



Table of Contents for QA Records Packages

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: 4

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, | Present |
| 5. | Certificates of Inspection | NA | Hi-Tech | L1430401-100103, L1430401-100303, | Present |
| 6. | Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings | L143-00093 | Hi-Tech | Undulator Girder | Present |
| 7. | Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings | L143-00093 | Hi-Tech | Interface Plate (Double CAM) | Present |
| 8. | Copies of the ANL Inspection/Acceptance Report of Components for As-Built Drawings | L143-00093 | Hi-Tech | Interface Plate (Single CAM) | Present |
| 9. | Weld Certification | NA | Hi-Tech <i>Mobley</i> | Support Girder (L1430401-10040) | Present |
| 10. | Inspection Planning & Report Form | NA | Metalex | Undulator 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? |
|-----|---|-----------------|-----------|--------------------|---------------------|
| 21. | Certification of Single Axis Table | | Lintech | | Present? |
| 22. | Certificate of Conformance for CAM Motors | | Animatics | Motors - In Folder | Present in SM #1 QA |
| 23. | Shipping Crate Design Approval Record | NA | Hi-Tech | | Present |
| 24. | Misc. Photographs | NA | Hi-Tech | | Present |

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. Schuch 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: 3/27/08

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

04-1

TIME OF TEST: 8/30/2007 10:17:00 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 2177.30
ROTARY POT GAIN = 344.92
POT OFFSET (DEG) = 60.00
DEVIATION RMS (MICRONS) = 11.86
DEVIATION MAX (MICRONS) = 25.99
DEVIATION MIN (MICRONS) = -26.01

POS#1 BWD

CAM ECCEN R (MICRONS) = 2181.41
ROTARY POT GAIN = 344.92
POT OFFSET (DEG) = 60.00
DEVIATION RMS (MICRONS) = 11.74
DEVIATION MAX (MICRONS) = 28.14
DEVIATION MIN (MICRONS) = -26.03

POS#2 FWD

CAM ECCEN R (MICRONS) = 2176.29
ROTARY POT GAIN = 344.92
POT OFFSET (DEG) = 60.00
DEVIATION RMS (MICRONS) = 12.30
DEVIATION MAX (MICRONS) = 26.80
DEVIATION MIN (MICRONS) = -27.04

POS#2 BWD

CAM ECCEN R (MICRONS) = 2179.18
ROTARY POT GAIN = 344.92
POT OFFSET (DEG) = 60.00
DEVIATION RMS (MICRONS) = 10.96
DEVIATION MAX (MICRONS) = 27.28
DEVIATION MIN (MICRONS) = -25.09

POS#3 FWD

CAM ECCEN R (MICRONS) = 2177.99
ROTARY POT GAIN = 344.92
POT OFFSET (DEG) = 60.00
DEVIATION RMS (MICRONS) = 11.91
DEVIATION MAX (MICRONS) = 27.54
DEVIATION MIN (MICRONS) = -25.66

POS#3 BWD

CAM ECCEN R (MICRONS) = 2180.98
ROTARY POT GAIN = 344.92
POT OFFSET (DEG) = 60.00
DEVIATION RMS (MICRONS) = 10.42
DEVIATION MAX (MICRONS) = 27.16
DEVIATION MIN (MICRONS) = -23.51

=== TEST PASS! ===

--- END OF TEST ---

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

04-2

TIME OF TEST: 9/5/2007 8:06:48 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1560.75
ROTARY POT GAIN = 343.27
POT OFFSET (DEG) = 61.00
DEVIATION RMS (MICRONS) = 8.90
DEVIATION MAX (MICRONS) = 16.51
DEVIATION MIN (MICRONS) = -22.73

POS#1 BWD

CAM ECCEN R (MICRONS) = 1562.55
ROTARY POT GAIN = 343.27
POT OFFSET (DEG) = 61.00
DEVIATION RMS (MICRONS) = 8.34
DEVIATION MAX (MICRONS) = 18.38
DEVIATION MIN (MICRONS) = -19.99

POS#2 FWD

CAM ECCEN R (MICRONS) = 1561.19
ROTARY POT GAIN = 343.27
POT OFFSET (DEG) = 61.00
DEVIATION RMS (MICRONS) = 9.65
DEVIATION MAX (MICRONS) = 17.92
DEVIATION MIN (MICRONS) = -22.07

POS#2 BWD

CAM ECCEN R (MICRONS) = 1562.72
ROTARY POT GAIN = 343.27
POT OFFSET (DEG) = 61.00
DEVIATION RMS (MICRONS) = 8.20
DEVIATION MAX (MICRONS) = 18.81
DEVIATION MIN (MICRONS) = -20.54

POS#3 FWD

CAM ECCEN R (MICRONS) = 1560.75
ROTARY POT GAIN = 343.27
POT OFFSET (DEG) = 61.00
DEVIATION RMS (MICRONS) = 9.71
DEVIATION MAX (MICRONS) = 17.48
DEVIATION MIN (MICRONS) = -22.13

POS#3 BWD

CAM ECCEN R (MICRONS) = 1562.52
ROTARY POT GAIN = 343.27
POT OFFSET (DEG) = 61.00
DEVIATION RMS (MICRONS) = 9.03
DEVIATION MAX (MICRONS) = 22.24
DEVIATION MIN (MICRONS) = -20.58

=== TEST PASS! ===

--- END OF TEST ---

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

04-3

TIME OF TEST: 9/5/2007 7:51:12 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1559.85
ROTARY POT GAIN = 345.92
POT OFFSET (DEG) = 59.18
DEVIATION RMS (MICRONS) = 6.97
DEVIATION MAX (MICRONS) = 16.35
DEVIATION MIN (MICRONS) = -21.34

POS#1 BWD

CAM ECCEN R (MICRONS) = 1558.17
ROTARY POT GAIN = 345.92
POT OFFSET (DEG) = 995.38
DEVIATION RMS (MICRONS) = 6.24
DEVIATION MAX (MICRONS) = 15.42
DEVIATION MIN (MICRONS) = -16.21

POS#2 FWD

CAM ECCEN R (MICRONS) = 1558.79
ROTARY POT GAIN = 345.92
POT OFFSET (DEG) = 59.18
DEVIATION RMS (MICRONS) = 6.50
DEVIATION MAX (MICRONS) = 21.05
DEVIATION MIN (MICRONS) = -14.54

POS#2 BWD

CAM ECCEN R (MICRONS) = 1557.30
ROTARY POT GAIN = 345.92
POT OFFSET (DEG) = 555.56
DEVIATION RMS (MICRONS) = 6.14
DEVIATION MAX (MICRONS) = 14.22
DEVIATION MIN (MICRONS) = -13.58

POS#3 FWD

CAM ECCEN R (MICRONS) = 1558.89
ROTARY POT GAIN = 345.92
POT OFFSET (DEG) = 59.18
DEVIATION RMS (MICRONS) = 6.60
DEVIATION MAX (MICRONS) = 20.15
DEVIATION MIN (MICRONS) = -15.05

POS#3 BWD

CAM ECCEN R (MICRONS) = 1556.46
ROTARY POT GAIN = 345.92
POT OFFSET (DEG) = -28.78
DEVIATION RMS (MICRONS) = 6.21
DEVIATION MAX (MICRONS) = 16.58
DEVIATION MIN (MICRONS) = -13.97

=== TEST PASS! ===

--- END OF TEST ---

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

04-4

TIME OF TEST: 8/30/2007 10:54:15 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1558.82
ROTARY POT GAIN = 346.41
POT OFFSET (DEG) = 61.28
DEVIATION RMS (MICRONS) = 6.14
DEVIATION MAX (MICRONS) = 15.01
DEVIATION MIN (MICRONS) = -14.92

POS#1 BWD

CAM ECCEN R (MICRONS) = 1560.74
ROTARY POT GAIN = 346.41
POT OFFSET (DEG) = 61.28
DEVIATION RMS (MICRONS) = 7.14
DEVIATION MAX (MICRONS) = 16.90
DEVIATION MIN (MICRONS) = -15.62

POS#2 FWD

CAM ECCEN R (MICRONS) = 1560.62
ROTARY POT GAIN = 346.41
POT OFFSET (DEG) = 61.28
DEVIATION RMS (MICRONS) = 5.66
DEVIATION MAX (MICRONS) = 14.90
DEVIATION MIN (MICRONS) = -12.47

POS#2 BWD

CAM ECCEN R (MICRONS) = 1562.06
ROTARY POT GAIN = 346.41
POT OFFSET (DEG) = 61.28
DEVIATION RMS (MICRONS) = 6.86
DEVIATION MAX (MICRONS) = 16.90
DEVIATION MIN (MICRONS) = -13.85

POS#3 FWD

CAM ECCEN R (MICRONS) = 1558.84
ROTARY POT GAIN = 346.41
POT OFFSET (DEG) = 61.28
DEVIATION RMS (MICRONS) = 5.50
DEVIATION MAX (MICRONS) = 17.50
DEVIATION MIN (MICRONS) = -10.90

POS#3 BWD

CAM ECCEN R (MICRONS) = 1560.44
ROTARY POT GAIN = 346.41
POT OFFSET (DEG) = 61.28
DEVIATION RMS (MICRONS) = 6.66
DEVIATION MAX (MICRONS) = 16.25
DEVIATION MIN (MICRONS) = -14.21

=== TEST PASS! ===

--- END OF TEST ---

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

04-5

TIME OF TEST: 9/5/2007 7:20:12 AM

POS#1 FWD

CAM ECCEN R (MICRONS) = 1544.41
ROTARY POT GAIN = 344.90
POT OFFSET (DEG) = 64.45
DEVIATION RMS (MICRONS) = 6.82
DEVIATION MAX (MICRONS) = 17.53
DEVIATION MIN (MICRONS) = -18.89

POS#1 BWD

CAM ECCEN R (MICRONS) = 1549.01
ROTARY POT GAIN = 344.90
POT OFFSET (DEG) = 64.45
DEVIATION RMS (MICRONS) = 5.54
DEVIATION MAX (MICRONS) = 14.51
DEVIATION MIN (MICRONS) = -15.57

POS#2 FWD

CAM ECCEN R (MICRONS) = 1547.57
ROTARY POT GAIN = 344.90
POT OFFSET (DEG) = 64.45
DEVIATION RMS (MICRONS) = 6.55
DEVIATION MAX (MICRONS) = 18.32
DEVIATION MIN (MICRONS) = -18.74

POS#2 BWD

CAM ECCEN R (MICRONS) = 1550.32
ROTARY POT GAIN = 344.90
POT OFFSET (DEG) = 64.45
DEVIATION RMS (MICRONS) = 5.42
DEVIATION MAX (MICRONS) = 15.35
DEVIATION MIN (MICRONS) = -18.10

POS#3 FWD

CAM ECCEN R (MICRONS) = 1548.70
ROTARY POT GAIN = 344.90
POT OFFSET (DEG) = 64.45
DEVIATION RMS (MICRONS) = 6.74
DEVIATION MAX (MICRONS) = 14.66
DEVIATION MIN (MICRONS) = -17.82

POS#3 BWD

CAM ECCEN R (MICRONS) = 1549.35
ROTARY POT GAIN = 344.90
POT OFFSET (DEG) = 64.45
DEVIATION RMS (MICRONS) = 5.60
DEVIATION MAX (MICRONS) = 15.65
DEVIATION MIN (MICRONS) = -18.36

=== 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. 25th Ave. FAX: (847) 678-1716
Schiller Park, IL
60176

RE: PURCHASE ORDER 16850

PRINT NUMBER(S) (if applicable)

4 Pcs / 4 Pcs.

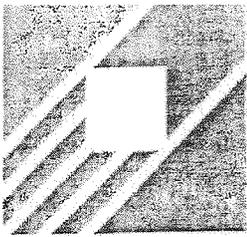
L1430802 - 200021 - 4 Pcs.

L1430802 - 200011 - 4 Pcs.

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

4637 N. 25th Ave.
Schiller Park, IL 60176
USA

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

| | |
|-----------------------|-----------------|
| Purchase Order | |
| 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. | | | |
| 4 ea Line: 001 | L1430802-200021 INTERFACE PLATE (SINGLE CAM) Vibratory Stress Relieve Certificate required | Rev: 03 Due: 18-Jul-07 Job: 55420B021 | \$0.00 ea | \$0.00 |
| 4 ea Line: 002 | 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. 25th Ave.

FAX: (847) 678-1716

Schiller Park, IL

60176

RE: PURCHASE ORDER 16845

PRINT NUMBER(S) (if applicable)

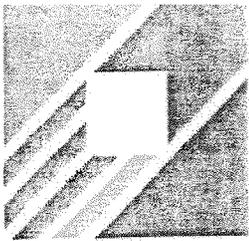
L143 0802-200030

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

7119107
Date



**HI-TECH
Manufacturing, Inc.**

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

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

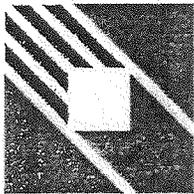
| Terms | | Ship Via | FOB | Issued By |
|--------------------------|--|---|--------------|-----------|
| | | Deliver | | JOE |
| Quantity | Description | | Unit Price | Amount |
| | 1. Please enter this order in accordance with prices, delivery and specifications shown below. 2. Please notify us immediately 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 Inspections

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.



P-T-C-E-I

Manufacturing, Inc.

ISO 9001:2000
certified

Q.C. Supervisor

Mudloz

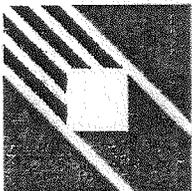
07-07-07
Date

Certificate of Inspection

This certificate is presented to

Argonne National Laboratory

Per PO # 74-08189, 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.



HT-TECH

Manufacturing, Inc.

ISO 9001:2000
certified

Q.C. Supervisor

M. Kelly

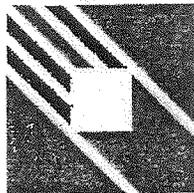
09-07-07
Date

Certificate of Inspection

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.



HI-TECH

MANUFACTURING, INC.

ISO 9001:2000
CERTIFIED

Q.C. Supervisor

M. J. [Signature]

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 #: 04

P.O. #: 7A-08189

DATE: 08-30-07

ACCEPTANCE CRITERIA

1. Visually inspect for damage. Accept/Reject

CRITICAL DIMENSIONS (mm)

| FEATURE | TARGET | TOLERANCE | MEASURED VALUE | |
|---|-------------|---------------|------------------|---------------|
| Perpendicularity of Datum B to C | $\leq .025$ | $\leq .025$ | $\leq .025$ | Accept/Reject |
| Perpendicularity of Datum A to C | $\leq .025$ | $\leq .025$ | $\leq .02$ | Accept/Reject |
| True position of 2 D2 hole to 2 D3 holes | $\leq .03$ | $\leq .03$ | $\leq .03$ | Accept/Reject |
| Parallelism of support pad surface to Datum C | $\leq .07$ | $\leq .07$ | #1 $\leq .07$ | Accept/Reject |
| | | | #2 $\leq .07$ | |
| | | | #3 $\leq .07$ | |
| | | | #4 $\leq .07$ | |
| Distance from Datum C to support pad surface | 109.50 | $+ .2 / - .2$ | #1 <u>109.38</u> | Accept/Reject |
| | | | #2 <u>109.37</u> | |
| | | | #3 <u>109.38</u> | |
| | | | #4 <u>109.36</u> | |

INSPECTOR: Simon

QA Supervisor: Mulaga

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 #: 04

P.O. #: 7A-08189

DATE: 08-09-07

ACCEPTANCE CRITERIA

| | |
|---------------------------------|----------------------|
| 1. Visually inspect for damage. | <u>Accept/Reject</u> |
|---------------------------------|----------------------|

CRITICAL DIMENSIONS (mm)

| FEATURE | TARGET | TOLERANCE | MEASURED VALUE | |
|---|------------|-------------|----------------------------------|----------------------|
| Flatness of Datum A | $\leq .02$ | $\leq .02$ | <u>$\angle = .01$</u> | <u>Accept/Reject</u> |
| Perpendicularity of Datum B to A | $\leq .02$ | $\leq .02$ | <u>$\angle = .01$</u> | <u>Accept/Reject</u> |
| Parallelism of inner edge on Cam Block A to B | $\leq .02$ | $\leq .02$ | <u>$\angle = .01$</u> | <u>Accept/Reject</u> |
| Parallelism of inner edge on Cam Block B to B | $\leq .02$ | $\leq .02$ | <u>$\angle = .01$</u> | <u>Accept/Reject</u> |
| Parallelism of outer edge on Cam Block B to B | $\leq .02$ | $\leq .02$ | <u>$\angle = .01$</u> | <u>Accept/Reject</u> |
| Width of mounting surface on Cam Block B | 142.01 | +.02/-0 | <u>142.01</u> | <u>Accept/Reject</u> |
| Width of mounting surface on Cam Block A | 254.00 | +.02/-0 | <u>254.01</u> | <u>Accept/Reject</u> |
| Separation of outer edges of Cam Blocks | 685.42 | +0.08/-0.08 | <u>685.44</u> | <u>Accept/Reject</u> |

INSPECTOR: SIMON

QA Supervisor: Muelaza

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 #: 04

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 | |
|---|------------------------|------------------------|----------------|---------------|
| Flatness of Datum A | ≤ 0.02 | ≤ 0.02 | 0.01 | Accept/Reject |
| Perpendicularity of Datum B to A | ≤ 0.02 | ≤ 0.02 | 0.01 | Accept/Reject |
| Parallelism of upper edge on lower Cam Block C to B | ≤ 0.02 | ≤ 0.02 | 0.01 | Accept/Reject |
| Parallelism of lower edge on upper Cam Block C to B | ≤ 0.02 | ≤ 0.02 | 0.01 | Accept/Reject |
| Parallelism of upper edge on upper Cam Block C to B | ≤ 0.02 | ≤ 0.02 | 0.01 | 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 | 457.46 | Accept/Reject |

INSPECTOR: Simon

QA Supervisor: Mwajaz

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

COMMENTS:

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



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

| <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

7/24/07
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



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 <input type="checkbox"/> In-Process <input checked="" type="checkbox"/> Final <input type="checkbox"/> Rework/Repair <input type="checkbox"/> First Article | | Vendor Name N/A | | Part No. L1430401-100400 | REV 5V | P.O. Number 16185 |
| At Oper. 170 | | Serial Numbers: 04 | Date Rec'd N/A | P.O. No. N/A | Part Name Undulator Support Girder | |
| | | | 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 | |

**** ALL DIMENSIONS TO BE RECORDED IN MILLIMETERS ****
**** ALL TEMPERATURES TO BE RECORDED IN CELSIUS ****

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.

| | | | | |
|---|-----------|----------------------------|----------|----------|
| PART TEMPERATURE <i>BEFORE</i> INSPECTION (Record in Celsius) | SOW 4.5.4 | CONTACT THERMOMETER MX1794 | 20.55° C | MTX QC 8 |
| PART TEMPERATURE <i>DURING</i> INSPECTION (Record in Celsius) | SOW 4.5.4 | CONTACT THERMOMETER MX1794 | 20.54° C | MTX QC 8 |
| PART TEMPERATURE <i>AFTER</i> INSPECTION (Record in Celsius) | SOW 4.5.4 | CONTACT THERMOMETER MX1794 | 20.52° C | MTX QC 8 |

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 | .012 mm | MTX QC 8 |
| B) Perpendicularity of Datum B to Datum C [] .25 [.010] A C | E8 | CMM MX1269 | .014 mm | MTX QC 8 |
| C) Flatness of datum A of .030 [.001] | N/A | CMM MX1269 | .021 mm | MTX QC 8 |
| D) Perpendicularity of Datum A to Datum C [] .25 [.010] C | D8 | CMM MX1269 | .059 mm | MTX QC 8 |
| E) 9X Ø 6.315 - 6.329 marked "D1", "D2" & "D3" | E7 E6 E3 | CMM MX1269 | 6.321 - 6.327 | MTX QC 8 |
| F) True position of "D3" holes 2X [] .1 [.004] A B C [] .03 [.0012] B C | E3 | CMM MX1269 | .060 .048 .006 | MTX QC 8 |
| F) True position of "D2" holes 2X [] .1 [.004] A B C [] .03 [.0012] B C | E6 | CMM MX1269 | .020 .052 .015 | MTX QC 8 |

| | | | | | |
|-------------------|-------------------------------|-----------------|----------------|--------------|--------------|
| STAMP MTX QC 8 | INSPECTED BY THOMAS G COOK | DATE 7/10/07 | PAGE 1 OF 2 | QTY ACC 1 | QTY REJ 0 |
|-------------------|-------------------------------|-----------------|----------------|--------------|--------------|



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 | Date Rec'd N/A | P.O. No. N/A | Part No. | REV | P.O. Number |
| <input type="checkbox"/> In-Process | | | | L1430401-100400 | 5V | 16185 |
| <input checked="" type="checkbox"/> Final | | | | Part Name Undulator Support Girder | | |
| <input type="checkbox"/> Rework/Repair | | | | Customer Name Hi-Tech Manufacturing | | |
| <input type="checkbox"/> First Article | | | | | | |
| At Oper. 170 | Serial Numbers: 04 | | | | | |

| 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 | 444.564 | | | MTX QC 8 |
| 1968.50 [77.500] | E4 | CMM MX1269 | 1968.504 | | | MTX QC 8 |
| 3492.50 [137.500] | E2 | CMM MX1269 | 3492.455 | | | MTX QC 8 |
| 2X 523.6 [20.61] | E1 | CMM MX1269 | 523.573 523.574 523.576 | | | MTX QC 8 |
| 3185.26 [125.404] | D2 | CMM MX1269 | 3185.188 | | | MTX QC 8 |
| 845.29 [33.179] | D6 | CMM MX1269 | 845.275 | | | MTX QC 8 |
| 2X 95.10 [3.744] | D8 | CMM MX1269 | 95.087 95.135 | | | MTX QC 8 |

SHEET 2 - SIDE VIEW

| | | | | | | |
|--|----|------------|------|--|--|-------------|
| A) \square -C \square \square .030 [.0012] | C8 | CMM MX1269 | .028 | | | MTX QC 8 |
|--|----|------------|------|--|--|-------------|

SHEET 2 - BOTTOM VIEW

| | | | | | | |
|--------------------------------|----|------------|---------------------|--|--|-------------|
| A) 2X 749.78 ± .15 | C7 | CMM MX1269 | 79.769 79.780 | | | MTX QC 8 |
| B) 2X 2340.00 ± .15 | C5 | CMM MX1269 | 2339.951 2339.939 | | | MTX QC 8 |
| C) 4X \square .05 [.002] B | B2 | CMM MX1269 | .010 .000 .004 .001 | | | MTX QC 8 |
| D) 4X \square .030 [.0012] A | B7 | CMM MX1269 | .001 .004 .006 .004 | | | MTX QC 8 |

SHEET 3 - SECTION B-B

| | | | | | | |
|---------------------------|----|------------|---------------------|--|--|-------------|
| E) \square .07 [.003] C | C2 | CMM MX1269 | .012 .024 .026 .033 | | | MTX QC 8 |
| F) 4X 109.47 ± .08 | C2 | CMM MX1269 | 109.408 - 109.413 | | | 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 |
|---|-----------------------|----------|--|--|--|-------------|

| | | | | | |
|-----------|-------------------------------|-----------------|----------------|--------------|--------------|
| STAMP | INSPECTED BY THOMAS G COOK | DATE 7/10/07 | PAGE 2 OF 2 | QTY ACC 1 | QTY REJ 0 |
|-----------|-------------------------------|-----------------|----------------|--------------|--------------|

The Cincinnati Steel Treating Co
5701 Mariemont Ave.
Cincinnati, Ohio 45227 (513) 271-3173

Certification ID
36424

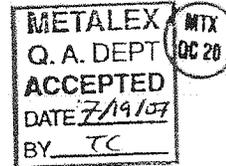
Order ID
96188

CERTIFICATION OF COMPLIANCE

CUSTOMER

Metalex Mfg., Inc.
5750 Cornell Road

Cincinnati OH
Bikt Ord # 45242



Purchase Order 71474-JS Customer Cust

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

S/N 7A-08198-03 & 7A-08189-04

STRESS RELIEVE PR AWS D1.1 REV. 2004 SECTION 5.8 AND TABLE 5.2. FURNACE CHARTS & CERTIFY.

RESULTS

THE ABOVE PARTS HAVE BEEN HEAT TREATED TO THE FOLLOWING:

HEAT TREATMENT STRESS RELIEVED PER AWS D1.1 REV 2004
SECTION 5.8 AND TABLE 5.2

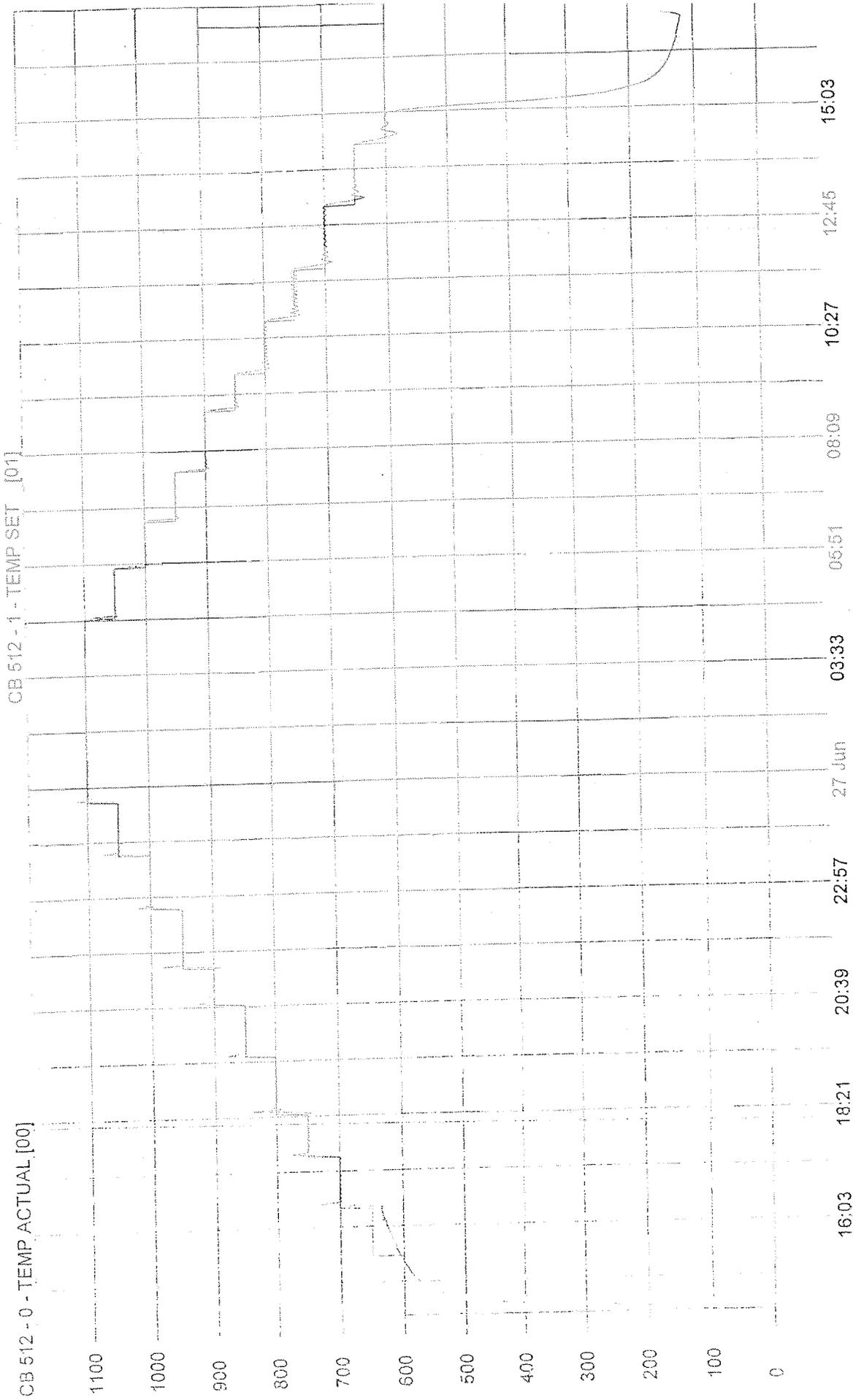
WE HEREBY CERTIFY THAT THE ABOVE PARTS WERE PROCESSED IN ACCORDANCE WITH THE SPECIFICATIONS AND INSTRUCTIONS SPECIFIED ON THE ABOVE PURCHASE ORDER AND THAT THE RESULTS AND REPORT THEREOF ARE AS STATED. ALL TESTING AND INSPECTION PROCEDURES EMPLOYED WERE IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS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

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

Waiting Report

Customer: METALEX STRESS RELIEVE
Part#: L1430401+-100400-05
PO#:71474-JS
CST Order #: 96188

Start: 6/26/2007 1:45:00 PM
End: 6/27/2007 5:00:00 PM
Sample every 1 minute(s)
Printed 7/17/2007 8:10:48 AM



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



CERTIFICATE OF CONFORMANCE

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

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

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

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

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

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

Attn:
Customer PO: 16185

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

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 SEMI-AUTO 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/O₂ - 92/8 FLOW RATE: 25 cfh
 BACKING OR BACK GOUGING METHOD: None

VISUAL INSPECTION RESULTS

APPEARANCE: Satisfactory UNDERCUT: None POROSITY: None

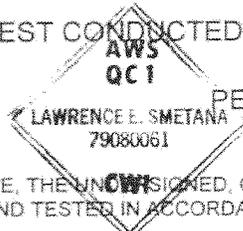
GUIDED BEND TEST RESULTS

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

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

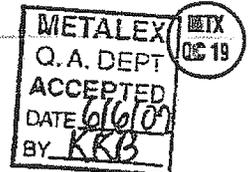
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

Laura Epps

Laura Epps
INSIDE SALES

Job# *Hi-tech*
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.

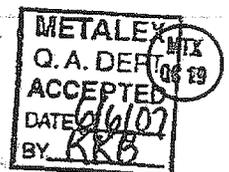
AUTHORIZED SIGNATURE:

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: | C | MN | P | S | CU | SI | NI | CR | MO |
|-------|------|------|------|------|-----|-----|-----|-----|-----|
| T7257 | .13 | .77 | .018 | .011 | .12 | .20 | .05 | .06 | .02 |
| MELT: | V | AL | CB | | | | | | |
| T7257 | .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 BVRV 5741

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

| |
|-------------|
| METALEX |
| Q.A. DEPT |
| ACCEPTED |
| DATE 5/2/05 |
| 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 | KKB |

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 | INTX |
| Q. A. DEPT | 0519 |
| 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: 04/20/06

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 6/6/07
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"

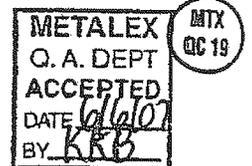
- ITEM# 1
- JOB# 7558
- HT# T7130

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# L143049-100400
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

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

MTX
QC 19

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

P.O# 71069-BL

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

MTX
05-19

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

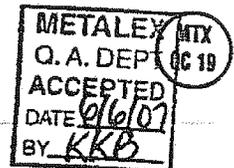
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

Laura Epps

Laura Epps
INSIDE SALES

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



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

| |
|--------------------|
| METALEX |
| Q. A. DEPT |
| ACCEPTED |
| DATE <i>6/6/07</i> |
| BY <i>KKB</i> |

MTX
QC 19

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
MX P.O.# 71069 Item #1

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

QTX
06 19

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

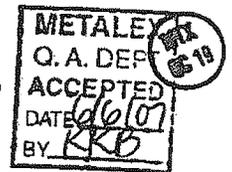
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

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: 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

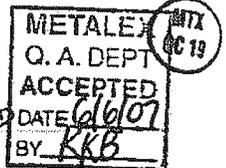
THIS MATERIAL HAS BEEN PRODUCED IN ACCORDANCE WITH APPLICABLE COMMERCIAL STANDARDS AND/OR SPECIFICATIONS THAT MAY BE DESIGNATED ON PURCHASE ORDERS AND/OR BY DRAWING SUPPLIED ON THE DATE ON WHICH THE INQUIRY AND/OR ORDER WAS PLACED. WE HAVE DOCUMENTATION ON FILE AND IS AVAILABLE FOR REVIEW.

AUTHORIZED SIGNATURE:

Laura Epps

Laura Epps
INSIDE SALES

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



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 | | | | | | |

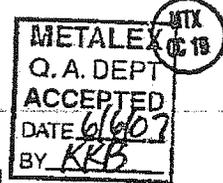
TENSILE PROPERTIES

| 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

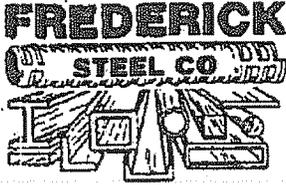
Hi-Tech
Jot # 07-7558
P/N L1430401-100400
M: P.O.# 71069 Item #1



WE HEREBY CERTIFY THE ABOVE INFORMATION IS CORRECT:

QUALITY ASSURANCE LABORATORY
COATESVILLE, PA 19320

Elinore Zaplitny
SUPERVISOR - TEST REPORTING
ELINORE ZAPLITNY



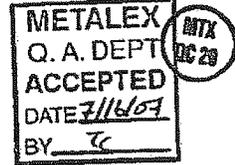
"The Complete Steel Service Center"
Since 1933

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' | A500-03A 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.
 Farrow, 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: 8.0x3.0x125x48"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 |
|------------|------------|------------|---------|-------|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 37620 | | 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&B | | | | | | | | |

Material Note:
 Sales Or.Note:

Authorized by Quality Assurance:

[Handwritten Signature]

METALEX
 Q. A. DEPT
 ACCEPTED
 DATE 7/11/07
 BY TC

MTX DC 20



Job # 7558
 PN: L1430401-100400
 PO# 71070





Southland Tube, Inc.
 3525 Richard Arrington Jr. Blvd. N.
 Birmingham, AL. 35234
 Phone (205) 251-1884 Fax (205) 421-4561
TEST REPORT ASTM-E8

07C06018

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.

Josh 7558
 IN: 11430401-100400
 PO# 71070

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



Pickup # 03L004
 STI Ord# 124649

Heat # X25899

Cust PO# 106530



CERTIFIED MILL TEST REPORT

For additional copies call
(800) 637-3227

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

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

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

John F. Powell

John F. Powell - CMC Steel AL
Quality Assurance Manager

| HEAT NO.: J62810 SECTION: F 8X3/4 | | SHIP TO | | SHIP#: BOL #: INV #: CUST PO#: CUST P/N: | | | |
|---|----------------------------------|-------------|-----------|--|-----------|----------|--|
| GRADE: ASTM A529-05-50/A529-05-55 ASTM A529M-05-345/A529M-05-380 | | S O L D T O | | S H I P T O | | | |
| CHEMICAL ANALYSIS | | TEST 1 | | TEST 2 | | TEST 3 | |
| MECHANICAL | | IMPERIAL | | IMPERIAL | | IMPERIAL | |
| % | | METRIC | | METRIC | | METRIC | |
| C | 0.25 | 60.1 KSI | 414.3 MPa | 60.0 KSI | 413.5 MPa | | |
| Mn | 0.96 | 86.2 KSI | 594.7 MPa | 88.4 KSI | 609.5 MPa | | |
| P | 0.012 | 19 % | 19 % | 20 % | 20 % | | |
| S | 0.035 | 8 INS | 203 MM | 8 INS | 203 MM | | |
| Si | 0.22 | | | | | | |
| Cu | 0.39 | | | | | | |
| Cr | 0.13 | | | | | | |
| Ni | 0.09 | | | | | | |
| Mo | 0.031 | | | | | | |
| Cb | 0.014 | | | | | | |
| V | 0.002 | | | | | | |
| Sn | 0.011 | | | | | | |
| 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 | | GRAIN SIZE | | INCLUSION RATING | | | |
| 1 | 2 3 4 5 6 7 8 9 10 11 12 | METHOD | | METHOD | | | |
| 13 | 14 15 16 18 20 22 24 26 28 30 32 | RESULT | | TYPE | | | |
| | | SIZE | | 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 A56.



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 | ULTIMATE KSI | 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 | ULTIMATE MPA | 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



Job# 7558
PIN: 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 Q0S741D 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

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

CERTIFIED MILL TEST REPORT

For additional copies call
(800) 637-3227

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

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

John F. Powell - CMC Steel AL
Quality Assurance Manager

John F. Powell

07B26025

| | |
|----------------------------|--|
| HEAT NO.: J70358 | SHIP#: 101941/177 |
| SECTION: F 7x9/8 x200" | BOL #: 266176 |
| F 178.9.5x6.096 | INV #: |
| GRADE: ASTM A36-05 | CUST PO#: 106527 |
| ASTM A36M-05 | CUST P/N: |
| S O L D T O | FREDERICK STEEL 200 WEST NORTH BEND RD CINCINNATI, OH 45216- |
| S O L D T O | FREDERICK STEEL 200 WEST NORTH BEND RD CINCINNATI, OH 45216- |

| CHEMICAL ANALYSIS % | PROPERTIES | | | | | |
|---------------------|------------|-----------|----------|-----------|----------|--------|
| | TEST 1 | | TEST 2 | | TEST 3 | |
| | IMPERIAL | METRIC | IMPERIAL | METRIC | IMPERIAL | METRIC |
| Yield Strength | 43.6 KSI | 301.0 MPA | 42.7 KSI | 294.7 MPA | | |
| Tensile Strength | 69.0 KSI | 475.8 MPA | 67.9 KSI | 468.3 MPA | | |
| Elongation | 28 % | 28 % | 27 % | 27 % | | |
| Gauge Length | 8 INS | 203 MM | 8 INS | 203 MM | | |
| Reduction of Area | | | | | | |
| Bend Test | | | | | | |
| Diameter | | | | | | |
| Charpy Impact | | | | | | |
| Test Temp | | | | | | |
| Sample Size | | | | | | |
| Orientation | | | | | | |
| Hardness | | | | | | |
| C | 0.16 | | | | | |
| Mn | 0.61 | | | | | |
| P | 0.013 | | | | | |
| S | 0.028 | | | | | |
| Si | 0.20 | | | | | |
| Cu | 0.33 | | | | | |
| Cr | 0.11 | | | | | |
| Ni | 0.09 | | | | | |
| Mo | 0.019 | | | | | |
| Cb | 0.000 | | | | | |
| V | 0.003 | | | | | |
| Sn | 0.011 | | | | | |
| B | 0.0002 | | | | | |
| Ti | 0.001 | | | | | |
| C.Eq. | 0.32 | | | | | |
| AL | 0.001 | | | | | |
| N | 0.008 | | | | | |

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



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

| JOMINY RESULTS - Rockwell C hardness at 1/16th inch increments | | | | | | | | | | | | INCLUSION RATING | | | | | | | | | |
|--|----|----|----|----|----|----|----|----|----|----|----|------------------|--|--|--|--|--|--|--|--|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | METHOD | | | | | | | | | |
| | | | | | | | | | | | | TYPE | | | | | | | | | |
| | | | | | | | | | | | | SIZE | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
| 13 | 14 | 15 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | | | | | | | | | | |

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

REMARKS:

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 |

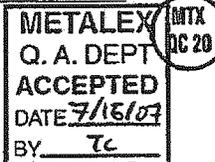
Material Note:
 Sales Or.Note:

Authorized by Quality Assurance:

JP

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

Page : 3 Of 3





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

A Division of Reid Entities

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



* 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 TL

MTX
 QC 20

HI-tech 755B

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

LINE 1

Estimated Weight 14 lb 4.00 oz 6.470 kg

UPS 6.00 PPD

RECEIVED

JUN 28 2007

METALEX MFG.
 BY CA

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 or by calling 800-253-0421 and requesting a copy.

CERTIFICATION OF COMPLIANCE

Reid Supply Company and its 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
(330)995-5500

| Warehouse Location | McMaster Carr Part Number | FUJ Quantity | Item Description | Your Line | Your Order | This Shipment |
|--------------------------|---------------------------|--------------|--|-----------|------------|---------------|
| EXTRA PACKING LIST | 90145 A537 | 18 PK | 18-2 STAINLESS STEEL DOWEL PIN 1/4" DIAMETER, 1/2" LENGTH PKG = 20 EA/PK 3 | 1 | 18 PK | 18 |
| | | | <p>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.</p> <p>Compliance Manager- Alberto Valdon</p> <p>Certificate of Compliance 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.</p> <p>Steve Tuttle Steve Tuttle, Quality Assurance Manager</p> | | | |

| | | | | | |
|-------------------|--------------|---------|---------------|------------|---|
| Post-It® Fax Note | 7671 | Date | 7/18 | # of pages | 1 |
| To | JAMES GIFFIN | From | | | |
| Co/Dept | METALEX MFG | Co | MCMASTER-CARR | | |
| Phone # | | Phone # | | | |
| Fax # | 513-489-0807 | Fax # | | | |

4789768-01

METALEX MANUFACTURING INC

PER TO:
UR
CP

LNS: 1 EST # PKG 1
WEIGHT 3

| | | |
|--------|-------------------|--------|
| PACKER | Number of CARTONS | FILLER |
| | | |

BLE

| | |
|---|---|
| <p>METALEX Q. A. DEPT ACCEPTED DATE 7/18/07 BY TC</p> <p>MTX DC 20</p> | <p>MCM NO. 4789768-01 04</p> <p>PURCHASE ORDER 70779-JT</p> <p>FROM: MCMASTER-CARR 200 AURORA INDUSTRIAL PKWY AURORA OH 44202 USA</p> <p>SHIP TO: METALEX MANUFACTURING INC BLUE ASH INDUSTRIAL PARK 5750 CORNELL RD CINCINNATI OH 45242-2010</p> <p>CCP</p> |
| | |

LB



CERTIFICATE OF ANALYSIS

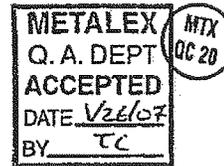
DATE : 01/22/007
PAGE : 1

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

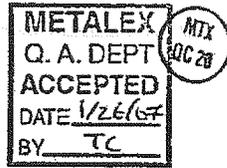
DATE : 01/22/007

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:

| <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

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

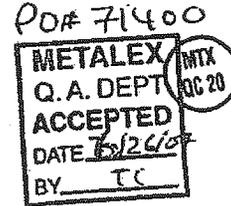
PAGE : 1

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



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

CHEMICAL ANALYSIS :

Table with 3 columns: ELEMENT, PROPERTIES, SPEC. REQUIREMENTS. Rows include Carbon, Manganese, Silicon, Phosphorus, Sulphur, Chromium, Nickel, Molybdenum, Vanadium, Copper.

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

ESAB

ORDER # : 282637
PART NUMBER: 245015904

ELONGATION : 27.0
REDUCTION OF AREA : 71.8

HARPY V-NOTCH REQUIREMENTS:

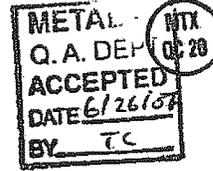
S-WELDED :

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

HARPY V-NOTCH RESULTS:

S-WELDED :

| 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

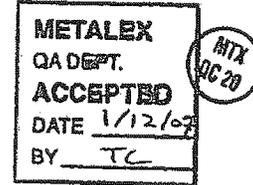
CERTIFICATE OF TYPICAL ANALYSIS

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 | 0.30 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/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. Wildstein
K. Wildstein, Supervisor, Q.A. Services



CERTIFICATE OF ANALYSIS

ESAB

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:

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

P.O. 67952

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

NTX
QC 20

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

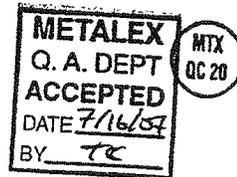
By: K. Wildasin
K. Wildasin, Supervisor, Q.A. Services



Metalex PO# 7/829-BL-7558

Certificate of Conformance

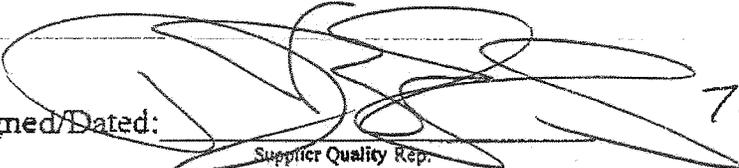
Customer: Metalex Mfg. Inc.
Address: 5750 Cornell Rd.
Cincinnati, Oh: 45242
Attention: Quality Engineering Dept.



| <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 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:  7.16-07
Supplier Quality Rep.

cc: Hardcopy P.O. Books
MX4012 (5/95)



SHERWIN-WILLIAMS.

SHERWIN-WILLIAMS
3143 E KEMPER RD
SHARONVILLE OH 45241

Visit 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

METALEX MFG
Q. A. DEPT. OF 20
ACCEPTED
DATE 7/16/07
BY TC

PO: 71829-BL-7558
ORDER: OE002500701246
DATE: 07/16/07
TIME: 8:08 AM

E16/13651 11

| SALES NUMBER | SIZE | PRODUCT | DESCRIPTION | QUANTITY |
|--------------------------------|-----------|----------|----------------|----------|
| 6405-18999 | GALLON | B62WZ111 | TC HS EX WHT A | 5 |
| Color: SW4026 SLATE GRAY | | | | |
| BAC Blend-a-Color OZ 32 64 128 | | | | |
| E1 | Black | 2 | 16 1 1 | |
| G2 | New Green | - | 3 - - | |
| Y3 | Deep Gold | - | 2 - - | |
| Sher-Color Formula | | | | |
| TOTAL LINES | | | | 1 |
| | | | | 5 |

OE1637L

RECEIVED
JUL 16 2007
METALEX MFG.
BY CS

MERCHANDISE RECEIVED IN GOOD ORDER BY:

BILLY BLANTON

DATE (CENTRALIZED INVOICE)



SHERWIN-WILLIAMS.

SHERWIN-WILLIAMS
3143 E KEMPER RD
SHARONVILLE OH 45241

Visit 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

PO: 7126/JG

METALEX MFG
5750 CORNELL RD
CINCINNATI OH 45242 2010

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 | MTX QC 20 |
| Q. A. DEPT | |
| ACCEPTED | |
| DATE 6/29/07 | |
| BY TC | |

Job 7558

MTX
RECEIVED

JUN 20 2007

METALEX MFG.
BY CO

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 755B

**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
OX 26965
batch date OX 27165 B67N5
OX 27855

OX 0275C B67H5
OX 2905Z

FROM ISW 1246

06/04/2007 20:19 16137712667

FAX NO. : 5137716590

SW CINCI CC

Jun. 05 2007 07:36AM P1

PAGE 01

FROM: METALEX PURCHASING

PHONE NO. : 513+489 8484

Jan. 30 2006 10:07AM P1

Metalex PO# 70772-JE-7558

ATTN: JAMES GRIFFIN

Certificate of Conformance

Hi-Tech Job# 7558

METALEX
Q. A. DEPT
ACCEPTED
DATE 6/5/07
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 | B624Z11 | | TILE CLAD H.S. EW. MC-S6 | | 36 MONTH UN OPEN |
| 2. | 5 | B60VZ10 | | TILE CLAD H.S. HARDNER | | 36 MONTH UN OPE |
| 3. | 1 | R7K54 | | SI REDUCER | | 2 YEARS |
| L Shelf life ID# 2834 | | | | | | |
| KKB 615107 | | | | | | |

MX Shelf Life ID# 2841 thru 2844

MTX
QC 19

KKB 615107

SHERWIN WILLIAMS 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: 

Vendor Quality Rep.

cc: Hardcopy P.O. Books
M74012 (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- (04)

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: 6/22/07

Fabrication Stage#2

Features: W3, W4 and W5

Acceptable (Y/N) YES

Initial: B.H.



Date: 6/23/07

Fabrication Stage#3

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

Acceptable (Y/N) YES

Initial: B.H.



Date: 6/25/07

Verification of completion of weld visual inspection:

Completed By: 



Date: 6/25/07

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) | | | | | | | | | | |
|---|--|--|--|--|------------|------------|---------|--------------|------------|-----------|---|---|---|
| (1) Crack Prohibition Any crack shall be unacceptable, regardless of size or location. | X | X | X | | | | | | | | | | |
| (2) Weld/Base-Metal Fusion Thorough fusion shall exist between adjacent layers of weld metal and between weld metal and base metal. | X | X | X | | | | | | | | | | |
| (3) Crater Cross Section 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 | | | | | | | | | | |
| (4) Weld Profiles Weld profiles shall be in conformance with 5.24. | X | X | X | | | | | | | | | | |
| (5) Time of Inspection 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 | | | | | | | | | | |
| (6) Undersized Welds 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] | | | | | | | | | | | | |
| (7) Undercut (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 | | | | | | | | | | | | |
| (8) Porosity (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.

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 Metalex 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
 Metalex 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>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>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

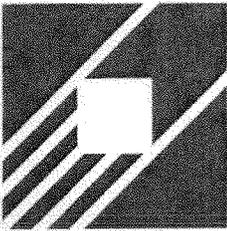
| | | | |
|-------------------|-------------------|--|--|
| Side - Acceptable | Side - Acceptable | | |
| Side - Acceptable | | | |
| Side - Acceptable | | | |

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: Rob Sch 2/27/07 2/26/07 RS
 to transfer to reused form to
 add AWS D1.1. info.



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

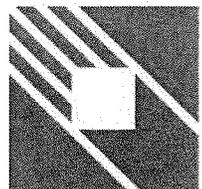
Features: # 1, 4, 2, 3

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

Verification of completion of weld visual inspection:

Completed by: Samuel Sosa Date: 11-17-07

Weld Certificate



HT-JUEGER
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.

Q.C. Supervisor

Musky A. Freese

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: ~~10~~ 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.

Shipping Special Instruction

Packaged By: _____ Date: _____

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.

Inspected By: Bill Date: 08-31-05



IMAC Inspection Form

Revised: 01/11/07
Revised: 09/29/05

Order #: 210000 Customer: IMC Motion Control Serial #: 000000000000
 Part Number: 210000 Type Code: 111-114-400 (1123 001) Qty: 25

Verify mounting dimensions

- Motor Mtg: IMBA Standard Model: N23 - 3/8"
- Check bore diameter = .15
** Check for EVERY adapter **
 - Check pin height > 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 shaft disc is present, if applicable
 - Verify order is complete.

Assemble gearbox / verify appearance and label

- Clean gearbox and part 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

- Notes:
Give copy of Inspection sheet to shipping for IMAC orders.

Shipping Special Instruction

Packaged By: _____ Date: _____

Inspected By: [Signature] Date: 01/31/07

LINTECH

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

CERTIFICATION

Date: 08/15/2007
Sales Order No.: 42873
Pick List No.: 52559

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

Ship To:
Hi-Tech Manufacturing
4637 No. 25th 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.

Quantity Shipped

(10)

Part Number/Description

206821 Rev."F"
Single Axis Table

Serial Number

AA00733003 } #-04
AA00733004 }
AA00733005
AA00733006
AA00733007
AA00733008
AA00733009
AA00733010
AA00733011
AA00733012

By: _____

Q.C. Manager

LINTECH

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

CERTIFICATION

Date: 08/15/2007
Sales Order No.: 42873
Pick List No.: 52559

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

Ship To:
Hi-Tech Manufacturing
4637 No. 25th 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 | AA00733003 AA00733004 AA00733005 AA00733006 AA00733007 AA00733008 AA00733009 AA00733010 AA00733011 AA00733012 |

Job# 55421A424

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