

The purpose of this form is to verify the presence of the appropriate quality assurance records for hardware shipments being installed at SLAC. This form is required to be completed by ANL LCLS project personnel prior to authorizing shipments to SLAC.

System or Component Name: LCLS Fixed Support Assembly Date: March 27, 2008

Part/Drawing Number: L143-143080-200000 Serial Numbers: 2

Supplier Name: Hi-Tech Manufacturing Inc PO Number: 7A-08189

Responsible LCLS Technical Lead: M. White Responsible Engineer(s): E. Trakhtenberg

No.	Record Name	Document number	Origin	Comments	✓ Present?
1.	ANL Component Acceptance Record	LCLS	ANL	ANL Acceptance record of ANL acceptance date and applicable drawing revisions.	Present
2.	Dynamic CAM test results		ANL		Present
3.	Certificates of Conformance for Vibratory Stress Relief	NA	American Grinding	L1430802-200030, L1430802-200021, L1430802-200011	Present
4.	Certificates of Inspection	NA	Hi-Tech	L1430401-100101, L1430401-100201, L1430401-100103, L1430401-100303,	Present
5.	Certificates of Inspection	NA	Hi-Tech	Undulator Girder	Present
6.	Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings	L143-00093	Hi-Tech	Interface Plate (Double CAM)	Present
7.	Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings	L143-00093	Hi-Tech	Interface Plate (Single CAM)	Present
8.	Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings	L143-00093	Hi-Tech	Support Girder (L1430401-10040)	Present
9.	Weld Certification	NA	<del>Hi-Tech</del> <u>M/A/OK</u>	Undulator Support Girder	Present
10.	Inspection Planning & Report Form	NA	Metalex	Support Girder	Present
11.	Certificate of compliance – Stress Test	NA	Cincinnati Steel Treating Co.	Support Girder	Present
12.	Certificate of Conformance	NA	Metalex	Support Girder	Present
13.	Calibration Certificate – CMM metric & inches	TG13480 & TG13482	American Calibration Inc.	Unit is in working condition	Present in SM #1 QA
14.	Various MSDS for Paint & Oil and Concrete Epoxy Grease	NA	NA	MSDS for chemicals used.	Present in SM #1 QA
15.	Welding Operator Qualification Test Record	NA	Bodycote Tausig Inc.	Welders qualifications	Present in SM #1 QA
16.	Certificates of Conformance for Support Girder raw materials	NA	Metalex	Precision Steel Services Inc., Frederick Steel Co., CMC Steel	Present in SM #1 QA
17.	Certificate of Compliance /Statement of Quality	NA	The Sherwin-Williams Co.		Present
18.	Visual Weld Inspection Report	NA	Metalex	Girder Support	Present
19.	Visual Weld Inspection Report	NA	HiTech	Girder Support	Present
20.	Gearhead Inspection Report		GAM	In Folder	Present

No.	Record Name	Document number	Origin	Comments	Present? Present in SM #1 QA
21.	Certification of Single Axis Table		Lintech		Present
22.	Certificate of Conformance for CAM Motors		Animatics	Motors - In Folder	Present
23.	Shipping Crate Design Approval Record	NA	Hi-Tech		Present
24.	Misc. Photographs	NA	Hi-Tech		

**Optional notes or Comments:**

The Mill Certificates for the steel dimensions, chemical composition, and tensile properties are present for Girder serial number 1 only because the material for all of the girder assemblies was purchased at one time.

Signature of person that completed this table of contents: John F. Schreck Date: March 27, 2008

Concurrence signatures of this table of contents contents:

Responsible ANL LCLS Engineer: [Signature] Date: 03/27/08

Responsible ANL QA Coordinator: [Signature] Date: 3/31/08

Responsible ANL LCLS Technical Lead: [Signature] Date: 3/24/08

ANL LCLS Project Manager: [Signature] Date: 3/31/08

Distribute this completed form to: ANL Records package. ANL LCLS QA. ANL LCLS Technical Lead

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

02-1

TIME OF TEST: 8/28/2007 10:32:30 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 2198.42  
ROTARY POT GAIN = 344.06  
POT OFFSET (DEG) = 60.53  
DEVIATION RMS (MICRONS) = 12.79  
DEVIATION MAX (MICRONS) = 33.30  
DEVIATION MIN (MICRONS) = -26.07

POS#1 BWD

CAM ECCEN R (MICRONS) = 2201.38  
ROTARY POT GAIN = 344.06  
POT OFFSET (DEG) = 60.53  
DEVIATION RMS (MICRONS) = 10.93  
DEVIATION MAX (MICRONS) = 31.90  
DEVIATION MIN (MICRONS) = -22.03

POS#2 FWD

CAM ECCEN R (MICRONS) = 2197.93  
ROTARY POT GAIN = 344.06  
POT OFFSET (DEG) = 60.53  
DEVIATION RMS (MICRONS) = 10.96  
DEVIATION MAX (MICRONS) = 28.17  
DEVIATION MIN (MICRONS) = -21.92

POS#2 BWD

CAM ECCEN R (MICRONS) = 2200.13  
ROTARY POT GAIN = 344.06  
POT OFFSET (DEG) = 60.53  
DEVIATION RMS (MICRONS) = 9.56  
DEVIATION MAX (MICRONS) = 25.84  
DEVIATION MIN (MICRONS) = -19.67

POS#3 FWD

CAM ECCEN R (MICRONS) = 2199.06  
ROTARY POT GAIN = 344.06  
POT OFFSET (DEG) = 60.53  
DEVIATION RMS (MICRONS) = 10.69  
DEVIATION MAX (MICRONS) = 27.54  
DEVIATION MIN (MICRONS) = -22.64

POS#3 BWD

CAM ECCEN R (MICRONS) = 2201.24  
ROTARY POT GAIN = 344.06  
POT OFFSET (DEG) = 60.53  
DEVIATION RMS (MICRONS) = 9.17  
DEVIATION MAX (MICRONS) = 24.79  
DEVIATION MIN (MICRONS) = -20.36

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

02-2

TIME OF TEST: 8/28/2007 10:15:54 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1551.30

ROTARY POT GAIN = 344.08

POT OFFSET (DEG) = 59.91

DEVIATION RMS (MICRONS) = 14.01

DEVIATION MAX (MICRONS) = 27.55

DEVIATION MIN (MICRONS) = -38.04

POS#1 BWD

CAM ECCEN R (MICRONS) = 1552.03

ROTARY POT GAIN = 344.08

POT OFFSET (DEG) = 59.91

DEVIATION RMS (MICRONS) = 13.45

DEVIATION MAX (MICRONS) = 33.31

DEVIATION MIN (MICRONS) = -31.87

POS#2 FWD

CAM ECCEN R (MICRONS) = 1550.65

ROTARY POT GAIN = 344.08

POT OFFSET (DEG) = 59.91

DEVIATION RMS (MICRONS) = 14.18

DEVIATION MAX (MICRONS) = 31.69

DEVIATION MIN (MICRONS) = -37.01

POS#2 BWD

CAM ECCEN R (MICRONS) = 1551.21

ROTARY POT GAIN = 344.08

POT OFFSET (DEG) = 59.91

DEVIATION RMS (MICRONS) = 13.83

DEVIATION MAX (MICRONS) = 31.88

DEVIATION MIN (MICRONS) = -31.36

POS#3 FWD

CAM ECCEN R (MICRONS) = 1550.44

ROTARY POT GAIN = 344.08

POT OFFSET (DEG) = 59.91

DEVIATION RMS (MICRONS) = 14.12

DEVIATION MAX (MICRONS) = 32.70

DEVIATION MIN (MICRONS) = -37.89

POS#3 BWD

CAM ECCEN R (MICRONS) = 1549.51

ROTARY POT GAIN = 344.08

POT OFFSET (DEG) = 59.91

DEVIATION RMS (MICRONS) = 14.30

DEVIATION MAX (MICRONS) = 32.73

DEVIATION MIN (MICRONS) = -31.42

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

02-3

TIME OF TEST: 8/28/2007 10:00:18 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1558.54  
ROTARY POT GAIN = 345.42  
POT OFFSET (DEG) = 60.64  
DEVIATION RMS (MICRONS) = 11.61  
DEVIATION MAX (MICRONS) = 26.18  
DEVIATION MIN (MICRONS) = -25.35

POS#1 BWD

CAM ECCEN R (MICRONS) = 1557.65  
ROTARY POT GAIN = 345.42  
POT OFFSET (DEG) = 60.65  
DEVIATION RMS (MICRONS) = 11.58  
DEVIATION MAX (MICRONS) = 25.93  
DEVIATION MIN (MICRONS) = -23.40

POS#2 FWD

CAM ECCEN R (MICRONS) = 1559.38  
ROTARY POT GAIN = 345.42  
POT OFFSET (DEG) = 60.64  
DEVIATION RMS (MICRONS) = 11.09  
DEVIATION MAX (MICRONS) = 22.52  
DEVIATION MIN (MICRONS) = -24.56

POS#2 BWD

CAM ECCEN R (MICRONS) = 1557.75  
ROTARY POT GAIN = 345.42  
POT OFFSET (DEG) = 60.65  
DEVIATION RMS (MICRONS) = 11.05  
DEVIATION MAX (MICRONS) = 24.58  
DEVIATION MIN (MICRONS) = -23.02

POS#3 FWD

CAM ECCEN R (MICRONS) = 1559.29  
ROTARY POT GAIN = 345.42  
POT OFFSET (DEG) = 60.64  
DEVIATION RMS (MICRONS) = 11.70  
DEVIATION MAX (MICRONS) = 27.00  
DEVIATION MIN (MICRONS) = -25.03

POS#3 BWD

CAM ECCEN R (MICRONS) = 1557.78  
ROTARY POT GAIN = 345.42  
POT OFFSET (DEG) = 60.65  
DEVIATION RMS (MICRONS) = 11.72  
DEVIATION MAX (MICRONS) = 26.51  
DEVIATION MIN (MICRONS) = -26.83

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

02-4

TIME OF TEST: 8/28/2007 9:42:31 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1618.15

ROTARY POT GAIN = 343.73

POT OFFSET (DEG) = 60.97

DEVIATION RMS (MICRONS) = 5.84

DEVIATION MAX (MICRONS) = 15.04

DEVIATION MIN (MICRONS) = -17.97

POS#1 BWD

CAM ECCEN R (MICRONS) = 1620.93

ROTARY POT GAIN = 343.73

POT OFFSET (DEG) = 60.97

DEVIATION RMS (MICRONS) = 5.50

DEVIATION MAX (MICRONS) = 15.70

DEVIATION MIN (MICRONS) = -15.58

POS#2 FWD

CAM ECCEN R (MICRONS) = 1619.44

ROTARY POT GAIN = 343.73

POT OFFSET (DEG) = 60.97

DEVIATION RMS (MICRONS) = 6.05

DEVIATION MAX (MICRONS) = 16.75

DEVIATION MIN (MICRONS) = -17.24

POS#2 BWD

CAM ECCEN R (MICRONS) = 1622.08

ROTARY POT GAIN = 343.73

POT OFFSET (DEG) = 60.97

DEVIATION RMS (MICRONS) = 5.27

DEVIATION MAX (MICRONS) = 15.03

DEVIATION MIN (MICRONS) = -15.47

POS#3 FWD

CAM ECCEN R (MICRONS) = 1619.07

ROTARY POT GAIN = 343.73

POT OFFSET (DEG) = 60.97

DEVIATION RMS (MICRONS) = 7.52

DEVIATION MAX (MICRONS) = 18.65

DEVIATION MIN (MICRONS) = -22.84

POS#3 BWD

CAM ECCEN R (MICRONS) = 1621.42

ROTARY POT GAIN = 343.73

POT OFFSET (DEG) = 60.97

DEVIATION RMS (MICRONS) = 6.31

DEVIATION MAX (MICRONS) = 15.48

DEVIATION MIN (MICRONS) = -17.56

=== TEST PASS! ===

--- END OF TEST ---

LCLS UNDULATOR SUPPORT CAM TEST DATA  
ADVANCED PHOTON SOURCE  
ARGONNE NATIONAL LAB

02-5

TIME OF TEST: 8/28/2007 10:50:02 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1585.27  
ROTARY POT GAIN = 345.87  
POT OFFSET (DEG) = 60.41  
DEVIATION RMS (MICRONS) = 9.56  
DEVIATION MAX (MICRONS) = 18.76  
DEVIATION MIN (MICRONS) = -23.94

POS#1 BWD

CAM ECCEN R (MICRONS) = 1589.72  
ROTARY POT GAIN = 345.87  
POT OFFSET (DEG) = 60.41  
DEVIATION RMS (MICRONS) = 9.99  
DEVIATION MAX (MICRONS) = 20.40  
DEVIATION MIN (MICRONS) = -23.52

POS#2 FWD

CAM ECCEN R (MICRONS) = 1586.92  
ROTARY POT GAIN = 345.87  
POT OFFSET (DEG) = 60.41  
DEVIATION RMS (MICRONS) = 9.33  
DEVIATION MAX (MICRONS) = 19.47  
DEVIATION MIN (MICRONS) = -23.73

POS#2 BWD

CAM ECCEN R (MICRONS) = 1589.12  
ROTARY POT GAIN = 345.87  
POT OFFSET (DEG) = 60.41  
DEVIATION RMS (MICRONS) = 9.95  
DEVIATION MAX (MICRONS) = 19.49  
DEVIATION MIN (MICRONS) = -24.64

POS#3 FWD

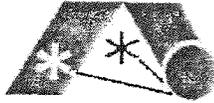
CAM ECCEN R (MICRONS) = 1585.18  
ROTARY POT GAIN = 345.87  
POT OFFSET (DEG) = 60.41  
DEVIATION RMS (MICRONS) = 9.11  
DEVIATION MAX (MICRONS) = 17.77  
DEVIATION MIN (MICRONS) = -22.79

POS#3 BWD

CAM ECCEN R (MICRONS) = 1588.97  
ROTARY POT GAIN = 345.87  
POT OFFSET (DEG) = 60.41  
DEVIATION RMS (MICRONS) = 10.11  
DEVIATION MAX (MICRONS) = 20.80  
DEVIATION MIN (MICRONS) = -25.74

=== TEST PASS! ===

--- END OF TEST ---



# AMERICAN GRINDING & MACHINE CO.

2000 N. MANGO AVE. CHICAGO, IL 60639  
773-889-4343 toll free: 877-988-4343  
FAX 773-889-3781

## CERTIFICATE OF COMPLIANCE

Customer: Hi-Tech Mfg PHONE: ( 847 ) 678-1616  
4637 N. 25<sup>th</sup> Ave. FAX: ( 847 ) 678-1716  
Schiller Park, IL  
60176

RE: PURCHASE ORDER 16850

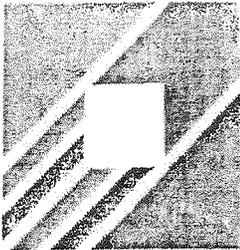
PRINT NUMBER(S) (if applicable)

4 pres / 4 pres. L1430802-200021 - 4 pres.  
L1430802-200011 - 4 pres.

This is to certify that the services and /or material furnished by American Grinding & Machine Company on this order meets the requirements of listed purchase order and any prints furnished to us for that purchase order.

Signature of American Grinding Representative

7/18/07  
Date



**HI-TECH  
Manufacturing, Inc.**

CNC Milling & Turning  
 Prototypes & Special Machinery  
 4637 N. 25th Ave.  
 Schiller Park, IL 60176

Hi-Tech Manufacturing, Inc.  
 4637 N. 25th Ave.  
 Schiller Park, IL 60176  
 USA

Ph: (847) 678-1616  
 Fax: (847) 678-1617

<b>Purchase Order</b>	
Number: 16850	Date: 13-Jul-07

**To**

American Grinding & Machine Co 2000 N. Mango Ave. Chicago, IL 60639-2899 USA
---

**Ship To**

Hi-Tech Manufacturing, Inc. 4637 N. 25th Ave. Schiller Park, IL 60176 USA
--

Ph: (773) 889-4343

Fax: (773) 889-3781

Ph: (847) 678-1616

Fax: (847) 678-1617

Terms	Ship Via	FOB	Issued By
	Deliver	Destination	JOE
Quantity	Description	Unit Price	Amount
	1. Please enter this order in accordance with prices, delivery and specifications shown below. 2. Please notify us immediately if you are unable to ship as specified. 3. Overshipment of product will not be accepted without prior approval from Hi-Tech. 4. UPS Ground shipments must be shipped COLLECT. Use account # 6E1-000. 5. No declared value charges will be accepted without prior approval by Hi-Tech.		
Line: 001	4 ea L1430802-200021 INTERFACE PLATE (SINGLE CAM) Vibratory Stress Relieve Certificate required	Rev: 03 Due: 18-Jul-07 Job: 55420B021 \$0.00 ea	\$0.00
Line: 002	4 ea L1430802-200011 INTERFACE PLATE (DOUBLE CAM) Vibratory Stress Relieve Certificate required	Rev: 03 Due: 18-Jul-07 Job: 55420B011 \$0.00 ea	\$0.00
		Total:	\$0.00



# AMERICAN GRINDING & MACHINE CO.

2000 N. MANGO AVE. CHICAGO, IL 60639  
773-889-4343 toll free: 877-988-4343  
FAX 773-889-3781

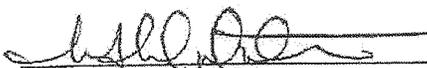
## CERTIFICATE OF COMPLIANCE

Customer: Hi-Tech Mfg PHONE: ( 847 ) 678-1616  
4637 N. 25<sup>th</sup> Ave. FAX: ( 847 ) 678-1716  
Schiller Park, IL  
60176

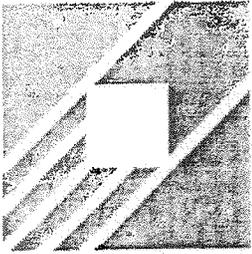
RE: PURCHASE ORDER 16845

PRINT NUMBER(S) (if applicable) L1430802-200030  
Spec.

This is to certify that the services and /or material furnished by American Grinding & Machine Company on this order meets the requirements of listed purchase order and any prints furnished to us for that purchase order.

  
Signature of American Grinding Representative

7/19/07  
Date



**HI-TECH  
Manufacturing, Inc.**

CNC Milling & Turning  
 Prototypes & Special Machinery  
 4637 N. 25th Ave.  
 Schiller Park, IL 60176

Hi-Tech Manufacturing, Inc.  
 4637 N. 25th Ave.  
 Schiller Park, IL 60176  
 USA

Ph: (847) 678-1616  
 Fax: (847) 678-1617

**Purchase Order**

Number: 16845

Date: 13-Jul-07

**To**

American Grinding & Machine Co  
 2000 N. Mango Ave.  
 Chicago, IL 60639-2899  
 USA

**Ship To**

Ace Sandblast Co.  
 4601 W. Roscoe St.  
 Chicago, IL 60641-4484  
 USA

Ph: (773) 889-4343

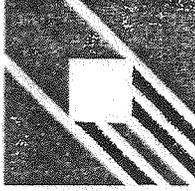
Fax: (773) 889-3781

Ph: (773) 777-6654

Fax: (773) 777-7562

Terms		Ship Via	FOB	Issued By
		Deliver		JOE
Quantity	Description		Unit Price	Amount
	1. Please enter this order in accordance with prices, delivery and specifications shown below. 2. Please notify us immediately if you are unable to ship as specified. 3. Overshipment of product will not be accepted without prior approval from Hi-Tech. 4. UPS Ground shipments must be shipped COLLECT. Use account # 6E1-000. 5. No declared value charges will be accepted without prior approval by Hi-Tech.			
8 ea  Line: 001	L1430802-200030 PEDESTAL WELDMENT Vibratory Stress Relieve  Certificate required	Rev: 01 Due: 18-Jul-07 Job: 55420B030	\$0.00 ea	\$0.00
	DROP SHIP TO ACE SANDBLAST		Total:	\$0.00

*Certificate of Inspection*



**HTI-TECH**

Manufacturing, Inc.

ISO 9001:2000  
certified

*This certificate is presented to*

**Argonne National Laboratory**

Per PO # 7A-08189, part #  
**L1430401-100101 (PF-381-000-13) quantity of 114pcs**  
**L1430401-100201 (PF-381-000-23) quantity of 38pcs**  
*Have been inspected and met all drawing requirements.*

Q.C. Supervisor

*Mueloz*

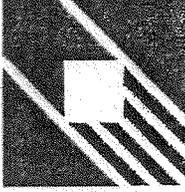
09-07-07

Date

**HTI-TECH**

Manufacturing, Inc.

ISO 9001:2000  
certified



*Certificate of Inspection*

*This certificate is presented to*

**A gonne National Laboratory**

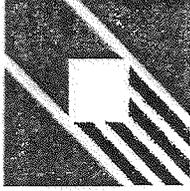
Per PO # 7A-08189, part # #  
**L1430401-100103 (PF-381-000-15) quantity of 136pcs**  
**L1430401-100303 (PF-381-002-15) quantity of 34pcs**  
*Have been inspected and met all drawing requirements.*

*[Signature]*

Q.C. Supervisor

09-07-07  
Date

*Certificate of Inspection*



**HI-TECH**

Manufacturing, Inc.

ISO 9001:2000  
certified

*This certificate is presented to*

**Argonne National Laboratory**

Per PO # 7A-08189, part ##  
**L1430401-100103 (PF-381-000-15) quantity of 16pcs**  
**L1430401-100303 (PF-381-002-15) quantity of 4pcs**  
*Have been inspected and met all drawing requirements.*

Q.C. Supervisor

*W. Meloye*

09-07-07  
Date

## INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: METALEX, INC.

PART NAME: UNDULATOR GIRDER ASSY

DRAWING #: L1430401-100400 (05)

SERIAL #: 02

P.O. #: 7A-08189

DATE: 08-08-07

### ACCEPTANCE CRITERIA

1. Visually inspect for damage. (Accept/Reject)

### CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Perpendicularity of Datum B to C	$\leq .025$	$\leq .025$	$\angle = .025$	(Accept/Reject)
Perpendicularity of Datum A to C	$\leq .025$	$\leq .025$	$\angle = .025$	(Accept/Reject)
True position of 2 D2 hole to 2 D3 holes	$\leq .03$	$\leq .03$	$\angle = .03$	(Accept/Reject)
Parallelism of support pad surface to Datum C	$\leq .07$	$\leq .07$	#1 $\angle = .07$	(Accept/Reject)
			#2 $\angle = .07$	
			#3 $\angle = .07$	
			#4 $\angle = .07$	
Distance from Datum C to support pad surface	109.50	+.2/-.2	#1 109.45	(Accept/Reject)
			#2 109.50	
			#3 109.55	
			#4 109.50	

INSPECTOR: Simoni

QA Supervisor: Ullaga

TEST EQUIPMENT USED: feeler gage, dial indicator, micrometer, precision square.

COMMENTS:

## INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: HI-TECH MANUFACTURING, INC.

PART NAME: INTERFACE PLATE (DOUBLE CAM)

DRAWING #: L1430802-200011 (03)

SERIAL #: 02

P.O. #: 7A-08189

DATE: 08-23-07

### ACCEPTANCE CRITERIA

1. Visually inspect for damage.	Accept/Reject
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### CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Flatness of Datum A	$\leq .02$	$\leq .02$	$\angle = .02$	Accept/Reject
Perpendicularity of Datum B to A	$\leq .02$	$\leq .02$	$\angle = .02$	Accept/Reject
Parallelism of inner edge on Cam Block A to B	$\leq .02$	$\leq .02$	$\angle = .01$	Accept/Reject
Parallelism of inner edge on Cam Block B to B	$\leq .02$	$\leq .02$	$\angle = .01$	Accept/Reject
Parallelism of outer edge on Cam Block B to B	$\leq .02$	$\leq .02$	$\angle = .01$	Accept/Reject
Width of mounting surface on Cam Block B	142.01	$+0.02/-0$	142.01	Accept/Reject
Width of mounting surface on Cam Block A	254.00	$+0.02/-0$	254.01	Accept/Reject
Separation of outer edges of Cam Blocks	685.42	$+0.08/-0.08$	685.48	Accept/Reject

INSPECTOR:

*Simon*

QA Supervisor:

*Murtagh*

TEST EQUIPMENT USED: CMM, gage blocks, dial indicator.

COMMENTS:

## INSPECTION / ACCEPTANCE REPORT OF COMPONENTS FOR AS-BUILT DRAWINGS

VENDOR: HI-TECH MANUFACTURING, INC.

PART NAME: INTERFACE PLATE (SINGLE CAM)

DRAWING #: L1430802-200021 (03)

SERIAL #: 02

P.O. #: 7A-08189

DATE: 08-06-07

### ACCEPTANCE CRITERIA

1. Visually inspect for damage.	Accept/Reject
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### CRITICAL DIMENSIONS (mm)

FEATURE	TARGET	TOLERANCE	MEASURED VALUE	
Flatness of Datum A	$\leq .02$	$\leq .02$	$\leq .01$	Accept/Reject
Perpendicularity of Datum B to A	$\leq .02$	$\leq .02$	$\leq .02$	Accept/Reject
Parallelism of upper edge on lower Cam Block C to B	$\leq .02$	$\leq .02$	$\leq .01$	Accept/Reject
Parallelism of lower edge on upper Cam Block C to B	$\leq .02$	$\leq .02$	$\leq .01$	Accept/Reject
Parallelism of upper edge on upper Cam Block C to B	$\leq .02$	$\leq .02$	$\leq .01$	Accept/Reject
Width of mounting surface on lower Cam Block	142.01	+0.02/-0	142.02	Accept/Reject
Width of mounting surface on upper Cam Block	142.01	+0.02/-0	142.02	Accept/Reject
Separation of inner edges of Cam Blocks	457.43	+0.08/-0.08	457.47	Accept/Reject

INSPECTOR: Simon

QA Supervisor: Mueloza

TEST EQUIPMENT USED: CMM, gage blocks, dial indicator.

COMMENTS:

Metalex Manufacturing Inc.  
5750 Cornell Road · Cincinnati, OH 45242  
Phone (513) 489-0507 · Fax (513) 489-1020  
EMAIL: metalex@metalexmgf.com



### METALEX WELD CERTIFICATION

MX JOB #: 07-7558 QTY 4 CUSTOMER: Hi-Tech Manufacturing, Inc.  
PART NAME: Support Girder  
PART NUMBER: L1430401-100400 REVISION: 5V  
S/N: (if applicable) 7A-08198-01 thru -04

METALEX PROCEDURE # WPS 146 (K. Ballard), WPS 194-1 (G. Black)  
CUST. SPECIFICATION # AWS D1.1  
WELD WIRE SPEC AWS A5.20  
TYPE E71T-1  
HEAT 79526, 81192, 80622  
DIAMETER .062

<u>SERIAL NUMBER</u>	<u>WELDER</u>
7A-08198-01	Ken Ballard
7A-08198-02	Greg Black
7A-08198-03	Ken Ballard
7A-08198-04	Greg Black

THE ABOVE PARTS LISTED WERE WELDED IN ACCORDANCE WITH THE REFERENCED WELDING SPECIFICATION.

  
\_\_\_\_\_  
Metalex Quality Control

7/30/07  
\_\_\_\_\_  
Date

**WELDING OPERATOR QUALIFICATION (WPQ)**

Welding Specification ASME IX & AWS D1.1

Welder's Name Ken Ballard Employee No. 334 WPQ No. 146  
 Welding Process(es) used FCAW Type Semi-Automatic  
 Identification of WPS followed by welder during welding of test coupon WPS 146  
 Base Material(s) welded ASME IX: P1 to P1 (A36) Thickness .375"  
AWS D1.1: Group 1 to Group 1 (A36)

<u>Manual or Semi-Automatic Variables for Each Process</u>	<u>Actual Values</u>	<u>Range Qualified</u>
Penetration – Complete or Partial	<u>Complete</u>	<u>Complete</u>
Single or Double Weld	<u>Single</u>	<u>Single</u>
Backing (metal, weld metal, welded from both sides, flux, etc)	<u>Yes</u>	<u>Yes</u>
ASME IX P-No. to ASME IX P-No.	<u>1</u>	<u>1</u>
AWS D 17.1. Group No. to Group No.	<u>N/A</u>	<u>N/A</u>
AWS D 1.1. Group-No. to Group-No.	<u>1</u>	<u>1</u>
Plate <u>X</u> Pipe (enter diameter, if pipe)	<u>.375"</u>	<u>ASME IX: .0625" - .75"</u> <u>AWS D1.1: .125" - .75"</u>
Filler Metal Specification (SFA): <u>5.20</u> Classification	<u>E71T-1</u>	<u>-</u>
Filler Metal F-No.	<u>6</u>	<u>6</u>
Consumable Insert for GTAW or PAW	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (ASME IX)	<u>.375"</u>	<u>.750" max</u>
Weld deposit thickness for each welding process (AWS D 17.1)	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (AWS D 1.1)	<u>.375"</u>	<u>.750" max</u>
Welding Position (1G, 5G, etc)	<u>1G</u>	<u>1G</u>
Progression (uphill/downhill)	<u>N/A</u>	<u>N/A</u>
Backing Gas	<u>N/A</u>	<u>N/A</u>
GMAW Transfer Mode	<u>N/A</u>	<u>N/A</u>
Welding current type / polarity	<u>DC REverse</u>	<u>DC Reverse</u>

**GUIDED BEND TEST RESULTS**

Guided Bend Tests Type: (Side) Results  (Trans. R&F) Type  (Long.R&F) Results

<u>1 - Acceptable</u>	<u>4 - Acceptable</u>		
<u>2 - Acceptable</u>			
<u>3 - Acceptable</u>			

Visual test results Pass Radiographic test results N/A  
 Fillet Weld – Fracture Test N/A Length and percent of defects N/A in.  
 Macro test fusion N/A Fillet leg size N/A in. X N/A in Concavity/convexity N/A in.  
 Welding test conducted by Metalix Manufacturing  
 Mechanical tests conducted by MQS Inspection Lab test no. 0594-5586

We certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with the requirements of the above referenced welding specification. The above named individual is qualified in accordance with the above referenced welding specification within the above limits for the welding process used for this test.

Date: 5/19/94 By: Katrina Black / 7/31/00  
 Metalix Manufacturing, Inc.

\* Revised By / Date: 7/26/01 [Signature]  
 Revised to transfer info to updated Form to include AWS D1.1 info.

**WELDING OPERATOR QUALIFICATION (WPQ)**

Welding Specification AWS D1.1

Welder's Name Greg Black Employee No. 132 WPQ No. 194-1  
 Welding Process(es) used FCAW Type Semi-Automatic  
 Identification of WPS followed by welder during welding of test coupon 194-1  
 Base Material(s) welded Group II to Group II (A572 to A572) Thickness .500"

Manual or Semi-Automatic Variables for Each Process

	<u>Actual Values</u>	<u>Range Qualified</u>
Penetration – Complete or Partial	<u>Complete</u>	<u>Complete</u>
Single or Double Weld	<u>Single</u>	<u>Single</u>
Backing (metal, weld metal, welded from both sides, flux, etc)	<u>N/A</u>	<u>N/A</u>
ASME IX P-No. to ASME IX P-No.	<u>N/A</u>	<u>N/A</u>
AWS D 17.1. Group No. to Group No.	<u>N/A</u>	<u>N/A</u>
AWS D 1.1. Group-No. to Group-No.	<u>.500"</u>	<u>.125" - 1.00"</u>
Plate <u>X</u> Pipe (enter diameter, if pipe)	<u>.500"</u>	<u>.125" - 1.00"</u>
Filler Metal Specification (SFA): <u>5.20</u> Classification	<u>E71T-1</u>	<u>E71T-1</u>
Filler Metal F-No.	<u>6</u>	<u>6</u>
Consumable Insert for GTAW or PAW	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (ASME IX)	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (AWS D 17.1)	<u>N/A</u>	<u>N/A</u>
Weld deposit thickness for each welding process (AWS D 1.1)	<u>1.00" max</u>	<u>1.00" max</u>
Welding Position (1G, 5G, etc)	<u>1G</u>	<u>1G</u>
Progression (uphill/downhill)	<u>N/A</u>	<u>N/A</u>
Backing Gas	<u>Argon</u>	<u>Argon</u>
GMAW Transfer Mode	<u>N/A</u>	<u>N/A</u>
Welding current type / polarity	<u>DC Reverse</u>	<u>DC Reverse</u>

**GUIDED BEND TEST RESULTS**

Guided Bend Tests Type: (Side) Results  (Trans. R&F) Type  (Long.R&F) Results

Side - Acceptable	Side - Acceptable		
Side - Acceptable			
Side - Acceptable			

Visual test results Pass Radiographic test results Pass  
 Fillet Weld – Fracture Test N/A Length and percent of defects N/A in.  
 Macro test fusion N/A Fillet leg size N/A in. X \_\_\_\_\_ in Concavity/convexity \_\_\_\_\_ in.  
 Welding test conducted by Metalex Manufacturing  
 Mechanical tests conducted by Cooperheat MQS Lab test no. 303-04557-1

We certify that the statements in this record are correct and that the test welds were prepared and tested in accordance with the requirements of the above referenced welding specification. The above named individual is qualified in accordance with the above referenced welding specification within the above limits for the welding process used for this test.

Date: 2/26/04 By: Tom Jolly / KKB  
 Metalex Manufacturing, Inc.

*\* Reused by: [Signature] 2/27/04 2/26/04 RB  
 to transfer to reused form to  
 add AWS D1.1 info.*

Manufacturing Inc.  
Cornell Road • Cincinnati, OH 45242  
Phone (513) 489-0507 • Fax (513) 489-1020  
Email: metalex@metalexmfg.com



**Metalex**

Customized Machinery and Parts

ISO 9001:2000 and AS9100 CERTIFIED  
Veteran Owned Business 30 Plus Years

### METALEX WELD CERTIFICATION

MX JOB #: 07-7558 QTY 4

CUSTOMER: Hi-Tech Manufacturing, Inc.

PART NAME: Support Girder

PART NUMBER: L1430401-100400

REVISION: 5V

S/N: (if applicable) 7A-08198-01 thru -04

METALEX PROCEDURE # WPS 146

CUST. SPECIFICATION # AWS D1.1

WELD WIRE SPEC AWS A5.20

TYPE E71T-1

HEAT 79526, 81192, 80622

DIAMETER .062

SERIAL NUMBER    WELDER

7A-08198-01    Ken Ballard

7A-08198-02    Greg Black

7A-08198-03    Ken Ballard

7A-08198-04    Greg Black

THE ABOVE PARTS LISTED WERE WELDED IN ACCORDANCE WITH THE REFERENCED WELDING SPECIFICATION.

  
\_\_\_\_\_  
Metalex Quality Control

7/24/07  
Date

Metalex Manufacturing Inc.  
5750 Cornell Road • Cincinnati, OH 45242  
Phone (513) 489-0507 • Fax (513) 489-1020  
EMAIL: metalex@metalexmfg.com



METALEX WELD CERTIFICATION

MX JOB #: 07-7558 QTY 4 CUSTOMER: Hi-Tech Manufacturing, Inc.  
PART NAME: Support Girder  
PART NUMBER: L1430401-100400 REVISION: 5V  
S/N: (if applicable) 7A-08198-01 thru -04

METALEX PROCEDURE # WPS 146 (K. Ballard), WPS 194-1 (G. Black)  
CUST. SPECIFICATION # AWS D1.1  
WELD WIRE SPEC AWS A5.20  
TYPE E71T-1  
HEAT 79526, 81192, 80622  
DIAMETER .062

<u>SERIAL NUMBER</u>	<u>WELDER</u>
7A-08198-01	Ken Ballard
7A-08198-02	Greg Black
7A-08198-03	Ken Ballard
7A-08198-04	Greg Black

THE ABOVE PARTS LISTED WERE WELDED IN ACCORDANCE WITH THE REFERENCED WELDING SPECIFICATION.

  
\_\_\_\_\_  
Metalex Quality Control

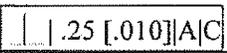
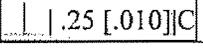
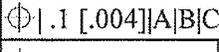
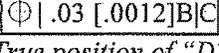
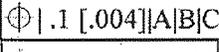
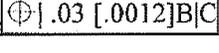
7/30/07  
\_\_\_\_\_  
Date

 <b>Metalex</b> Customized Machinery and Parts <small>CERTIFIED ISO 9001 QUALITY MANAGEMENT</small>		<b>INSPECTION PLANNING &amp; REPORT FORM</b> Metalex Mfg. 5750 Cornell Rd   Cincinnati, OH 45242   (513) 489-0507		Job No. <b>2007-7558</b>	Qty 1	
<b>Inspection Origin</b> <input type="checkbox"/> Receiving <input type="checkbox"/> In-Process <input checked="" type="checkbox"/> Final <input type="checkbox"/> Rework/Repair <input type="checkbox"/> First Article		<b>Vendor (Sub-Tier Source) Identification</b> Vendor Name N/A Date Rec'd N/A P.O. No. N/A		<b>Customer Identification</b> Part No. L1430401-100400 REV 5V P.O. Number 16185 Part Name Undulator Support Girder		
At Oper. 170	Serial Numbers: 02		Customer Name Hi-Tech Manufacturing			
SPECIFICATION		B/P ZONE	INSPECTION METHOD / GAGE NO.	ACTUAL DIMENSION / GAGE VERIFICATION (Range of Readings or Accept Status)	QTY ACC	QTY REJ

<b>** ALL DIMENSIONS TO BE RECORDED IN MILLIMETERS **</b> <b>** ALL TEMPERATURES TO BE RECORDED IN CELSIUS **</b>					
<b>ALL DIMENSIONS APPLY AT A TEMPERATURE OF 20 DEGREES CELSIUS. PART MUST BE IN THERMAL EQUILIBRIUM DURING MEASUREMENTS AND AT THE SAME TEMPERATURE AT THE BEGINNING AND CONCLUSION OF THE MEASUREMENTS WITHIN +/-2 DEG. CELSIUS.</b>					
PART TEMPERATURE <i>BEFORE</i> INSPECTION (Record in Celsius)	SOW 4.5.4	CONTACT THERMOMETER MX1794	20.58 °C		
PART TEMPERATURE <i>DURING</i> INSPECTION (Record in Celsius)	SOW 4.5.4	CONTACT THERMOMETER MX1794	20.55 °C		
PART TEMPERATURE <i>AFTER</i> INSPECTION (Record in Celsius)	SOW 4.5.4	CONTACT THERMOMETER MX1794	20.57 °C		

**CRITICAL DIMENSIONS PER SECTION 4.5.2.2 OF DOC. # L143-00093**

SHEET 2 – TOP VIEW

A) Flatness of Datum B of .030 [.001]	N/A	CMM MX1269	.011		
B) Perpendicularity of Datum B to Datum C 	E8	CMM MX1269	.011		
C) Flatness of datum A of .030 [.001]	N/A	CMM MX1269	.022		
D) Perpendicularity of Datum A to Datum C 	D8	CMM MX1269	.024		
E) 9X Ø 6.315 – 6.329 marked "D1", "D2" & "D3"	E7 E6 E3	CMM MX1269	6.315 - 6.327		
F) True position of "D3" holes 2X  	E3	CMM MX1269	.063 AND .052 <hr/> .0006		
F) True position of "D2" holes 2X  	E6	CMM MX1269	.029 AND .055 <hr/> .018		

STAMP 	INSPECTED BY THOMAS G COOK	DATE 7/7/07	PAGE 1 OF 2	QTY ACC 1	QTY REJ 0
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**Metalex**  
 Customized Machinery and Parts  
 CERTIFIED ISO 9001 QUALITY MANAGEMENT

**INSPECTION PLANNING & REPORT FORM**

Metalex Mfg.  
 5750 Cornell Rd | Cincinnati, OH 45242 | (513) 489-0507

Job No.  
**2007-7558**

Qty  
 1

Inspection Origin		Vendor (Sub-Tier Source) Identification		Customer Identification		
<input type="checkbox"/> Receiving	Vendor Name N/A	Part No.		REV	P.O. Number	
<input type="checkbox"/> In-Process		L1430401-100400		5V	16185	
<input checked="" type="checkbox"/> Final	Date Rec'd	P.O. No.		Part Name		
<input type="checkbox"/> Rework/Repair	N/A	N/A		Undulator Support Girder		
<input type="checkbox"/> First Article	Serial Numbers:			Customer Name		
At Oper. 170	02			Hi-Tech Manufacturing		
SPECIFICATION	B/P ZONE	INSPECTION METHOD / GAGE NO.	ACTUAL DIMENSION / GAGE VERIFICATION (Range of Readings or Accept Status)	QTY ACC	QTY REJ	

F) Locations of "D1" holes 444.50 [17.500]	E7	CMM MX1269	444.513	MTX QC 8
1968.50 [77.500]	E4	CMM MX1269	1968.532	MTX QC 8
3492.50 [137.500]	E2	CMM MX1269	3492.533	MTX QC 8
2X 523.6 [20.61]	E1	CMM MX1269	523.600 523.599	MTX QC 8
3185.26 [125.404]	D2	CMM MX1269	3185.293	MTX QC 8
845.29 [33.179]	D6	CMM MX1269	845.276	MTX QC 8
2X 95.10 [3.744]	D8	CMM MX1269	95.110 95.105	MTX QC 8

SHEET 2 - SIDE VIEW

A) <input type="checkbox"/> C <input checked="" type="checkbox"/> $\sqrt{\text{V}}$ .030 [.0012]	C8	CMM MX1269	0.028 mm	MTX QC 8
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SHEET 2 - BOTTOM VIEW

A) 2X 749.78 ± .15	C7	CMM MX1269	749.746 749.752	MTX QC 8
B) 2X 2340.00 ± .15	C5	CMM MX1269	2340.002 2340.004	MTX QC 8
C) 4X $\sqrt{\text{V}}$ .05 [.002] B	B2	CMM MX1269	.004 .003 .003 .006	MTX QC 8
D) 4X $\sqrt{\text{V}}$ .030 [.0012] A	B7	CMM MX1269	.002 .008 .003 .006	MTX QC 8

SHEET 3 - SECTION B-B

E) $\sqrt{\text{V}}$ .07 [.003] C	C2	CMM MX1269	.015 .023 .031 .021	MTX QC 8
F) 4X 109.47 ± .08	C2	CMM MX1269	109.495 - 109.537	MTX QC 8

ALL OTHER FEATURES ARE ACCEPTED PER METALEX OPERATOR ACCEPTANCE PROGRAM (OAP) MXW117001 & OPERATOR SIGNOFF OF ROUTER OPERATIONS FOR COMPLIANCE TO ALL DRAWING FEATURES GENERATED WITHIN THAT DEFINED OPERATION.	ROUTER SIGNOFF MX5009	CONFORMS	MTX QC 8
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STAMP MTX QC 8	INSPECTED BY THOMAS G COOK	DATE 7/7/07	PAGE 2 OF 2	QTY ACC 1	QTY REJ 0
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The Cincinnati Steel Treating Co  
5701 Mariemont Ave.  
Cincinnati, Ohio 45227 (513) 271-3173

Certification ID  
36423

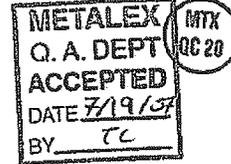
Order ID  
95712

**CERTIFICATION OF COMPLIANCE**

**CUSTOMER**

Metalex Mfg., Inc.  
5750 Cornell Road

Cincinnati OH  
Blkt Ord # 45242



Purchase Order 71422-JS      Customer Cust

Qty	Part No / Description	Material
2	L1430401-100400-05 SUPPORT GIRDER	A36

S/N 7A-08198-01 & 7A-08198-02

STRESS RELIEVE PER AWS D1.1 REV. 2004.  
NOTE: SUPPORT TO PREVENT DISTORTION.  
HEAT TREAT CHARTS REQUIRED.  
CERTIFICATIONS REQUIRED.

**RESULTS**

**THE ABOVE PARTS HAVE BEEN HEAT TREATED TO THE FOLLOWING:**

HEAT TREATMENT      STRESS RELIEVED      PER AWS D1.1 REV 2004

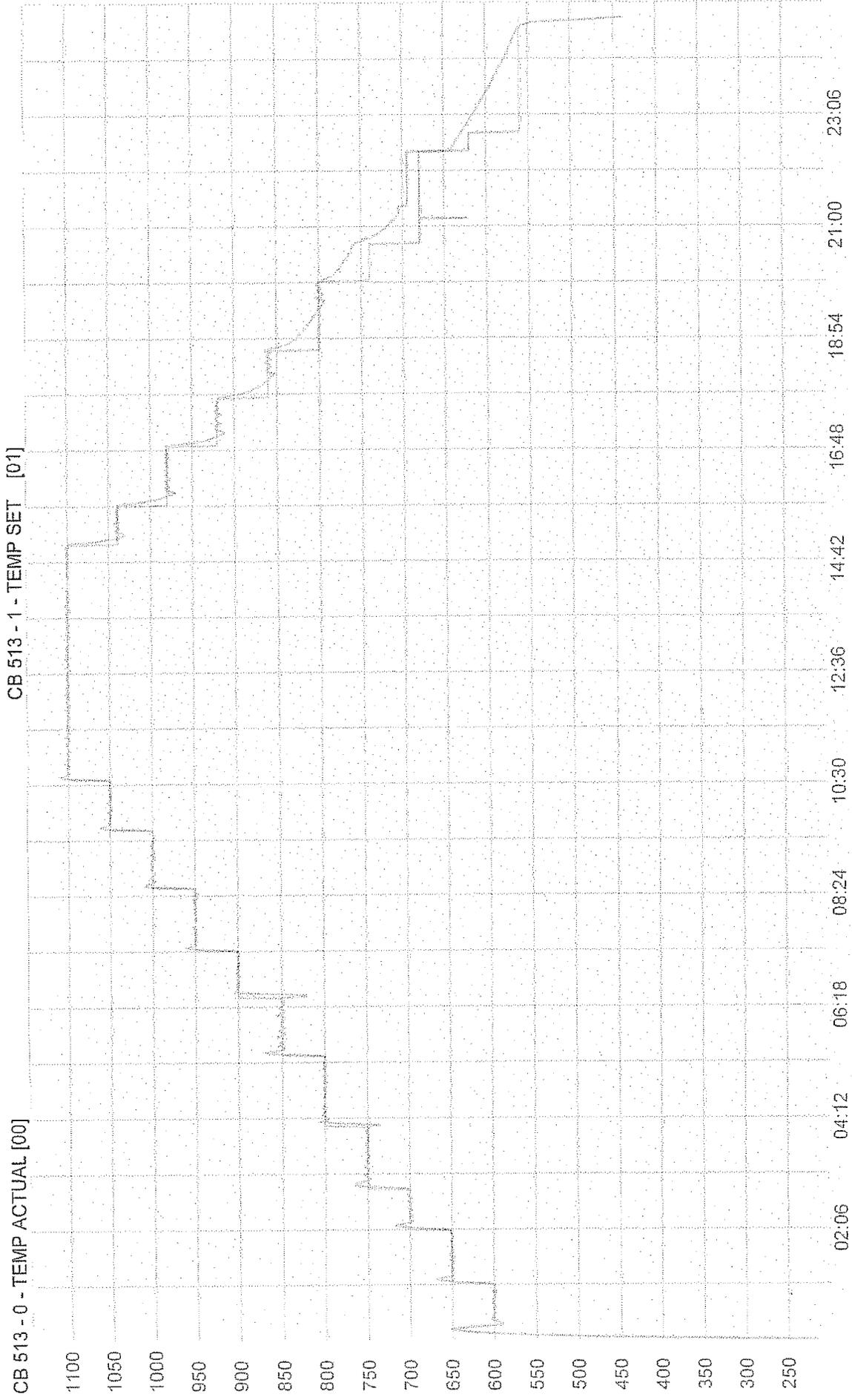
WE HEREBY CERTIFY THAT THE ABOVE PARTS WERE PROCESSED IN ACCORDANCE WITH THE SPECIFICATIONS AND INSTRUCTIONS SPECIFIED ON THE ABOVE PURCHASE ORDER AND THAT THE RESULTS AND REPORT THEREOF ARE AS STATED. ALL TESTING AND INSPECTION PROCEDURES EMPLOYED WERE IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS AND THE RESULTS THEREOF ARE ON FILE.

*James M. Hunt*  
NAME JAMES M. HUNT  
TITLE QA MANAGER  
DATE 7/17/2007

# Datalog Report

Customer: METALEX STRESS RELIEVE  
Part#: L1430401-100400-05  
PO#: 71422-JS  
CST Order#: 95712

Start: 6/11/2007  
End: 6/12/2007 12:55:00 AM  
Sample every 1 minute(s)  
Printed 7/17/2007 8:05:13 AM



Metalex Manufacturing Inc.  
 5750 Cornell Road • Cincinnati, OH 45242  
 Phone (513) 489-0507 • Fax (513) 489-1020  
 EMAIL: metalex@metalexmgf.com



## CERTIFICATE OF CONFORMANCE

Date: <u>08/13/2007</u>	Metalex Job# <u>2007-7558</u>
Customer: <u>Hi-Tech Manufacturing, Inc.</u>	Purchase Order # <u>16185</u>
<u>4637 N. 25<sup>th</sup> Ave.</u>	MX Packing List # <u>40858</u>
<u>Schiller Park, IL 60176</u>	
Attention: <u>Simon Sorsher</u>	

Metalex certifies that all material, processes, procedures, and dimensions are as called for on the purchase order, drawings, and/or amendments supplied by you.  
 All information concerning this part or parts, units and/or assemblies are on file at Metalex Manufacturing, Inc.

<u>ITEM</u>	<u>QTY</u>	<u>PART NUMBER</u>	<u>REV</u>	<u>PART NAME</u>	<u>ID # *</u>
001	4	L1430401-100400	6	Support Girder	See Below

\*IDENTIFICATION NUMBER INCLUDES SERIAL #, HEAT #, AND/OR LOT #.

COMMENTS: Serial number 7A-08198-01 represents our "First Article" part of this part number.

Applicable serial numbers of this shipment are 7A-08198-01 thru 7A-08198-04.

Some internal documents in this quality package may contain documents certifying to revision level "5" or "5V". Metalex certifies these documents and processes conform to the rev 6 revision level and the parts conform to revision level "6".

Metalex is in compliance with Statement of Worksopce Document No. L143-00093, Revision New, dated 12/12/06.

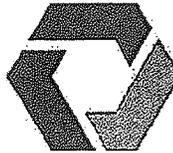
Manufactured from Metalex purchased material. Reference heat numbers: T7257, T7232, T7130, T7141, U9728, 0129862, X25899, J62810, JF6843, J70358, and 478765.

  
 Metalex Representative Signature

Thomas Clark  
 Print Name

8/13/07  
 Date

Metalex  
Manufacturing  
Inc.



# Metalex

Certified ISO 9001 Quality Management  
Veteran Owned Business 30 Plus Years

#1-- INSIDE Pkg - Cust Copy

Ship To: HI-TECH MANUFACTURING, INC  
4637 N. 25TH AVE  
SCHILLER PARK IL 60176

Packing List# 40858 Rel# 1 PAGE 1  
Metalex Job# 2007-7558

Date: 7/26/07  
Ship Via: CCX  
PTA# \_\_\_\_\_  
(prepaid shipments only)

Attn:  
Customer PO: 16185

BOL/Air Bill# 745587430  
Prepaid: Collect: XXXXXXXX  
Weight: 9100 Ctns: 5 Zone:  
Dimensions: 34 x 157 x 26

P.O. Item No.	Qty Ordered	Qty Shipped	Qty Back Ordered	Description
001	38	4	34	ANL PART L1430401-100400 REV. 6 SLAC PART#: PF-381-002-80 S/N(S): 7A-08198-01 THRU 7A-08198-04  -CERTIFICATE OF CONFORMANCE, INSPECTION DATA, AND CERTIFICATIONS ENCLOSED.  S/N: 7A-08198-01 REPRESENTS THE FIRST ARTICLE OF THIS PART.

Received By:

Printed Name \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_



# Bodycote Taussig Inc.

Metallurgical & Materials Engineers



## AWS WELDER AND WELDING OPERATOR QUALIFICATION TEST RECORD

WELDER OR WELDING OPERATOR'S NAME: Tadeusz Sutowski I.D. #39  
 WELDING PROCESS: GMAW MANUAL SEMIAUTO XXX MACHINE  
 POSITION: 4G - Overhead PROGRESSION: N/A  
 WPS NO.: AWS Prequalified TYPE OF JOINT TESTED: Single V Groove  
 BASE METAL SPECIFICATION: ASTM A36, Qualifies All Groups  
 PIPE DIAMETER: N/A JOINT THICKNESS: 3/8"  
 QUALIFICATION RANGES: 3/4" Max. Groove/Unlimited Fillet, Flat, Horiz., Overhead

### FILLER METAL

SPECIFICATION NO.: AWS A5.18 CLASSIFICATION: ER80S-D2 F NO.: N/A  
 DIAMETER: .035" FLUX/SHIELDING GAS: AR/O<sub>2</sub> - 92/8 FLOW RATE: 25 cfh  
 BACKING OR BACK GOUGING METHOD: None

### VISUAL INSPECTION RESULTS

APPEARANCE: Satisfactory UNDERCUT: None POROSITY: None

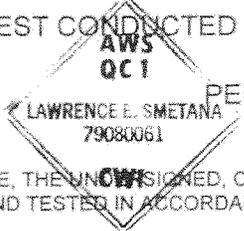
### GUIDED BEND TEST RESULTS

TYPE	RESULTS	TYPE	RESULTS
FACE	PASS	ROOT	PASS

### FILLET TEST RESULTS

SIZE: N/A FRACTURE TEST: N/A MACROETCH: N/A  
 LOCATION, NATURE, SIZE OF DISCONTINUITIES N/A  
 NOTED: \_\_\_\_\_

TEST CONDUCTED BY: BODYCOTE TAUSSIG, INC. LABORATORY NO.: 134477



PER: Lawrence E. Smetana, CWI TEST DATE: March 20, 1997

WE, THE UNDERSIGNED, CERTIFY THAT THIS RECORD IS CORRECT AND THAT THE WELDS WERE PREPARED AND TESTED IN ACCORDANCE WITH AWS D1.1-1996

MANUFACTURER OR CONTRACTOR: Hi-Tech Manufacturing

AUTHORIZED BY/DATE: \_\_\_\_\_

THIS CERTIFICATE OR REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF BODYCOTE TAUSSIG, INC.

Where quality is an ongoing commitment

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7257

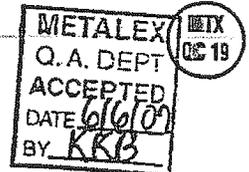
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Hi-tech  
Job# 7558  
Part# L1430401-100400  
P.O # 71069-BL



# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 2 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7257

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

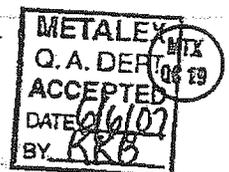
AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Job# 7558  
Part# L1430401-100400

P.O# 71069-BL



SHIP TO: ISG PLATE INC.

TEST CERTIFICATE

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 54690-001  
MELT NO: T7257  
DATE: 05/02/05

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
13	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4696

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

MELT: T7257	C	MN	P	S	CU	SI	NI	CR	MO
	.13	.77	.018	.011	.12	.20	.05	.06	.02
MELT: T7257	V	AL	CB						
	.001	.054	.001						

TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	406	626	8.00"	30.0
BOT.	TRANS.	435	650	8.00"	27.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.

B/L #31420 CR 580676, #31492 BVRY 5741

Hi-Tech  
Jol # 07-7558  
P/N L1430401-100400  
MX P.O.# 71069 Item #1

METALEX
Q.A. DEPT
ACCEPTED
DATE 5/6/07
BY KKB



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7232

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Hi-Tech  
Job# 7558  
PART# L1430401-100400  
P.O# 71069-BL

METALEX	MTX
Q. A. DEPT	QC 19
ACCEPTED	
DATE	6/6/07
BY	KRB

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7232

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*  
Laura Epps  
INSIDE SALES

Job# 7558  
PART# L14304501-100400  
P.O.# 71069-BL

METALEX	MTX
Q. A. DEPT	0619
ACCEPTED	
DATE 6/6/07	
BY KKB	

SHIP TO: ISG PLATE INC.

TEST CERTIFICATE

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53779-002  
MELT NO: T7232  
DATE: 04/26/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
4	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4677

SPECIFICATION (S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

	C	MN	P	S	CU	SI	NI	CR	MO
MELT:T7232	.17	.85	.025	.016	.14	.18	.07	.05	.01
	V	AL	CB						
MELT:T7232	.001	.027	.001						

TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	436	683	8.00"	27.0
BOT.	TRANS.	453	673	8.00"	27.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.

B/L #29155 CR 578630

Hi-Tech  
Job# 07-7558  
P/N L1430401-100400  
MX P.O.# 71069 Item #1

MTX  
QC 19

METALEX
Q. A. DEPT
ACCEPTED
DATE 4/26/06
BY KKB

WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

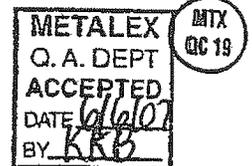
DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7130

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES



Hi-tech  
Job# 7558  
PART# LT43049-100400  
P.O# 71069-BL

SHIP TO:

ISG PLATE INC.

TEST CERTIFICATE

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53137-001  
MELT NO: T7130  
DATE: 04/11/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
4	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4662

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

	C	MN	P	S	CU	SI	NI	CR	MO
MELT:T7130	.14	.78	.014	.013	.13	.24	.08	.03	.01
	V	AL	CB						
MELT:T7130	.001	.052	.001						

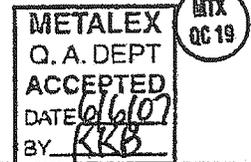
TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	433	656	8.00"	28.0
BOT.	TRANS.	436	653	8.00"	27.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.  
B/L #28102 UMP 5517

Hi-Tech  
Jot # 07-7558  
P/N L1430401-100400  
M.N. P.O.# 71069 Item #1



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7141

THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

*Laura Epps*  
Laura Epps  
INSIDE SALES

*Hi-Tech*  
Job# 7558

*Part# L1430401-100400*

*PO# 71069-BL*

METALEX
Q. A. DEPT
ACCEPTED
DATE <i>6/6/07</i>
BY <i>KRB</i>

MTX  
06 19

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7141

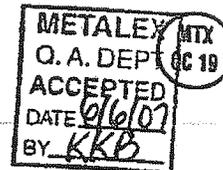
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AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Job# 7558  
PART# L1430401-100400  
P.O# 71069-BL



# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

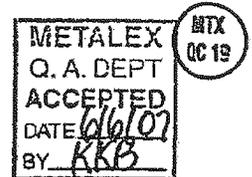
DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# T7141

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AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES



Job # 7558  
Part # L1430401-100400  
P.O # 71069-BL

SHIP TO:

ISG PLATE INC.

TEST CERTIFICATE

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53137-001  
MELT NO: T7141  
DATE: 04/11/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
4	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4662

SPECIFICATION(S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

MELT	C	MN	P	S	CU	SI	NI	CR	MO
T7141	.13	.81	.016	.013	.11	.18	.06	.04	.01
MELT	V	AL	CB						
T7141	.001	.040	.001						

TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	419	646	8.00"	28.0
BOT.	TRANS.	421	646	8.00"	26.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.

B/L #28102 UMP 5517

Hi-Tech  
Jot # 07-7558  
P/N L1430401-100400  
M. P.O.# 71069 Item #1

METALEX  
Q.A. DEPT  
ACCEPTED  
DATE 6/6/07  
BY KRB



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY

# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# U9728

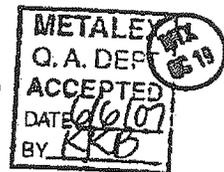
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AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

Hi-Tech  
Job# 7558  
PART# L1430401-100400  
P.O# 71069-BL



# Precision Steel Services, Inc.

## CERTIFICATE OF CONFORMANCE

TO: METALEX MANUFACTURING INC.

FROM: PRECISION STEEL SERVICES, INC.  
31 E. SYLVANIA AVE.  
TOLEDO, OH 43612

DATE OF SHIPMENT: 5/24/07

QUANTITY SHIPPED: 4 PCS

PURCHASE ORDER NUMBER: 71069-BL

DESCRIPTION: ASTM A-36 REV. 05 3/4" BURN 22.3" x 151.20"  
• ITEM# 1  
• JOB# 7558  
• HT# U9728

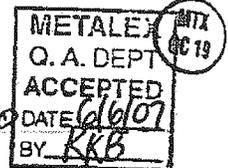
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AUTHORIZED SIGNATURE:

*Laura Epps*

Laura Epps  
INSIDE SALES

JOB # 7558  
PART # L1430401-100400  
P.O. # 71069-BL



ISG PLATE INC.

TEST CERTIFICATE

SHIP TO:

PAGE NO: 01 OF 01  
FILE NO: 8462-01-01  
MILL ORDER NO: 53137-001  
MELT NO: U9728  
DATE: 04/13/06

SOLD TO:

SEND TO:

01-C

PLATE DIMENSIONS / DESCRIPTION

TOTAL QTY	GAUGE	WIDTH	LENGTH	DESCRIPTION	PIECE WEIGHT
1	.75"	96"	480"	RECTANGLE	9801#

CUSTOMER INFORMATION

CUSTOMER PO: J.C.R. 4662

SPECIFICATION (S)

THIS MATERIAL HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH PURCHASE ORDER REQUIREMENTS AND SPECIFICATION(S).

ASME SA36 REV ED YR 04  
ASTM A36 05 & ASME SA36 05A  
MATERIAL PRODUCED UNDER A CERTIFIED QUALITY MGMT SYSTEM COMPLYING WITH ISO 9001 ABS-QE CERT. NO. 30130

CHEMICAL COMPOSITION

	C	MN	P	S	CU	SI	NI	CR	MO
MELT:U9728	.09	.80	.012	.004	.23	.20	.12	.10	.03
	V	AL	CB						
MELT:U9728	.002	.024	.001						

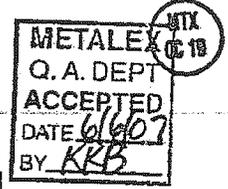
TENSILE PROPERTIES

LOC	DIR	YIELD STRENGTH PSI X 100	TENSILE STRENGTH PSI X 100	ELONGATION GAGE LGTH	%
BOT.	TRANS.	427	582	8.00"	28.0
BOT.	TRANS.	455	643	8.00"	28.0

GENERAL INFORMATION

ALL STEEL HAS BEEN MELTED AND MANUFACTURED IN THE U.S.A.  
B/L #29142 NW 190356

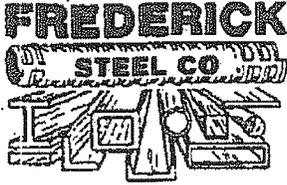
Hi-Tech  
Jot # 07-7558  
P/N L1430401-100400  
M. P.O.# 71069 Item #1



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY  
COATESVILLE, PA 19320

*Elinore Zaplitny*  
SUPERVISOR - TEST REPORTING  
ELINORE ZAPLITNY



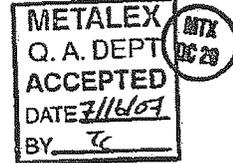
**"The Complete Steel Service Center"**  
Since 1933 -

200 W. North Bend Rd.  
Cincinnati, Ohio 45216-1725

(513) 821-6400  
FAX (513) 821-6915  
U.S.A. 1-800-543-4922

CERTIFICATE OF CONFORMANCE

CUSTOMER METALEX MFG INC  
PO# 71070BL7558  
DATE: 5/22/07



QUANTITY	DESCRIPTION	SPECIFICATION	HEAT #
13 PCS	STRUCTURAL TUBING 10 X 6 X 3/8 X 40'	A500-U3A GrCB	0129862
3 PCS	1-1/4 ID SCH 40 X 21'	A-500-03	X25899
7 PC	HOT ROLL FLATS 3/4 X 8 X 20'	A-529-50	J62810
3 PCS	1/4 X 5 X 20'	A-36 rev5	JF6843
26 PCS	3/8 X 7 X 20'	A-36 rev5	J70358
26 PCS	8x3x3/8x 40'	A500B rev03a GrCB	478765

THIS MATERIAL TO THE BEST OF OUR KNOWLEDGE WAS PRODUCED  
IN ACCORDANCE WITH APPLICABLE ASTM STANDARDS.

*Dee Stone*



Mill and Warehouse located on 75 acres and served by B & O siding

HOT & COLD ROLLED BARS • STRUCTURALS • MESH • PLATE • SHEETS  
REINFORCING BARS ROLLED IN OUR OWN MILL

Atlas Tube Canada ULC  
 200 Clark St.  
 Barrow, Ontario, Canada  
 NOR 1G0  
 Tel: 519-738-3541  
 Fax: 519-738-3537

Ref.B/L: 80190559  
 Date: 07.11.2007  
 Customer: 63



**MATERIAL TEST REPORT**

Sold to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

Shipped to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

Material: 8.0x3.0x9/5x24"0(2x6). Material No: 80030375 Made in: Canada  
 Sales order: 224717 Purchase Order: 105913

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
0129683		0.200	1.070	0.015	0.004	0.160	0.050	0.030	0.000	0.000	0.000	0.000	0.000
Bundle No	Yield	Tensile	Eln.2in	Certification									
M100507323	065130 Psi	075610 Psi	29.9 %	ASTM A500-03A GRADE B&C									

Material Note:  
 Sales Or.Note:

Material: 8.0x3.0x12.5x48"0(2x5). Material No: 800301254800 Made in: Canada  
 Sales order: 224717 Purchase Order: 105913

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
32620		0.180	0.790	0.014	0.008	0.030	0.028	0.030	0.000	0.010	0.020	0.020	0.002
Bundle No	Yield	Tensile	Eln.2in	Certification									
M100507346	059280 Psi	072670 Psi	24.0 %	ASTM A500-03A GRADE B&C									

Material Note:  
 Sales Or.Note:

Material: 12.0x12.0x250x48"0(2x2). Material No: 1201202504800 Made in: Canada  
 Sales order: 221075 Purchase Order: 105844

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
225417		0.140	0.810	0.015	0.021	0.080	0.047	0.050	0.000	0.004	0.030	0.020	0.005
Bundle No	Yield	Tensile	Eln.2in	Certification									
M200334612	065720 Psi	077590 Psi	29.4 %	ASTM A500-03A GRADE B&C									

Material Note:  
 Sales Or.Note:

Material: 10.0x6.0x375x40"0(2x2).-CSA Material No: 1000603754000-CSA Made in: Canada  
 Sales order: 225427 Purchase Order: 105913

Heat No	Pcs	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
0129862		0.220	1.020	0.011	0.008	0.160	0.080	0.000	0.000	0.000	0.000	0.000	0.000
Bundle No	Yield	Tensile	Eln.2in	Certification									
M200339261	060720 Psi	073990 Psi	30.3 %	CSA G40.21-04 50W CLASS C MEETS ASTM A500-03A GR C&R									

Material Note:  
 Sales Or.Note:

Authorized by Quality Assurance:

**METALEX**  
 Q.A. DEPT  
 ACCEPTED  
 DATE 7/16/07  
 BY TC

MTX  
 DC 20



Job # 7558  
 PN: L1430401-  
 100400  
 PO# 71070



Atlas Tube Canada ULC  
 200 Clark St.  
 Harrow, Ontario, Canada  
 NOR 1G0  
 Tel: 519-738-3541  
 Fax: 519-738-3537

Ref.B/L: 80242832  
 Date: 06.12.2007  
 Customer: 63



**MATERIAL TEST REPORT**

Sold to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

Shipped to

Frederick Steel  
 200 W. North Bend Road  
 CINCINNATI OH 45216  
 USA

*07F13006*

Material: 10.0x10.0x375x45'0"0(2x2).  
 Sales order: 306203

Material No: 100100375  
 Purchase Order: 106753

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
479379	0.200	0.800	0.013	0.003	0.160	0.052	0.026	0.005	0.002	0.008	0.036	0.000

Bundle No	Yield	Tensile	Eln.2in	Certification
M200448518	062620 Psi	075680 Psi	34.4 %	ASTM A500-03A GRADE C & B

Material Note:  
 Sales Or.Note:

Material: 10.0x10.0x375x45'0"0(1x1).  
 Sales order: 306203

Material No: 100100375  
 Purchase Order: 106753

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
679856	0.200	0.810	0.016	0.003	0.160	0.041	0.032	0.004	0.002	0.011	0.042	0.000

Bundle No	Yield	Tensile	Eln.2in	Certification
M200448513	057920 Psi	071280 Psi	35.8 %	ASTM A500-03A GRADE C & B

Material Note:  
 Sales Or.Note:

Material: 6.0x3.0x313x40'0"0(3x3).  
 Sales order: 307413

Material No: 600303134000  
 Purchase Order: 106771

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
120827	0.160	0.770	0.016	0.020	0.030	0.038	0.040	0.000	0.006	0.005	0.030	0.003

Bundle No	Yield	Tensile	Eln.2in	Certification
M100619084	063320 Psi	070490 Psi	34.3 %	ASTM A500-03A GRADE C & B

Material Note:  
 Sales Or.Note:

Material: 8.0x3.0x375x40'0"0(2x3).  
 Sales order: 304925

Material No: 800303754000  
 Purchase Order: 106737

Made in: Canada

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V
478765	0.200	0.800	0.019	0.002	0.160	0.034	0.017	0.006	0.002	0.007	0.039	0.000

Bundle No	Yield	Tensile	Eln.2in	Certification
M100635600	068200 Psi	080330 Psi	30.5 %	ASTM A500-03A GRADE C & B

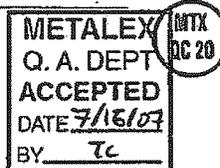
Material Note:  
 Sales Or.Note:

Authorized by Quality Assurance:

*JP*

Job# 755B  
 PN: L1430401-100400  
 PD# 71070-BL

Page : 3 Of 3





Southland Tube, Inc.  
 3525 Richard Arrington Jr. Blvd. N.  
 Birmingham, AL. 35234  
 Phone (205) 251-1884 Fax (205)421-4561

07C06018

TEST REPORT ASTM-E8

Customer: FREDERICK STEEL

Print Date: 3/1/2007

Heat No.: X25899

Description: CARBON STEEL TUBE

Size: 1-1/4 X SCH 40

Spec/Grade: A500-03/B/C

Carbon: .150

Manganese: .430

Sulphur: .012

Phosphorus: .007

Silicon: .009

Sample number	Date	Tensile	Yield	Elongation
SL9242	2/23/2007	70,000	59,900	25.50

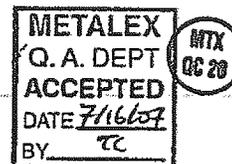
We hereby certify that the above figures are correct as contained in the records of this company and that the tubing was manufactured, tested and inspected in compliance with applicable specifications.

Melted & Manufactured in the U.S.A.

Computer Generated Document  
 Quality Assurance

Melted & Manufactured in the U.S.A.

Job# 7558  
 IN: U430401-100400  
 PO# 71076



Pickup # 03L004  
 STI Ord# 124549

Heat # X25899

Cust PO# 106530



Steel Dynamics®

Roanoke Bar Division

Steel Dynamics - Roanoke Bar Division  
P.O. Box 13948 Roanoke, VA 24038  
Office: 540-342-1831 Fax: 540-342-9437

Test and Inspection Report

NO. 39696-4

ROANOKE

07E03024

FREDERICK STEEL CO.

200 W NORTH BEND RD  
CINCINNATI OH 45216-0000

Date 5/01/07

HEAT NUMBER	SIZE	1-YIELD Pt. KSI	ULTIMATE KSI	ELONG 8 IN. TEST	BEND TEST	GRADE				
JF6843	FLATS 1/4 X 5	43.9	64.4	32.5		A36				
PURCHASE ORDER NUMBER	NUMBER PIECES	2-YIELD PT. KSI <td>ULTIMATE KSI <td>ELONG 8 IN. TEST</td> <td>BEND TEST</td> <td>GRADE</td> </td>	ULTIMATE KSI <td>ELONG 8 IN. TEST</td> <td>BEND TEST</td> <td>GRADE</td>	ELONG 8 IN. TEST	BEND TEST	GRADE				
106663	60 PIECES 20'	45.7	67.9	31.9		A36				
HEAT NUMBER	SIZE	1-YIELD Pt. MPA	ULTIMATE MPA	ELONG 203mm TEST	BEND TEST	GRADE				
JF6843	FLATS 6.4 X 127.0	302.7	444.0	32.5		A36				
PURCHASE ORDER NUMBER	NUMBER PIECES	2-YIELD PT. MPA <td>ULTIMATE MPA <td>ELONG 203mm TEST</td> <td>BEND TEST</td> <td>GRADE</td> </td>	ULTIMATE MPA <td>ELONG 203mm TEST</td> <td>BEND TEST</td> <td>GRADE</td>	ELONG 203mm TEST	BEND TEST	GRADE				
106663	60 PIECES 20'	315.1	468.2	31.9		A36				
C	MN	S	P	SI	CR	NI	MO	CU	V	NB
.13	.66	.030	.007	.21	.08	.08	.02	.28	.001	.002

METALEX  
Q.A. DEPT  
ACCEPTED  
DATE 7/16/07  
BY TC

NTX  
CS 20

Job# 7558  
AN: L1430401-100400  
PO# 71070-BL

MERCURY, RADIUM OR OTHER ALPHA SOURCE MATERIALS IN ANY FORM HAVE NOT BEEN USED IN THE PRODUCTION OF THIS MATERIAL. NO WELD REPAIR HAS BEEN PERFORMED.

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 A36-05 ASME SA36 QCS741D A709-06A GR36 AASHTO M270 GR 36 IMPACTS WAIVED

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



# CERTIFIED MILL TEST REPORT

For additional copies call  
(800) 637-3227

We hereby certify that the test results presented here  
are accurate and conform to the reported grade specification.

CMC Steel - Alabama  
P.O. Box 321188  
Birmingham, AL 35232-1188  
www.smt-ai.com

CMC Steel - South Carolina  
Box 2005  
Cayce, SC 29171-2005  
www.smt-sc.com

John F. Powell - CMC Steel AL  
Quality Assurance Manager

CHEMICAL ANALYSIS		PROPERTIES										INCLUSION RATING			
		TEST 1					TEST 2							TEST 3	
%		MECHANICAL		IMPERIAL		METRIC		IMPERIAL		METRIC		IMPERIAL		METRIC	
C	0.25	Yield Strength	60.1 KSI	414.3 MPa	60.0 KSI	413.5 MPa									
Mn	0.96	Tensile Strength	86.2 KSI	594.7 MPa	88.4 KSI	609.5 MPa									
P	0.012	Elongation	19 %	19 %	20 %	20 %									
S	0.035	Gauge Length	8 INS	203 MM	8 INS	203 MM									
Si	0.22	Reduction of Area													
Cu	0.39	Bend Test													
Cr	0.13	Diameter													
Ni	0.09	Charpy Impact													
Mo	0.031	Test Temp													
Cb	0.014	Sample Size													
V	0.002	Orientation													
Sn	0.011	Hardness													
B	0.0003														
Ti	0.001														
C.Eq.	0.47														
AL	0.001														
N	0.006														
		JOMINY RESULTS - Rockwell C hardness at 1/16th Inch Increments													
1	2	3	4	5	6	7	8	9	10	11	12	METHOD			
												TYPE			
13	14	15	16	18	20	22	24	26	28	30	32	SIZE			

**METALEX**  
 Q. A. DEPT  
 ACCEPTED  
 DATE 7/16/07  
 BY TC

Job # 7558  
PIN: L1430401-100400  
PO# 71070-BL

**100% MELTED AND MANUFACTURED IN THE USA AND FREE OF MERCURY CONTAMINATION IN THE PROCESS**

REMARKS:

EXCEEDS THE PHYSICAL REQUIREMENTS OF ASTM A36.





A Division of Reid Entities

2265 Black Creek Road • Muskegon, MI 49444-2684  
www.reidsupply.com mail@reidsupply.com

Phone: 800-253-0421  
231-777-3951  
Fax: 800-438-1145  
231-773-4485



\* 3 7 5 4 4 5 7 \*  
P.O. #: 70778-JG-7558

Shipper No 03754457-0

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 6/29/07  
BY TC

HI-Tech 7558

Page 1 of 1

Bill To: METALEX MFG INC  
5750 CORNELL RD  
CINCINNATI, OH 45242-2083

Ship To: METALEX MFG INC  
5750 CORNELL RD  
CINCINNATI, OH 45242-2083

Attn:

Customer No 29204	Your P.O. No 70778-JG-7558	Sched Date 05/23/07	Ship Via U.P.S.	Ship Date 06/26/07	Shipper No 03754457-0
----------------------	-------------------------------	------------------------	--------------------	-----------------------	--------------------------

Line	Order Qty	Item	Description	Qty Shipped	Back Order
1	380	PF-22	PRESS FIT JIG FEET 6MM X 16MM	380	0

HS Tariff Code: 846620  
Country of Origin: United States

1 WEEK LEAD TIME.  
THANK YOU FOR YOUR ORDER.

Total Number of items: 1  
Opr: KMF Branch: 11 SLSM: REID  
Picker: JBH

Estimated Weight 14 lb 4.00 oz 6.470 kg

*LINE 1*

RECEIVED

JUN 28 2007

METALEX MFG.  
BY *CD*

*UPS Ground PPD*

All sales of products by Reid Supply Company are made on the terms contained in Reid Supply Company's standard Terms of Sale, which are incorporated by reference. If buyer has not otherwise agreed to those terms, then buyer's Acceptance of Delivery of, or Payment For, the goods will constitute buyer's agreement to the standard Terms of Sale. Reid Supply Company's standard Terms of Sale are available at [www.reidsupply.com](http://www.reidsupply.com) or by calling 800-253-0421 and requesting a copy.

CERTIFICATION OF COMPLIANCE

Reid Supply Company and it's divisions being ISO-9002 compliant does certify that according to our records the above material purchased was supplied in accordance with the description as illustrated in our catalog.

ALL ITEMS MANUFACTURED IN THE U.S.A UNLESS OTHERWISE NOTED.  
THANK YOU VERY MUCH FOR YOUR ORDER

*Cathy Reid*  
Cathy Reid, Document Control Supervisor

Packing List

Packing List

METALEX MANUFACTURING INC  
5750 CORNELL RD  
CINCINNATI OH 45242

**YOUR PURCHASE  
ORDER NUMBER**  
70779-JT

MCMASTER-CARR  
200 AURORA INDUSTRIAL PKWY  
AURORA OH 44202

**PAGE**  
1  
**MCM NUMBER**  
4789768-01

CALLER) JAMES GIFFIN

Today's Date:

IF THERE ARE ANY QUESTIONS ABOUT THIS  
SHIPMENT CONTACT OUR SALES DEPARTMENT  
(350)995-5500

Warehouse Location	McMaster Carr Part Number	FUJ Quantity	Item Description	Your Line	Your Order	This Shipment																													
<b>PACKING LIST EXTRA</b>	90145 A537	18 PK	18-8 STAINLESS STEEL DOWEL PIN 1/4" DIAMETER, 1/2" LENGTH PKG = 20 EA/PK  CERTIFICATE OF COMPLIANCE -This is to certify the above item(s) on your purchase order was supplied in accordance with the description and as illustrated in the catalog. Compliance Manager- Alberto Valadon  <u>Certificate of Compliance</u> This document certifies that according to our records, the material furnished on your purchase order was supplied in accordance with the description and illustration provided in our catalog.  <i>Steve Tuttle</i> Steve Tuttle, Quality Assurance Manager	1	18 PK	18																													
	<table border="1"> <tr> <td>Post-It® Fax Note</td> <td>7871</td> <td>Date</td> <td>7/18</td> <td># of pages</td> <td>1</td> </tr> <tr> <td>To</td> <td>JAMES GIFFIN</td> <td>From</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Co./Dept</td> <td>METALEX MFG</td> <td>Co</td> <td>MCMASTER-CARR</td> <td></td> <td></td> </tr> <tr> <td>Phone #</td> <td></td> <td>Phone #</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Fax #</td> <td>513-489-0807</td> <td>Fax #</td> <td></td> <td></td> <td></td> </tr> </table>			Post-It® Fax Note	7871	Date	7/18	# of pages	1	To	JAMES GIFFIN	From				Co./Dept	METALEX MFG	Co	MCMASTER-CARR			Phone #		Phone #				Fax #	513-489-0807	Fax #					
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Co./Dept	METALEX MFG	Co	MCMASTER-CARR																																
Phone #		Phone #																																	
Fax #	513-489-0807	Fax #																																	

4789768-01

METALEX MANUFACTURING INC

ORDER TO:

UR

CP

LNS: 1 EST # PKG 1 WEIGHT 3

PACKER	NUMBER OF CARTONS	FILLER

DATE

MCM NO. 4789768-01 04

**PURCHASE ORDER**  
70779-JT

MAIL

FROM:  
MCMASTER-CARR  
200 AURORA INDUSTRIAL PKWY  
AURORA OH 44202 USA

SHIP TO:

METALEX MANUFACTURING INC  
BLUE ASH INDUSTRIAL PARK  
5750 CORNELL RD  
CINCINNATI OH

45242-2010

LB

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 7/18/07  
BY TC

MTX  
DC 20

CCP

CERTIFICATE OF ANALYSIS

DATE : 01/22/007  
PAGE : 1

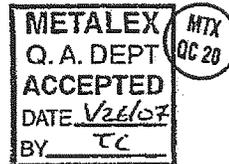


CERTIFICATE OF TYPICAL ANALYSIS

ORDER # : 0  
PART NUMBER: 245015904

CUSTOMER NAME: INDIANA OXYGEN  
5704 STATE ROUTE 128  
CLEVES

P.O. 67952



DIAMETER & LENGTH: 1/16  
TRADE NAME: DUAL SHIELD  
TYPE : 70 ULTRA PLUS  
HEAT NO: 79526  
CLASSIFICATION : E71T-1M/T-9M

This material conforms to :  
AWS A5.20-95, ASME SFA 5.20

CHEMICAL ANALYSIS :

	PROPERTIES	SPEC. REQUIREMENTS
Carbon	0.04	0.18 Max
Manganese	1.18	1.75 Max
Silicon	0.64	0.90 Max
Phosphorus	0.018	0.03 Max
Sulphur	0.013	0.03 Max
Chromium	0.04	0.20 Max
Nickel	0.01	0.50 Max
Molybdenum	0.01	0.30 Max
Vanadium	0.02	0.08 Max
Copper	0.04	0.35 Max

RADIOGRAPHY :

XRAY Satisfactory

DIFFUSIBLE HYDROGEN :

AVERAGE : 2.2 (ml/100gr Avg).  
GAS USED : 75AR/25C02

TENSILE REQUIREMENTS:

AS WELDED  
MIN YIELD(psi) : 58000  
MIN YIELD(MPa) : 400  
MIN TENSILE(psi) : 70000  
MIN TENSILE(MPa) : 480  
MIN ELONG : 22  
MAX TENSILE(MPa) :

TENSILE RESULTS :

AS WELDED

GAS USED : 75AR/25C02  
CALCULATE YIELD(psi) : 76250  
CALCULATE YIELD(Mpa) : 526  
CALCULATE TENSILE(psi) : 86250  
CALCULATE TENSILE(Mpa) : 595  
% ELONGATION : 27.0  
% REDUCTION OF AREA : 71.8

The ESAB Group, Inc.

1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services





CERTIFICATE OF ANALYSIS

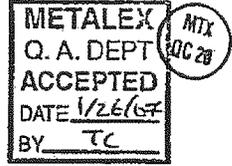
DATE : 01/22/007  
PAGE : 2

ORDER # : 0  
PART NUMBER: 245015904

P.O. 67952

CHARPY V-NOTCH REQUIREMENTS:

AS-WELDED :  
CVN TEMPERATURE (F) : 0  
CVN TEMPERATURE (C) : -18  
CVN AW MIN (FT-LBS) : 20  
CVN AW MIN (JOULES) : 27



CHARPY V-NOTCH RESULTS:

AS-WELDED :

TEMP (F)	FT-LBS	TEMP (C)	JOULES	GAS
0	106	-18	144	75AR/25C02
-20	100	-29	136	75AR/25C02

FILLET : Satisfactory

This material is certified to be free of any mercury.  
The undersigned certifies that the product supplied will meet the requirements of the applicable AWS Filler Metal Specification when tested in accordance with that specification, and that no significant change has been made in the elements described in the qualification approval

The ESAB Group, Inc.

1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services





CERTIFICATE OF ANALYSIS

DATE : 06/20/007  
PAGE : 1

CERTIFICATE OF TYPICAL ANALYSIS

ORDER # : 282637  
PART NUMBER: 245015904

CUSTOMER NAME: Indiana Oxygen Co  
5704 STATE RD 128  
CLEVES  
OH 45002

CUSTOMERS ORDER NO: 102836  
DIAMETER & LENGTH: 1/16  
TRADE NAME: DUAL SHIELD  
TYPE : 70 ULTRA PLUS  
WEIGHT: 396  
LOT NO: 81192  
CLASSIFICATION : E71T-1M/T-9M

PO# 71400  
METALEX  
Q.A. DEPT  
ACCEPTED  
DATE 6/26/07  
BY TC

This material conforms to :  
AWS A5.20-95, ASME SFA 5.20

CHEMICAL ANALYSIS :

PROPERTIES	SPEC. REQUIREMENTS
Carbon	0.18 Max
Manganese	1.75 Max
Silicon	0.90 Max
Phosphorus	0.03 Max
Sulphur	0.03 Max
Chromium	0.20 Max
Nickel	0.50 Max
Molybdenum	0.30 Max
Vanadium	0.08 Max
Copper	0.35 Max

RADIOGRAPHY :  
XRAY

Satisfactory

DIFFUSIBLE HYDROGEN :

AVERAGE : 2.2 (ml/100gr Avg).  
GAS USED : 75AR/25CO2

TENSILE REQUIREMENTS:

AS WELDED

MIN YIELD(psi) : 58000  
MIN YIELD(MPa) : 400  
MIN TENSILE(psi) : 70000  
MIN TENSILE(MPa) : 480  
MIN ELONG : 22  
MAX TENSILE(MPa) :

TENSILE RESULTS :

AS WELDED  
GAS USED : 75AR/25CO2  
CALCULATE YIELD(psi) : 76250  
CALCULATE YIELD(Mpa) : 526  
CALCULATE TENSILE(psi) : 86250  
CALCULATE TENSILE(Mpa) : 595

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS

DATE : 06/20/007  
PAGE : 2

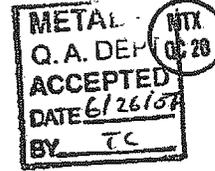


ORDER # : 282637  
PART NUMBER: 245015904

ELONGATION : 27.0  
REDUCTION OF AREA : 71.8

HARPY V-NOTCH REQUIREMENTS:

S-WELDED :  
VN TEMPERATURE (F) : 0  
VN TEMPERATURE (C) : -18  
VN AW MIN (FT-LBS) : 20  
VN AW MIN (JOULES) : 27



HARPY V-NOTCH RESULTS:

<u>S-WELDED :</u>					
EMP (F)	FT-LBS	TEMP (C)	JOULES	GAS	
	106	-18	144	75AR/25CO2	
20	100	-29	136	75AR/25CO2	

TILLET : Satisfactory

This material is certified to be free of any mercury.  
The undersigned certifies that the product supplied will meet the requirements of the applicable AWS  
Filler Metal Specification when tested in accordance with that specification, and that no  
significant change has been made in the elements described in the qualification approval

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS



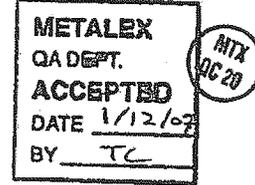
CERTIFICATE OF TYPICAL ANALYSIS

ORDER # : 0  
PART NUMBER: 245015904

CUSTOMER NAME: INDIANA OXYGEN  
5704 STATE ROUTE 128

P.O. 67952

DIAMETER & LENGTH: 1/16  
TRADE NAME: DUAL SHIELD  
TYPE : 70 ULTRA PLUS  
HEAT NO: 80622  
CLASSIFICATION : E71T-1M/T-9M  
This material conforms to :  
AWS A5.20-95, ASME SFA 5.20



CHEMICAL ANALYSIS :

	PROPERTIES	SPEC. REQUIREMENTS
Carbon	0.04	0.18 Max
Manganese	1.18	1.75 Max
Silicon	0.64	0.90 Max
Phosphorus	0.018	0.03 Max
Sulphur	0.013	0.03 Max
Chromium	0.04	0.20 Max
Nickel	0.01	0.50 Max
Molybdenum	0.01	0.50 Max
Vanadium	0.02	0.08 Max
Copper	0.04	0.35 Max

RADIOGRAPHY :

XRAY : Satisfactory

DIFFUSIBLE HYDROGEN :

AVERAGE : 2.2 (ml/100gr Avg).  
GAS USED : 75AR/25CO2

TENSILE REQUIREMENTS:

AS WELDED  
MIN YIELD(psi) : 58000  
MIN YIELD(MPa) : 400  
MIN TENSILE(psi) : 70000  
MIN TENSILE(MPa) : 480  
MIN ELONG : 22  
MAX TENSILE(MPa) :

TENSILE RESULTS :

AS WELDED  
GAS USED : 75AR/25CO2  
CALCULATE YIELD(psi) : 76250  
CALCULATE YIELD(Mpa) : 526  
CALCULATE TENSILE(psi) : 86250  
CALCULATE TENSILE(Mpa) : 595  
% ELONGATION : 27.0  
% REDUCTION OF AREA : 71.8

The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS



ORDER # : 0  
PART NUMBER: 245015904

CHARPY V-NOTCH REQUIREMENTS:

AS-WELDED :  
CVN TEMPERATURE (F) : 0  
CVN TEMPERATURE (C) : -18  
CVN AW MIN (FT-LBS) : 20  
CVN AW MIN (JOULES) : 27

CHARPY V-NOTCH RESULTS:

<u>AS-WELDED :</u>					
TEMP (F)	FT-LBS	TEMP (C)	JOULES	GAS	
0	106	-18	144	75AR/25C02	
-20	100	-29	136	75AR/25C02	

FILLET : Satisfactory

This material is certified to be free of any mercury.  
The undersigned certifies that the product supplied will meet the requirements of the applicable AWS  
Filler Metal Specification when tested in accordance with that specification, and that no  
significant change has been made in the elements described in the qualification approval

P.O. 67952

METALEX
QA DEPT.
ACCEPTED
DATE 1/12/07
BY TC



The ESAB Group, Inc.  
1500 Karen Lane  
Hanover, PA 17331  
www.esab.com  
Fax: 1-800-444-8911  
Phone: 1-800-123ESAB

By: K. Wildasin  
K. Wildasin, Supervisor, Q.A. Services





SHERWIN-WILLIAMS.

SHERWIN-WILLIAMS  
3143 E KEMPER RD  
SHARONVILLE OH 45241

Visit [www.sherwin-williams.com](http://www.sherwin-williams.com)  
Store 1246 ANDREW  
(513) 771-8572  
Fax - (513) 771-8590

PACKING  
SLIP  
No. 5888-8

ACCOUNT: 6538-0111-8 JOB 01 METALEX MFG

METALEX MFG  
5750 CORNELL RD  
CINCINNATI OH 45242 2010

PO: 7126/JG

DATE: 06/20/07  
TIME: 8:30 AM

(513) 489-0507

E23/13651 11

SALES NUMBER	SIZE	PRODUCT	DESCRIPTION	QUANTITY
630-4240	GALLON	B67H5	RCT EPX PR BUFF A	5
630-4265	GALLON	B67V5	RCT EPX PR HARD B	5
TOTAL LINES				2
				10

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 6/29/07  
BY TC

MTX  
QC 20

Job 7558

RECEIVED

JUN 20 2007

METALEX MFG.  
BY CD

MERCHANDISE RECEIVED IN GOOD ORDER BY:

BILLY

DATE (CENTRALIZED INVOICE)

The Sherwin-Williams Co.  
3143 EAST KEMPER RD  
CINCINNATI, OHIO 45241

METALEX  
Q. A. DEPT  
ACCEPTED  
DATE 6/29/07  
BY TC

MTX  
0620

Job 7558

**CERTIFICATE OF COMPLIANCE  
STATEMENT OF QUALITY**

**METALEX**

PURCHASE ORDER 71261-JG  
DATE OF MFG  
SHELF LIFE  
PART

QUANTITY  
BATCH

IT IS HEREBY CERTIFIED THAT ALL MATERIAL USED IN THE  
MANUFACTURE OF PARTS IN THE QUALITY CALLED FOR ON  
THE SUBJECT PURCHASE ORDER, CONFORM TO THE MATERIALS  
AND/OR MANUFACTURING SPECIFICATIONS INDICATED IN  
DRAWINGS OF SPECIFICATIONS AS CALLED FOR ON SAID  
PURCHASE ORDER.

THE SHERWIN-WILLIAMS CO  
3143 EAST KEMPER RD  
CINCINNATI OHIO 45241

AUTHORIZED SIGNATURE  
CUSTOMER SERVICE ADM

Shelf life 36 months  
OX26965  
batch date OX27165  
OX27855 B67NS  
OX0275C B67HS  
OX2905Z



SHERWIN-WILLIAMS.

SHERWIN-WILLIAMS  
3143 E KEMPER RD  
SHARONVILLE OH 45241

Visit [www.sherwin-williams.com](http://www.sherwin-williams.com)  
Store 1246 KEVIN  
(513)771-8572  
Fax - (513)771-8590

PACKING  
SLIP  
No. 7233-5

ACCOUNT: 6538-0111-8 JOB 01 METALEX MFG

METALEX MFG  
5750 CORNELL RD  
CINCINNATI OH 45242 2010

PO: 71829-BL-7558  
ORDER: OE0025007Q1246  
DATE: 07/16/07  
TIME: 8:08 AM

METALEX MFG  
Q. A. DEPT  
ACCEPTED  
DATE 7/16/07  
BY TC

E16/13651 11

SALES NUMBER	SIZE	PRODUCT	DESCRIPTION	QUANTITY
6405-18999	GALLON	B62WZ111	TC HS EX WHT A	5
Color: SW4026 SLATE GRAY				
<u>BAC Blend-a-Color OZ 32 64 128</u>				
B1	Black	2	16 1 1	
G2	New Green	-	3 - -	
Y3	Deep Gold	-	2 - -	
Sher-Color Formula				
TOTAL LINES				1
				5

OE1637L

<sup>MWT</sup>  
RECEIVED  
JUL 16 2007  
METALEX MFG.  
BY CS

MERCHANDISE RECEIVED IN GOOD ORDER BY:

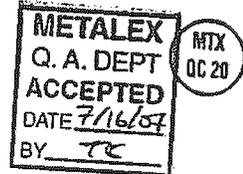
BILLY BLANTON

DATE (CENTRALIZED INVOICE)

Metalex PO# 41829-BL-7558

# Certificate of Conformance

Customer: Metalex Mfg. Inc.  
Address: 5750 Cornell Rd.  
Cincinnati, Oh: 45242  
Attention: Quality Engineering Dept.



<u>Item</u>	<u>Qty.</u>	<u>Part Number</u>	<u>Rev. Part Name</u>	<u>Job #</u>
<u>1</u>	<u>5</u>	<u>B62WZ111</u>	<u>BATCH# 051637L</u> <u>TILE CIAD H.S. SW4026</u> <u>Shelf life 36 months</u>	<u>7558</u>

Sherwin Williams  
Supplier Name

certifies that all materials, processes, etc. furnished to

Metalex, for the purchase order number stated above, comply with all conditions stated in the P.O. for the items shown.

Signed/Dated:  7.16-07  
Supplier Quality Rep.

FROM : SW 1246

05/04/2007 20:19

15137712657

FRX NO. : 5137716590

EW CINCI CG

Jun. 05 2007 07:36AM P1

PAGE 01

FROM : METALEX PURCHASING

PHONE NO. : 513-489 8484

Jan. 30 2006 10:07AM P1

Metalex PO# 70722-JE-7558

ATTN: JAMES GRIFFIN

# Certificate of Conformance

Hi-Tech Job# 7558

METALEX  
 O. A. DEPT  
 ACCEPTED  
 DATE 05/07  
 BY KKB

MTX  
QC 19

Customer: Metalex Mfg. Inc.  
 Address: 5730 Cornell Rd.  
 Cincinnati, Oh. 45242  
 Attention: Quality Engineering Dept.

KKB 615107  
 MTX  
 QC 19

Shelf life ID# 2835 thru 2839

Item	Qty.	Part Number	Rev. Part Name	Job #	Shelf Life
1.	5	B624211	TILECLAD H.S. EW. MC-SB		36 MONTH (IN OPEN)
2.	5	B604270	TILECLAD H.S. HARNER		36 MONTH (IN OPB)
3.	1	R7K54	SI REDUCER		3 YEARS
			L Shelf life ID# 2834		

mx  
 Shelf  
 Life ID#  
 2841 thru  
 2844  
 KKB  
 615107  
 MTX  
 QC 19

KKB 615107  
 MTX  
 QC 19

SHERWIN WILLIAMS certifies that all materials, processes, etc. furnished to  
Supplier Name

Metalex, for the purchase order number stated above, comply with all conditions stated in  
 the P.O. for the items shown.

Signed/Dated:

Vendor Quality Rep.

cc: Handcopy P.O. Books

MP4012 (2/95)

Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

## Visual Weld Inspection Report

Metalex Job: 2007-7558      Serial Number: 7A-08198- ( 02 )

Welding and Visual Welding Inspection Requirements:

Per SOW L143-00093 Section 4.1.4.2: For all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1M:2004..

Per SOW L143-00093 Section 4.1.4.2.2: All structural welds shall be visually inspected as defined in section 6.9 of the Structural Welding Code. The contractor shall certify that the welds were inspected and were acceptable.

Part Print L1430401-100400 sheet 1 of 3.

Fabrication Stage#1

Features: W1 and W2

Acceptable (Y/N) YES      Initial: B.H.  Date: 6/5/07

Fabrication Stage#2

Features: W3, W4 and W5

Acceptable (Y/N) YES      Initial: B.H.  Date: 6/7/07

Fabrication Stage#3

Features: W6, W7, W8, W9, W10, W11 and W12

Acceptable (Y/N) YES      Initial: B.H.  Date: 6/8/07

Verification of completion of weld visual inspection:

Completed By:   Date: 6/8/07



Metalex Manufacturing  
L1430401-100400 Girder Support  
Hi-Tech Purchase Order No. 16185

## Serialization Sheet

Part Print L1430401-100400 sheet 1 of 3. Qty-38 Units

Metalex Job: 2007-7558

### Serial Numbers:

7A-08198-01	7A-08198-14	7A-08198-27
7A-08198-02	7A-08198-15	7A-08198-28
7A-08198-03	7A-08198-16	7A-08198-29
7A-08198-04	7A-08198-17	7A-08198-30
7A-08198-05	7A-08198-18	7A-08198-31
7A-08198-06	7A-08198-19	7A-08198-32
7A-08198-07	7A-08198-20	7A-08198-33
7A-08198-08	7A-08198-21	7A-08198-34
7A-08198-09	7A-08198-22	7A-08198-35
7A-08198-10	7A-08198-23	7A-08198-36
7A-08198-11	7A-08198-24	7A-08198-37
7A-08198-12	7A-08198-25	7A-08198-38
7A-08198-13	7A-08198-26	

be measured with suitable gages. Visual inspections of cracks in welds and base metal and other discontinuities should be aided by a strong light, magnifying glasses, or other devices as may be found helpful.

**6.5.6 Inspector Identification of Inspections Performed.** Inspectors shall identify with a distinguishing mark or other recording methods all parts or joints that they have inspected and accepted. Any recording method which is mutually agreeable may be used. Die stamping of cyclically loaded members without the approval of the Engineer shall be prohibited.

**6.5.7 Maintenance of Records.** The Inspector shall keep a record of qualifications of all welders, welding operators, and tack welders; all WPS qualifications or other tests that are made; and such other information as may be required.

## *Part B*

### *Contractor Responsibilities*

#### **6.6 Obligations of the Contractor**

**6.6.1 Contractor Responsibilities.** The Contractor shall be responsible for visual inspection and necessary correction of all deficiencies in materials and workmanship in conformance with the requirements of this code.

**6.6.2 Inspector Requests.** The Contractor shall comply with all requests of the Inspector(s) to correct deficiencies in materials and workmanship as provided in the contract documents.

**6.6.3 Engineering Judgment.** In the event that faulty welding, or its removal for rewelding, damages the base metal so that in the judgment of the Engineer its retention is not in conformance with the intent of the contract documents, the Contractor shall remove and replace the damaged base metal or shall compensate for the deficiency in a manner approved by the Engineer.

**6.6.4 Specified NDT Other than Visual.** When NDT other than visual inspection is specified in the information furnished to bidders, it shall be the Contractor's responsibility to ensure that all specified welds shall meet the quality requirements of Section 6, Part C, whichever is applicable.

**6.6.5 Nonspecified NDT Other than Visual.** If NDT other than visual inspection is not specified in the original contract agreement but is subsequently requested by the Owner, the Contractor shall perform any requested testing or shall allow any testing to be performed in conformance

with 6.14. The Owner shall be responsible for all associated costs including handling, surface preparation, NDT, and repair of discontinuities other than those described in 6.14, whichever is applicable, at rates mutually agreeable between Owner and Contractor. However, if such testing should disclose an attempt to defraud or gross nonconformance to this code, repair work shall be done at the Contractor's expense.

## *Part C*

### *Acceptance Criteria*

#### **6.7 Scope**

Acceptance criteria for visual and NDT inspection of tubular connections and statically and cyclically loaded nontubular connections are described in Part C. The extent of examination and the acceptance criteria shall be specified in the contract documents on information furnished to the bidder.

#### **6.8 Engineer's Approval for Alternate Acceptance Criteria**

The fundamental premise of the code is to provide general stipulations applicable to most situations. Acceptance criteria for production welds different from those described in the code may be used for a particular application, provided they are suitably documented by the proposer and approved by the Engineer. These alternate acceptance criteria may be based upon evaluation of suitability for service using past experience, experimental evidence or engineering analysis considering material type, service load effects, and environmental factors.

#### **6.9 Visual Inspection**

All welds shall be visually inspected and shall be acceptable if the criteria of Table 6.1 are satisfied.

#### **6.10 PT and MT**

Welds that are subject to MT and PT, in addition to visual inspection, shall be evaluated on the basis of the applicable requirements for visual inspection. The testing shall be performed in conformance with 6.14.4 or 6.14.5, whichever is applicable.

**Table 6.1**  
**Visual Inspection Acceptance Criteria (see 6.9)**

Discontinuity Category and Inspection Criteria	Statically Loaded Nontubular Connections	Cyclically Loaded Nontubular Connections	Tubular Connections (All Loads)										
<b>(1) Crack Prohibition</b> Any crack shall be unacceptable, regardless of size or location.	X	X	X										
<b>(2) Weld/Base-Metal Fusion</b> Thorough fusion shall exist between adjacent layers of weld metal and between weld metal and base metal.	X	X	X										
<b>(3) Crater Cross Section</b> All craters shall be filled to provide the specified weld size, except for the ends of intermittent fillet welds outside of their effective length.	X	X	X										
<b>(4) Weld Profiles</b> Weld profiles shall be in conformance with 5.24.	X	X	X										
<b>(5) Time of Inspection</b> Visual inspection of welds in all steels may begin immediately after the completed welds have cooled to ambient temperature. Acceptance criteria for ASTM A 514, A 517, and A 709 Grade 100 and 100 W steels shall be based on visual inspection performed not less than 48 hours after completion of the weld.	X	X	X										
<b>(6) Undersized Welds</b> The size of a fillet weld in any continuous weld may be less than the specified nominal size (L) without correction by the following amounts (U): <table border="0" style="margin-left: 40px;"> <tr> <td style="text-align: center;">L,</td> <td style="text-align: center;">U,</td> </tr> <tr> <td style="text-align: center;"><u>specified nominal weld size, in. [mm]</u></td> <td style="text-align: center;"><u>allowable decrease from L, in. [mm]</u></td> </tr> <tr> <td style="text-align: center;">≤ 3/16 [5]</td> <td style="text-align: center;">≤ 1/16 [2]</td> </tr> <tr> <td style="text-align: center;">1/4 [6]</td> <td style="text-align: center;">≤ 3/32 [2.5]</td> </tr> <tr> <td style="text-align: center;">≥ 5/16 [8]</td> <td style="text-align: center;">≤ 1/8 [3]</td> </tr> </table> In all cases, the undersize portion of the weld shall not exceed 10% of the weld length. On web-to-flange welds on girders, underrun shall be prohibited at the ends for a length equal to twice the width of the flange.	L,	U,	<u>specified nominal weld size, in. [mm]</u>	<u>allowable decrease from L, in. [mm]</u>	≤ 3/16 [5]	≤ 1/16 [2]	1/4 [6]	≤ 3/32 [2.5]	≥ 5/16 [8]	≤ 1/8 [3]	X	X	X
L,	U,												
<u>specified nominal weld size, in. [mm]</u>	<u>allowable decrease from L, in. [mm]</u>												
≤ 3/16 [5]	≤ 1/16 [2]												
1/4 [6]	≤ 3/32 [2.5]												
≥ 5/16 [8]	≤ 1/8 [3]												
<b>(7) Undercut</b> (A) For material less than 1 in. [25 mm] thick, undercut shall not exceed 1/32 in. [1 mm], with the following exception: undercut shall not exceed 1/16 in. [2 mm] for any accumulated length up to 2 in. [50 mm] in any 12 in. [300 mm]. For material equal to or greater than 1 in. thick, undercut shall not exceed 1/16 in. [2 mm] for any length of weld. (B) In primary members, undercut shall be no more than 0.01 in. [0.25 mm] deep when the weld is transverse to tensile stress under any design loading condition. Undercut shall be no more than 1/32 in. [1 mm] deep for all other cases.	X												
<b>(8) Porosity</b> (A) CJP groove welds in butt joints transverse to the direction of computed tensile stress shall have no visible piping porosity. For all other groove welds and for fillet welds, the sum of the visible piping porosity 1/32 in. [1 mm] or greater in diameter shall not exceed 3/8 in. [10 mm] in any linear inch of weld and shall not exceed 3/4 in. [20 mm] in any 12 in. [300 mm] length of weld. (B) The frequency of piping porosity in fillet welds shall not exceed one in each 4 in. [100 mm] of weld length and the maximum diameter shall not exceed 3/32 in. [2.5 mm]. Exception: for fillet welds connecting stiffeners to web, the sum of the diameters of piping porosity shall not exceed 3/8 in. [10 mm] in any linear inch of weld and shall not exceed 3/4 in. [20 mm] in any 12 in. [300 mm] length of weld. (C) CJP groove welds in butt joints transverse to the direction of computed tensile stress shall have no piping porosity. For all other groove welds, the frequency of piping porosity shall not exceed one in 4 in. [100 mm] of length and the maximum diameter shall not exceed 3/32 in. [2.5 mm].	X												
		X	X										
		X	X										

General Note: An "X" indicates applicability for the connection type; a shaded area indicates non-applicability.

and shall have at least 75% of the stiffener bearing cross-sectional area in contact with the inner surface of the flanges. The outer surface of the flanges when bearing against a steel base or seat shall fit within 0.010 in. [0.25 mm] for 75% of the projected area of web and stiffeners and not more than 1/32 in. [1 mm] for the remaining 25% of the projected area. Girders without stiffeners shall bear on the projected area of the web on the outer flange surface within 0.010 in. [0.25 mm] and the included angle between web and flange shall not exceed 90° in the bearing length (see Commentary).

#### 5.23.11 Tolerance on Stiffeners

**5.23.11.1 Fit of Intermediate Stiffeners.** Where tight fit of intermediate stiffeners is specified, it shall be defined as allowing a gap of up to 1/16 in. [2 mm] between stiffener and flange.

**5.23.11.2 Straightness of Intermediate Stiffeners.** The out-of-straightness variation of intermediate stiffeners shall not exceed 1/2 in. [12 mm] for girders up to 6 ft [1.8 m] deep, and 3/4 in. [20 mm] for girders over 6 ft [1.8 m] deep, with due regard for members which frame into them.

**5.23.11.3 Straightness and Location of Bearing Stiffeners.** The out-of-straightness variation of bearing stiffeners shall not exceed 1/4 in. [6 mm] up to 6 ft [1.8 m] deep or 1/2 in. [12 mm] over 6 ft [1.8 m] deep. The actual centerline of the stiffener shall lie within the thickness of the stiffener as measured from the theoretical centerline location.

**5.23.11.4 Other Dimensional Tolerances.** Twist of box members and other dimensional tolerances of members not covered by 5.23 shall be individually determined and mutually agreed upon by the Contractor and the Owner with proper regard for erection requirements.

## 5.24 Weld Profiles

All welds, except as otherwise allowed below, shall be free from cracks, overlaps, and the unacceptable profile discontinuities exhibited in Figure 5.4.

**5.24.1 Fillet Welds.** The faces of fillet welds may be slightly convex, flat, or slightly concave as shown in Figure 5.4. Figure 5.4(C) shows typically unacceptable fillet weld profiles.

**5.24.2 Intermittent Fillet Welds.** Except for undercut, as allowed by the code, the profile requirements of Figure 5.4 shall not apply to the ends of intermittent fillet welds outside their effective length.

**5.24.3 Convexity.** Except at outside welds in corner joints, the convexity C of a weld or individual surface bead shall not exceed the values given in Figure 5.4.

**5.24.4 Groove or Butt Welds.** Groove welds shall be made with minimum face reinforcement unless otherwise specified. In the case of butt and corner joints, face reinforcement shall not exceed 1/8 in. [3 mm] in height. All welds shall have a gradual transition to the plane of the base-metal surfaces with transition areas free from undercut except as allowed by this code. Figure 5.4(D) shows typically acceptable groove weld profiles in butt joints. Figure 5.4(E) shows typically unacceptable weld profiles for groove weld butt joints.

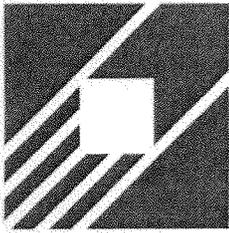
**5.24.4.1 Flush Surfaces.** Butt welds required to be flush shall be finished so as to not reduce the thicknesses of the thinner base metal or weld metal by more than 1/32 in. [1 mm], or 5% of the material thickness, whichever is less. Remaining reinforcement shall not exceed 1/32 in. [1 mm] in height. However, all reinforcement shall be removed where the weld forms part of a faying or contact surface. All reinforcement shall blend smoothly into the plate surfaces with transition areas free from undercut.

**5.24.4.2 Finish Methods and Values.** Chipping and gouging may be used provided these are followed by grinding. Where surface finishing is required, roughness values (see ASME B46.1) shall not exceed 250 microinches [6.3 micrometers]. Surfaces finished to values of over 125 microinches [3.2 micrometers] through 250 microinches [6.3 micrometers] shall be finished parallel to the direction of primary stress. Surfaces finished to values of 125 microinches [3.2 micrometers] or less may be finished in any direction.

## 5.25 Technique for Plug and Slot Welds

**5.25.1 Plug Welds.** The technique used to make plug welds when using SMAW, GMAW, (except GMAW-S), and FCAW processes shall be as follows:

**5.25.1.1 Flat Position.** For welds to be made in the flat position, each pass shall be deposited around the root of the joint and then deposited along a spiral path to the center of the hole, fusing and depositing a layer of weld metal in the root and bottom of the joint. The arc shall then be moved to the periphery of the hole and the procedure repeated, fusing and depositing successive layers to fill the hole to the required depth. The slag covering the weld metal should be kept molten until the weld is finished. If the arc is broken or the slag is allowed to cool, the slag must be completely removed before restarting the weld.



## Hi-Tech Manufacturing, Inc.

CNC Milling & Turning  
Prototypes & Special Machinery  
General Machining & Heliarc Welding Facilities  
ISO 9002 Registered  
4637 N. 25th Ave., Schiller Park, IL 60176  
Phone (847) 678-1616, Fax (847) 678-1617

### Visual Weld Inspection Report.

Per Statement of Work # L143-00093 Section 4.1.4.2, Motion System Assembly ## L1430401-100396 and L1430802-200000, contract # 7A-08189, for all welded parts, the welding practice shall conform to the Structural Welding Code, ANSI/AWS D1.1-D1.1 M:2004.

Part Print L1430802-200030 sheet 1 of 2.

Quantity: 76 pcs

Fabrication Stage #1

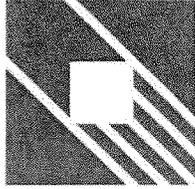
Features: # 1, 4, 2, 3

Acceptable (Y/N) Y Initials: S.S. Date: 11-16-07

Verification of completion of weld visual inspection:

Completed by: *Saugan Sosa* Date: 11-17-07

*Weld Certificate*



**HT-TECH**

Manufacturing, Inc.

ISO 9001:2000  
certified

*This certificate is presented to*

**Argonne National Laboratory**

*Per PO # 7A-08189, part # L1430802-200030 quantity of 76pcs*

*Procedure: #PQR101*

*Customer Specification: #AWS D1.1*

*Weld wire Spec: #AWS A5.28, Type: ER80S-D2, Heat: 83479, Dia: .045*

*Welder: Tadeusz Sutowski*

*Have been welded in accordance with the referenced welding specification.*

**O.C. Supervisor**

*Tadeusz A. Sutowski*

*11-17-07*

Date



# GAM Inspection Form

Record No. QRO-005-02

Revised: 09/29/05

Order #: 206059-1      Customer: IMAC Motion Cont      Serial #'s G45608-G456173  
 Part Number: 700944      Type Code: RPL-H-064-050H-[N23-A03]      Qty: ~~1~~ 6

### Verify mounting dimensions

- Motor Mfg: Animatics      Model: SM23XX
- Check Pilot Diameter = 1.5 -0.003  
\* Check for EVERY adapter \*\*
  - Check pilot height > 0.062
  - Check bolt circle = 2.625
  - Check hole size fits for: .205
  - Check hole depth for flange thickness: 0.19
  - Check shaft diameter = 0.25 -0.0005  
\*\* Check for EVERY gearbox \*\*
  - Check shaft engagement > 0.81
  - Verify ratio and "smoothness" of gearbox by spinning input
  - Verify mounting bolts are correct qty and type of for all applicable adapters.
  - Verify access hole plug is present and clamping ring bolt is accessible.
  - Place bolts, plugs, and loose gears in a bag and wire to each individual gearbox.
  - Verify key and keyways, if applicable
  - Verify output coupling bore size = 0.375
  - Verify shrink disc is present, if applicable
  - Verify order is complete.

### Assemble gearbox / verify appearance and label

- Clean gearbox and paint if necessary
- Mount input coupling to gearbox if applicable.
- Mount input adapter / lantern to gearbox if applicable.
- Verify label is correct to order
- Apply label to gearbox on a flat surface on gearbox.
- Apply clear plastic overlay label to top of original label.

### Customer Specific Notes (Inspection)

None

### Verify special options

- Verify all dimensions per GAM drawing  
Drawing No: ARG503
- Notes:  
M5x16 Motor Bolt. Give copy of Inspection sheet to shipping for IMAC orders.

### Shipping Special Instruction

Packaged By: \_\_\_\_\_ Date: \_\_\_\_\_

Inspected By: Bull Date 08-31-05



# IMAC Inspection Form

Form ID: 1001-010-000  
Revised: 09/2005

Order #: \_\_\_\_\_ Customer: 147 - Borden Part #: 1001-010-000-000  
Part number: 1001-010-000 Type: 1001-010-000 Qty: 1

### Verify mounting dimensions

- Motor Mtg: 1001-010-000 - Roach 1123 1/16"
- Check bore diameter = 1.15  
\*\* Check for EVERY adapter \*\*
  - Check pin depth > 0.06
  - Check bore circle = 2.625
  - Check hole size fits for: .205
  - Check hole depth for flange thickness: 0.25
  - Check shaft diameter = 0.375  
\*\* Check for EVERY gearbox \*\*
  - Check shaft engagement > 0.82
  - Verify ratio and "smoothness" of gearbox by spinning input
  - Verify mounting bolts are correct qty and type of for all applicable adapters.
  - Verify access hole plug is present and clamping ring bolt is accessible.
  - Place bolts, plugs, and loose gears in a bag and wire to each individual gearbox.
  - Verify key and keyways, if applicable
  - Verify output coupling bore size, if applicable
  - Verify shock disc is present, if applicable
  - Verify order is complete.

### Assemble gearbox / verify appearance and label

- Clean gearbox and pad if necessary
- Mount input coupling to gearbox if applicable.
- Mount input adapter / lantern to gearbox if applicable.
- Verify lubric. correct to order
- Apply label to gearbox on a flat surface on gearbox.
- Apply clear plastic overlay label to top of original label.

### Customer Specific Notes (Inspection)

None

### Verify special options

Notes:

Give copy of Inspection sheet to shipping for IMAC orders.

### Shipping Special Instruction

Packaged E: \_\_\_\_\_ Date: \_\_\_\_\_

Inspected By: [Signature] Date: 1/31/07

# LINTECH

1845 Enterprise Way  
Monrovia, CA 91016-4272  
Phone: 626.358.0110 – Fax: 626.303.2035

## CERTIFICATION

Date: 08/22/2007  
Sales Order No.: 42873  
Pick List No.: 52621

Sold To:  
IMAC  
1301-A Bowes Road  
Elgin, IL 30123

Ship To:  
Hi-Tech Manufacturing  
4637 No. 25<sup>th</sup> Ave.  
Schiller Park, IL 60176

Order No.: 7396

Order No.: None

Seller hereby certifies as follows - that all materials, parts and processes furnished against the above referenced purchase order were produced in conformance with all applicable specifications as referenced therein, and are on file subject to examination.

<u>Quantity Shipped</u>	<u>Part Number/Description</u>	<u>Serial Number</u>
(10)	206821 Rev."F" Single Axis Table	AA00734009 AA00734010 AA00734011 AA00734012 AA00734013 AA00734014 } S/N-02 AA00734015 AA00734016 AA00734017 AA00734018

By:   
Q.C. Manager

**From:** Simon Sorsher  
**Date:** 1/17/2008 9:04:40 AM  
**To:** Simon Sorsher  
**Subject:** Fw: Re: FW: Argonne Exploded View

-----Original Message-----

**From:** Emil Trakhtenberg  
**Date:** 1/17/2008 8:52:44 AM  
**To:** Simon Sorsher; Marion M. White  
**Subject:** Re: FW: Argonne Exploded View

Simon,  
Design of the crate for the SMS pedestal is approved.  
Thank you,  
Emil