

# Ninyo & Moore

Geotechnical and Environmental Sciences Consultants

July 21, 2004

Project No. 203294053

**EARTHQUAKE**  
**JUL 22 2004**  
**RECEIVED**

Mr. Bill Gelpi  
County of Los Angeles, Department of Public Works  
900 South Fremont Avenue  
Alhambra, California 91803-1331

Subject: Structural Steel Coupon Testing Services  
Hall of Justice  
211 West Temple Street  
Los Angeles, California

Reference: Ninyo & Moore, 2004, Revised Proposal for Structural Steel Coupon Testing Services, Hall of Justice, dated May 17.

Dear Mr. Gelpi:

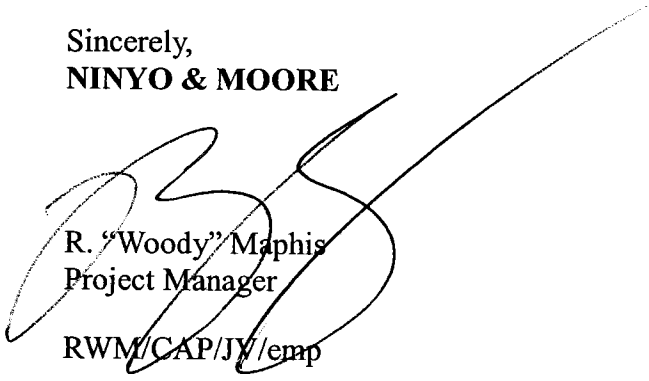
In accordance with the request and authorization of the County of Los Angeles, Department of Public Works (County), we have provided testing of the structural steel coupons from the Hall of Justice, located at 211 West Temple Street in Los Angeles, California. Our testing services were performed in general accordance with our referenced proposal dated, May 17, 2004, and the County's Work Authorization, No. NMCP-38, dated May 18, 2004. As indicated in the referenced document, our services included materials testing of the structural steel materials sampled by the County of Los Angeles' contractor from the site. Eleven samples of materials were requested to be tested and/or examined in accordance with the test descriptions provided in the Los Angeles County Hall of Justice Material Testing Program specifications provided with your request for quote dated May 12, 2004. This letter report summarizes the testing performed and provides results of our testing.

At the County's request, we arrived on site to pick up the structural steel coupon's that had been previously obtained, and transported the samples to our laboratory for testing. As indicated in the referenced document, Chemical Analysis, charpy v-notch, bend and tensile testing were performed on the samples. The laboratory test reports are attached. For informational purposes, test


results have been referenced to ASTM A36 standards. Ninyo & Moore has no information regarding the methods used in obtaining the samples.

Ninyo & Moore appreciates the opportunity to provide services on this project. If you have any questions regarding this letter, please contact the undersigned at your convenience.

Sincerely,  
**NINYO & MOORE**



R. "Woody" Maphis  
Project Manager  
RWM/CAP/JY/emp



Jalal Vakili, Ph.D., P.E.  
Principal Engineer

Attachments: Bodycote Materials Test Reports

Distribution: (3) Addressee

# Bodycote MATERIALS TESTING LOS ANGELES LABORATORY



BODYCOTE MATERIALS TESTING, INC. · 9940 ALBURTI AVENUE · SANTA FE SPRINGS · CA · 90670 · 562/801-5662 · FAX: 562/801-5660 · ONUNE · www.bodycote.com

## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-124

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 13-F A/B  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 1 OF 1

SPECIFICATION: ASTM A36-01 Plate > 3/4" to 1.5" Incl.

WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe						
RESULTS	0.25	0.46	< 0.01	0.00	0.03	0.03	Bal						
SPEC E C	MAX	1.20	0.40	0.04	0.05								
	MIN	0.80											

ANALYSIS BY XRAY & LECO

"V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	9.0	.011	15
2	11.0	.014	20
3	9.0	.013	20
AVERAGE	9.7		
MIN SINGULAR			
MIN AVERAGE			

Full Size Charpys: 0.394" x 0.394"

TEST RESULTS DO NOT CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Handwritten Signature]*

JOHN GOLCHER  
Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
Spec added

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## CERTIFICATION

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-125

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: 14-F 110/P  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 1 OF 1

SPECIFICATION: ASTM A36-01 Plate > 3/4" to 1.5" Incl.

WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.17	0.42	< 0.01	0.00	0.02	0.03	Bal					
SPEC	MAX	0.25	1.20	0.40	0.04	0.05						
	MIN		0.80									

ANALYSIS BY XRAY & LECO

"V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	12.0	.018	30
2	13.0	.018	30
3	10.0	.014	25
AVERAGE	11.7		
MIN SINGULAR			
MIN AVERAGE			

Full Size Charpys: 0.394" x 0.394"

TEST RESULTS DO NOT CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Signature]*  
 JOHN GOLCHER  
 Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
 Spec added

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## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-127

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: ROOF-W-11-O/P  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 1 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
 WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

**CHEMICAL ANALYSIS RESULTS:**

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.17	0.28	0.02	0.01	0.04	0.02	Bal					
SPECIFIC	MAX	0.25	0.40	0.04	0.05							
	MIN											

ANALYSIS BY XRAY & LECO

**TENSION TEST RESULTS:**

Elongation reported in % over 2 inch gauge length.

TEST TEMP: ROOM  
 YIELD: .2% OFFSET

SAMPLE IDENTIFICATION	DIMENSIONS	YIELD LOAD LBS.	TENSILE LOAD LBS.	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION %	REDUCTION OF AREA %	HARDNESS
# 01	.249	1,351	2,477	27,700	51,000	39.0	61.0	
MAXIMUM>>>					80,000			
MINIMUM>>>				36,000	58,000	23.0		

**"V" NOTCH CHARPY IMPACT TEST RESULTS:**

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	6.0	.010	20
2	5.0	.008	20
3	6.0	.009	20
AVERAGE	5.7		
MIN SINGULAR			
MIN AVERAGE			

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 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-127

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: ROOF-W-11-O/P  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 2 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
 WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

Full Size Charpys: 0.394" x 0.394"

**Bend Test Report:**

One transverse bend specimen was bent 90 degrees around a 1 t diameter.  
 Examination of the convex surface at 20X revealed no evidence of cracking.

TEST RESULTS DO NOT CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.

BMA  
6

JOHN GOLCHER  
 Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
 Spec added

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## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-128

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 12-W-2  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 1 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
WE SUBMIT THE FOLLOWING DETERMINATIONS:

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.23	0.43	< 0.01	0.00	0.05	0.02	Bal					
SPECIFIC	MAX	0.25	0.40	0.04	0.05							
	MIN											

ANALYSIS BY XRAY & LECO

### TENSION TEST RESULTS:

Elongation reported in % over 2 inch gauge length.

TEST TEMP: ROOM  
YIELD: .2% OFFSET

SAMPLE IDENTIFICATION	DIMENSIONS	YIELD LOAD LBS.	TENSILE LOAD LBS.	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION %	REDUCTION OF AREA %	HARDNESS
# 01	.251	2,147	3,097	43,400	62,500	27.0	43.0	
MAXIMUM>>>					80,000			
MINIMUM>>>				36,000	58,000	23.0		

### "V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	% SHEAR
1	21.0	.029	25
2	22.0	.035	30
3	21.0	.034	30
AVERAGE	21.3		
MIN SINGULAR			
MIN AVERAGE			

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SUBMITTED BY: NINYO & MOORE  
475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-128

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 12-W-2  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 2 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
WE SUBMIT THE FOLLOWING DETERMINATIONS:

Sub-Size Charpys: 0.335" x 0.394"

**Bend Test Report:**

One transverse bend specimen was bent 180 degrees around a 1 t diameter.  
Examination of the convex surface at 20X revealed no evidence of cracking.

TEST RESULTS CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Signature]*  
JOHN GOLCHER  
Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
Spec added

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475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-129

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 11-14-1/3-O/P  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 1 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.17	0.49	< 0.01	0.00	0.02	0.03	Bal					
SPEC	MAX	0.25	0.40	0.04	0.05							
	MIN											

ANALYSIS BY XRAY & LECO

### TENSION TEST RESULTS:

Elongation reported in % over 2 inch gauge length.

TEST TEMP: ROOM

YIELD: .2% OFFSET

SAMPLE IDENTIFICATION	DIMENSIONS	YIELD LOAD LBS.	TENSILE LOAD LBS.	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION %	REDUCTION OF AREA %	HARDNESS
# 01	.251	1,978	2,736	40,000	55,500	41.0	60.0	
MAXIMUM>>>					80,000			
MINIMUM>>>				36,000	58,000	23.0		

### "V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	% SHEAR
1	9.0	.014	30
2	16.0	.023	40
3	12.0	.018	35
AVERAGE	12.3		
MIN SINGULAR			
MIN AVERAGE			

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IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-129

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 11-14-1/3-O/P  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 2 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

Full Size Charpys: 0.394" x 0.394"

Bend Test Report:

One transverse bend specimen was bent 180 degrees around a 1 t diameter.  
Examination of the convex surface at 20X revealed no evidence of cracking.

TEST RESULTS DO NOT CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



JOHN GOLCHER  
Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
Spec added

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## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-131

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 12-F-2-A/B  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 1 OF 1

SPECIFICATION: ASTM A36-01 Plate > 3/4" to 1.5" Incl.

WE SUBMIT THE FOLLOWING DETERMINATIONS:

**NON-CONFORMING**

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe						
RESULTS	0.25	0.44	< 0.01	0.00	0.04	0.02	Bal						
SPECIFIC	MAX	0.25	1.20	0.40	0.04	0.05							
	MIN		0.80										

ANALYSIS BY XRAY & LECO

"V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	% SHEAR
1	12.0	.016	20
2	10.0	.013	20
3	17.0	.022	20
AVERAGE	13.0		
MIN SINGULAR			
MIN AVERAGE			

Full Size Charpys: 0.394" x 0.394"

TEST RESULTS DO NOT CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Signature]*  
JOHN GOLCHER  
Laboratory Manager

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Spec added

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## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-133

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 8-W-11-12-BC  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 1 OF 1

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
WE SUBMIT THE FOLLOWING DETERMINATIONS:

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe						
RESULTS	0.23	0.41	0.01	0.00	0.05	0.02	Bal						
SPECIFIC	MAX	0.25	0.40	0.04	0.05								
	MIN												

ANALYSIS BY XRAY & LECO

"V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	7.0	.010	20
2	9.0	.014	25
3	9.0	.012	20
AVERAGE	8.3		
MIN SINGULAR			
MIN AVERAGE			

Full Size Charpys: 0.394" x 0.394"

TEST RESULTS CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Signature]*  
JOHN GOLCHER  
Laboratory Manager

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Spec added

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## CERTIFICATION

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-133

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: 8-W-11-12-BC  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 1 OF 1

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
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### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe						
RESULTS	0.23	0.41	0.01	0.00	0.05	0.02	Bal						
SPECIFIC	MAX	0.25	0.40	0.04	0.05								
	MIN												

ANALYSIS BY XRAY & LECO

"V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	7.0	.010	20
2	9.0	.014	25
3	9.0	.012	20
AVERAGE	8.3		
MIN SINGULAR			
MIN AVERAGE			

Full Size Charpys: 0.394" x 0.394"

TEST RESULTS CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Handwritten Signature]*

JOHN GOLCHER  
 Laboratory Manager

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SUBMITTED BY: NINYO & MOORE  
475 GODDARD, SUITE 200  
  
IRVINE, CA 92618  
ATTN: TINO RODRIGUEZ  
LAB#: 07-12-NIN-134

DATE : 07/20/04  
P. O. # : 203294053  
SAMPLE ID: 14-W-11-O/P  
INVOICE #: 567136  
MATERIAL : STEEL  
PAGE # : 1 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
WE SUBMIT THE FOLLOWING DETERMINATIONS:

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.22	0.42	< 0.01	0.00	0.04	0.02	Bal					
SPECIFIC	MAX	0.25	0.40	0.04	0.05							
	MIN											

ANALYSIS BY XRAY & LECO

### TENSION TEST RESULTS:

Elongation reported in % over 2 inch gauge length.

TEST TEMP: ROOM  
YIELD: .2% OFFSET

SAMPLE IDENTIFICATION	DIMENSIONS	YIELD LOAD LBS.	TENSILE LOAD LBS.	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION %	REDUCTION OF AREA %	HARDNESS
# 01	.255	2,043	3,307	40,000	65,000	31.0	48.0	
MAXIMUM>>>					80,000			
MINIMUM>>>				36,000	58,000	23.0		

### "V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	12.0	.016	30
2	11.0	.017	30
3	12.0	.019	30
AVERAGE	11.7		
MIN SINGULAR			
MIN AVERAGE			

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# Bodycote MATERIALS TESTING LOS ANGELES LABORATORY



BODYCOTE MATERIALS TESTING, INC. · 9840 ALBURTI AVENUE · SANTA FE SPRINGS · CA · 90670 · 562/801-5662 · FAX: 562/801-5660 · ONLINE: · www.bodycote.com

## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-134

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: 14-W-11-O/P  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 2 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
 WE SUBMIT THE FOLLOWING DETERMINATIONS:

Sub-Size Charpys: 0.346" x 0.394"

**Bend Test Report:**

One transverse bend specimen was bent 180 degrees around a 1 t diameter.  
 Examination of the convex surface at 20X revealed no evidence of cracking.

TEST RESULTS CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Signature]*  
 JOHN GOLCHER  
 Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
 Spec added

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## CERTIFICATION

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-135

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: 2-W-AB 13-W-11-AB  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 1 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
 WE SUBMIT THE FOLLOWING DETERMINATIONS:

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.24	0.43	< 0.01	0.00	0.05	0.02	Bal					
SPECIFIC	MAX	0.25	0.40	0.04	0.05							
	MIN											

ANALYSIS BY KRAY & LECO

### TENSION TEST RESULTS:

Elongation reported in % over 2 inch gauge length.

TEST TEMP: ROOM  
 YIELD: .2% OFFSET

SAMPLE IDENTIFICATION	DIMENSIONS	YIELD LOAD LBS.	TENSILE LOAD LBS.	YIELD STRENGTH PSI	TENSILE STRENGTH PSI	ELONGATION %	REDUCTION OF AREA %	HARDNESS
# 01	.252	2,367	3,340	47,500	67,000	27.0	45.0	
MAXIMUM>>>					80,000			
MINIMUM>>>				36,000	58,000	23.0		

### "V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	% SHEAR
1	13.0	.021	40
2	12.0	.019	40
3	15.0	.022	45
AVERAGE	13.3		
MIN SINGULAR			
MIN AVERAGE			

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## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-135

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: 2-W-AB 13-W-11-AB  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 2 OF 2

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
 WE SUBMIT THE FOLLOWING DETERMINATIONS:

Sub-Size Charpys: 0.337" x 0.394"

### Bend Test Report:

One transverse bend specimen was bent 180 degrees around a 1 t diameter.  
 Examination of the convex surface at 20X revealed no evidence of cracking.

TEST RESULTS CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.



*[Signature]*  
 JOHN GOLCHER  
 Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
 Spec added

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## C E R T I F I C A T I O N

SUBMITTED BY: NINYO & MOORE  
 475 GODDARD, SUITE 200  
 IRVINE, CA 92618  
 ATTN: TINO RODRIGUEZ  
 LAB#: 07-12-NIN-136

DATE : 07/20/04  
 P. O. # : 203294053  
 SAMPLE ID: A 12-F-2 A/B  
 INVOICE #: 567136  
 MATERIAL : STEEL  
 PAGE # : 1 OF 1

SPECIFICATION: ASTM A36-01 Plate to 3/4" Incl.  
 WE SUBMIT THE FOLLOWING DETERMINATIONS:

### CHEMICAL ANALYSIS RESULTS:

ELEMENT	C	Mn	Si	P	S	Cu	Fe					
RESULTS	0.25	0.43	< 0.01	0.00	0.03	0.02	Bal					
SPECIFIC	MAX	0.25	0.40	0.04	0.05							
	MIN											

ANALYSIS BY XRAY & LECO

"V" NOTCH CHARPY IMPACT TEST RESULTS:

TEMP: ROOM

SAMPLE NUMBER	IMPACT STRENGTH FOOT-POUNDS	LATERAL EXPANSION INCHES	%SHEAR
1	15.0	.019	25
2	12.0	.015	20
3	13.0	.017	20
AVERAGE	13.3		
MIN SINGULAR			
MIN AVERAGE			

Full Size Charpys: 0.394" x 0.394"

TEST RESULTS CONFORM TO SPECIFICATIONS.

BODYCOTE MATERIALS TESTING, L.A.

  
 JOHN GOLCHER  
 Laboratory Manager

Physical testing conducted in accordance with ASTM E8-03  
 Spec added

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