray quality welds
- Very low spatter levels
- Excellent bead appearance
- Easy slag removal
- .045 for thin gauge sheet metal and galvanized applications
- Self shielded — no shielding gas required
- Versatile — many applications with one wire

#### SHIELDING GAS:

None Required

#### TYPICAL\* WELD METAL ANALYSIS: (ChemPad)

Carbon .....	.27
Manganese .....	.32
Silicon .....	.35
Phosphorus .....	.016
Sulphur .....	.006
Aluminum .....	.99

#### TYPICAL\* MECHANICAL PROPERTIES: (A.W.)

Tensile Strength .....	93,100
Yield Strength .....	66,200
Elongation % in 2" .....	23.5%

#### TYPICAL\* CHARPY V-NOTCH IMPACT VALUES: (A.W.)

Not Applicable

#### CONFORMANCES AND APPROVALS:

AWS A5.20-79, Class E71T-11  
ASME SFA 5.20  
ABS E71T-11 Cert. #81-C26193-X  
U.S. Coast Guard

\*The typical weld metal properties are those obtained when welded and tested in accordance with AWS specification A5.20-79. Other tests and other procedures may produce different results.

Because Hobart Brothers Company is constantly improving products, Hobart reserves the right to change specifications without notice.

## HOBART Arc Welding Systems

HOBART BROTHERS COMPANY  
TROY, OHIO 45061 U.S.A.

End of Report