CALSER CORPORATION

302 N. Belt East, Swansea, IL 62226

(618) 277-0329

TESTING MACHINE CALIBRATION DATA AND REPORT

University of Arkansas Customer Civil Engineering Location

Fayetteville, AR 72701

Forney 400,00lbf Model QC-400F-GB2 Machine

95037 Serial No. w/ Admet GB2 Digital R/O #GB2-100721-2 Auxiliary Equipment:

Report #:

Date of Service

Date Last Done

Order Date

Temp.

Customer Order No.

VN# 5863-001

Page 1 of 2

08/12/10

Verbal

08/05/10

95° F 03/30/10

	w/ Dy	nisco P/T							
Applied Force	*	Indicated Force	Error	%	Applied Force	*	Indicated Force	Error	%
Run #1		"As Found" Condition			Run #2		"As Left" Condition		
400,000lbf Range	*	10lbf / DIV			400,000lbf Range	*	10lbf / DIV		
0	10C	0	0	0.00	0	10C	0	0	0.00
5,000	10C	5,010	10	0.20	5,000	10C	5,010	10	0.20
10,000	10C	10,020	20	0.20	10,000	10C	10,020	20	0.20
20,000	11	20,040	40	0.20	20,000	11	20,060	60	0.30
40,000	11	40,060	60	0.15	40,000	11	40,080	80	0.20
60,000	12	60,100	100	0.17	60,000	12	60,120	120	0.20
80,000	12	80,150	150	0.19	80,000	12	80,180	180	0.23
100,000	12	100,130	130	0.13	100,000	12	100,170	170	0.17
150,000	12	150,090	90	0.06	150,000	12	150,110	110	0.07
200,000	12	199,920	-80	0.04	200,000	12	200,020	20	0.01
250,000	12	250,040	40	0.02	250,000	12	250,060	60	0.02
300,000	12	300,220	220	0.07	300,000	12	300,190	190	0.06
350,000	12	350,280	280	0.08	350,000	12	350,340	340	0.10
400,000	12	400,310	310	0.08	400,000	12	400,360	360	0.09
0	12	0	0	0.00	0	12	0	0	0.00
1	1								

Notes:

Calibration in accordance with ASTM E4-09, and Calser Corporation Procedure # 1-01, Rev 1.

*CALIBRATION EQUIPMENT

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Test'ing (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025. All instrument readings have been corrected for temperature where necessary. Verification Equipment

ACCURACY SUMMARY

	ACCOMMANT			7 (111	ioation Equipment	
Capacity Range	Loading Range	Max. Error	Manufacturer	* L/C	Range	Verification Agency
Run 1			and Serial #		and uncertainty	and Date
400,000lbf Range	5,000 - 400,000	0.20 %	Interface	10C	228.72 - 10,000 lbf	Morehouse
			71145		0.572 lbf	11/18/09
			Strainsense	11	9,132.57 - 100,000 lbf	Morehouse
Run 2			030429S		22.831 lbf	11/18/09
400,000lbf Range	5,000 - 400,000	0.30 %	Strainsense	12	59,870.58 - 600,000 lbf	Morehouse
			990921		149.676 lbf	11/18/09
	_					

This report shall not be copied except in its entirety without express written approval of Calser Corp.

Luanne Holper Calibration Technician

CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226

(618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner : University of Arkansas Report # : VN# 5863-001

Location : Civil Engineering Page : 2 of 2
Fayetteville, AR 72701

Date of Service: 08/12/10

Machine : Forney 400,00lbf Model QC-400F-GB2

Serial No. : 95037

w/ Admet GB2 Digital R/O #GB2-100721-2

w/ Dynisco P/T

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel.

The method of verification and listed data are in accordance with ASTM E 4-09.

Accuracy of all calibration devices is traceable to the National Institute of Standards and Testing (NIST)

and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 400,000lbf Range	5,000 - 400,000	0.20 %
Run 2 400,000lbf Range	5,000 - 400,000	0.30 %

Verification Equipment Used:

(600,000 Load Cell Set)

Admet Gage Buster Digital Readout, Serial # GB-9908261 and Load Cell(s) Listed Below:

Serial #	<u>Range</u>	<u>Calib. Date</u>	<u>Uncertainty</u>
71145-C	228.72 - 10,000 lbf	11/18/2009	0.572 lbf
030429S	9,132.57 -100,000 lbf	11/18/2009	22.831 lbf
990921	59,870.58 - 600,000 lbf	11/18/2009	149.676 lbf

This certificate is issued as a statement of the fact that on the above date the listed testing machine has an accuracy as indicated. It should not be construed or regarded as a Guarantee or Warranty of any kind (in favor of the client, the client's customers, or the public at large) that the testing machine will continue to retain the same percentage (%) of accuracy or efficiency as determined on the date when the calibration, and adjustments if required, was performed and reported by "Calser Corporation" since the calibrator has absolutely no control over the future operation, damage, maintenance, repairs, and overall condition of the testing machine and hereby expressly disclaims any and all liability for damage or loss sustained by all parties arising or resulting from the deterioration, obsolescence, malfunction or substandard performance of said testing machine; which shall remain the sole responsibility of the machine's regular custodian, owner, and/or user. This certificate shall not be reporduced except in full, without the written approval of Calser Corporation.

CALSER CORPORATION

Quality Control Director

Thomas R. Gagen

Form# 102-01-Rev.3

CALSER CORPORATION

302 N. Belt East, Swansea, IL 62226

(618) 277-0329

TESTING MACHINE CALIBRATION DATA AND REPORT

University of Arkansas Customer Civil Engineering

Fayetteville, AR 72701

TMI 500,000lbf Model CM-5000 GB2

100317 Serial No.

Location

Machine

Auxiliary Equipment:

w/ Admet GB2 Digital #GB2-1004302

Report #:

Date of Service

Date Last Done

Order Date

Temp.

Customer Order No.

VN# 5863-002

Page 1 of 2

08/12/10

Verbal 08/05/10

95° F New

w/ Dynisco P/T #04-08-10323273

	w/ Dy	nisco P/T #04-08-1032					.		
Applied Force	*	Indicated Force	Error	%	Applied Force	*	Indicated Force	Error	%
Run #1		"As Found" Condition			Run #2		"As Left" Condition		
500,000lbf Range	*	10lbf / DIV			500,000lbf Range	*	10lbf / DIV		
0	10C	0	0	0.00	0	10C	0	0	0.00
5,000	10C	5,000	0	0.00	5,000	10C	5,010	10	0.20
10,000	10C	10,010	10	0.10	10,000	10C	10,030	30	0.30
20,000	11	20,020	20	0.10	20,000	11	20,030	30	0.15
40,000	11	40,000	0	0.00	40,000	11	40,020	20	0.05
60,000	12	59,980	-20	0.03	60,000	12	59,990	-10	0.02
80,000	12	79,990	-10	0.01	80,000	12	79,970	-30	0.04
100,000	12	99,910	-90	0.09	100,000	12	99,880	-120	0.12
125,000	12	124,940	-60	0.05	125,000	12	124,910	-90	0.07
150,000	12	149,910	-90	0.06	150,000	12	149,880	-120	0.08
175,000	12	174,930	-70	0.04	175,000	12	174,870	-130	0.07
200,000	12	199,860	-140	0.07	200,000	12	199,840	-160	0.08
250,000	12	249,710	-290	0.12	250,000	12	249,660	-340	0.14
300,000	12	299,520	-480	0.16	300,000	12	299,460	-540	0.18
350,000	12	349,580	-420	0.12	350,000	12	349,530	-470	0.13
400,000	12	399,510	-490	0.12	400,000	12	399,560	-440	0.11
450,000	12	449,620	-380	0.08	450,000	12	449,680	-320	0.07
500,000	12	499,600	-400	0.08	500,000	12	499,640	-360	0.07
0	12	0	0	0.00	0	12	0	0	0.00
Notos		I					*OALIDDATION FOLUDATION	L	

Notes:

Calibration in accordance with ASTM E4-09, and Calser Corporation Procedure # 1-01, Rev 1.

*CALIBRATION EQUIPMENT

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Test'ing (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025. All instrument readings have been corrected for temperature where necessary. **Verification Equipment**

ACCURACY SUMMARY

	ACCOUNTAGE COMMAND			7 01 11	ioation Equipment	
Capacity Range	Loading Range	Max. Error	Manufacturer	* L/C	Range	Verification Agency
Run 1			and Serial #		and uncertainty	and Date
500,000lbf Range	5,000 - 500,000	0.16 %	Interface	10C	228.72 - 10,000 lbf	Morehouse
			71145		0.572 lbf	11/18/09
			Strainsense	11	9,132.57 - 100,000 lbf	Morehouse
Run 2			030429S		22.831 lbf	11/18/09
500,000lbf Range	5,000 - 500,000	0.30 %	Strainsense	12	59,870.58 - 600,000 lbf	Morehouse
			990921		149.676 lbf	11/18/09

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Luanne Holper Calibration Technician

CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226

(618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner : University of Arkansas Report # : VN# 5863-002

Location : Civil Engineering Page : 2 of 2
Fayetteville, AR 72701

Date of Service: 08/12/10

Machine: TMI 500,000lbf Model CM-5000 GB2

Serial No. : 100317

w/ Admet GB2 Digital #GB2-1004302 w/ Dynisco P/T #04-08-10323273

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel.

The method of verification and listed data are in accordance with ASTM E 4-09.

Accuracy of all calibration devices is traceable to the National Institute of Standards and Testing (NIST)

and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 500,000lbf Range	5,000 - 500,000	0.16 %
Run 2 500,000lbf Range	5,000 - 500,000	0.30 %

Verification Equipment Used:

(600,000 Load Cell Set)

Admet Gage Buster Digital Readout, Serial # GB-9908261 and Load Cell(s) Listed Below:

Serial #	<u>Range</u>	<u>Calib. Date</u>	<u>Uncertainty</u>
71145-C	228.72 - 10,000 lbf	11/18/2009	0.572 lbf
030429S	9,132.57 -100,000 lbf	11/18/2009	22.831 lbf
990921	59,870.58 - 600,000 lbf	11/18/2009	149.676 lbf

This certificate is issued as a statement of the fact that on the above date the listed testing machine has an accuracy as indicated. It should not be construed or regarded as a Guarantee or Warranty of any kind (in favor of the client, the client's customers, or the public at large) that the testing machine will continue to retain the same percentage (%) of accuracy or efficiency as determined on the date when the calibration, and adjustments if required, was performed and reported by "Calser Corporation" since the calibrator has absolutely no control over the future operation, damage, maintenance, repairs, and overall condition of the testing machine and hereby expressly disclaims any and all liability for damage or loss sustained by all parties arising or resulting from the deterioration, obsolescence, malfunction or substandard performance of said testing machine; which shall remain the sole responsibility of the machine's regular custodian, owner, and/or user. This certificate shall not be reporduced except in full, without the written approval of Calser Corporation.

CALSER CORPORATION

Thomas R. Gagen

Quality Control Director

Form# 102-01-Rev.3

CALSER CORPORATION

302 N. Belt East, Swansea, IL 62226

(618) 277-0329

TESTING MACHINE CALIBRATION DATA AND REPORT

Customer University of Arkansas

Location Civil Engineering
Fayetteville, AR 72701

Forney 400,000lbf T.M. 01160

Auxiliary Equipment: w/ Admet PIR Digital R/O #1004077

Report #:

VN# 5863-003 Page 1 of 2

08/12/10

Verbal

Date of Service
Customer Order No.
Order Date

Temp.
Date Last Done

08/05/10 95° F New

	w/ Dy	nisco P/T #10-07-09246	6183						
Applied Force	*	Indicated Force	Error	%	Applied Force	*	Indicated Force	Error	%
Run #1		"As Found" Condition			Run #2		"As Left" Condition		
400,000lbf Range	*	10lbf / DIV			400,000lbf Range	*	10lbf / DIV		
0	10C	0	0	0.00	0	10C	0	0	0.00
5,000	10C	5,010	10	0.20	5,000	10C	5,010	10	0.20
10,000	10C	10,010	10	0.10	10,000	10C	10,020	20	0.20
20,000	11	20,020	20	0.10	20,000	11	20,030	30	0.15
40,000	11	39,960	-40	0.10	40,000	11	40,010	10	0.03
60,000	12	60,010	10	0.02	60,000	12	60,020	20	0.03
80,000	12	80,000	0	0.00	80,000	12	80,020	20	0.03
100,000	12	100,040	40	0.04	100,000	12	100,070	70	0.07
125,000	12	125,010	10	0.01	125,000	12	125,030	30	0.02
150,000	12	150,080	80	0.05	150,000	12	150,120	120	0.08
175,000	12	175,120	120	0.07	175,000	12	175,180	180	0.10
200,000	12	200,100	100	0.05	200,000	12	200,050	50	0.03
250,000	12	250,090	90	0.04	250,000	12	250,060	60	0.02
300,000	12	300,070	70	0.02	300,000	12	300,050	50	0.02
350,000	12	349,990	-10	0.00	350,000	12	349,980	-20	0.01
400,000	12	399,920	-80	0.02	400,000	12	399,890	-110	0.03
0	12	0	0	0.00	0	12	0	0	0.00

Notes:

Machine

Serial No.

Calibration in accordance with ASTM E4-09, and Calser Corporation Procedure # 1-01, Rev 1.

*CALIBRATION EQUIPMENT

All verification equipment-including dead weights, proving rings, load cells, etc, is calibrated and traceable to the latest procedures stipulated by the National Institute of Standards and Testing (NIST) and ASTM E74-06. All equipment is traceable under guidelines set forth in ISO/IEC 17025. All instrument readings have been corrected for temperature where necessary.

Verification Equipment

ACCURACY SUMMARY

ACCORACT SOMMANT				Vernication Equipment			
Capacity Range	Loading Range	Max. Error	Manufacturer	* L/C	Range	Verification Agency	
Run 1			and Serial #		and uncertainty	and Date	
400,000lbf Range	5,000 - 400,000	0.20 %	Interface	10C	228.72 - 10,000 lbf	Morehouse	
			71145		0.572 lbf	11/18/09	
			Strainsense	11	9,132.57 - 100,000 lbf	Morehouse	
Run 2			030429S		22.831 lbf	11/18/09	
400,000lbf Range	5,000 - 400,000	0.20 %	Strainsense	12	59,870.58 - 600,000 lbf	Morehouse	
			990921		149.676 lbf	11/18/09	

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Calibration Technician Luanne Holper

CALSER CORPORATION 302 N. BELT EAST SWANSEA, IL 62226

(618)277-0329

TESTING MACHINE CERTIFICATE OF CALIBRATION

Owner : University of Arkansas Report #: VN# 5863-003 Page: 2 of 2

Location : Civil Engineering

Fayetteville, AR 72701 Date of Service: 08/12/10

Machine: Forney 400,000lbf T.M.

Serial No. : 01160

> w/ Admet PIR Digital R/O #1004077 w/ Dynisco P/T #10-07-09246183

This is to certify that the testing machine listed above has been calibrated by Calser Corporation personnel.

The method of verification and listed data are in accordance with ASTM E 4-09.

Accuracy of all calibration devices is traceable to the National Institute of Standards and Testing (NIST)

and all calculations have been corrected for temperature where applicable.

Capacity Range	Loading Range	Max. Error
Run 1 400,000lbf Range	5,000 - 400,000	0.20 %
Run 2 400,000lbf Range	5,000 - 400,000	0.20 %

Verification Equipment Used:

(600,000 Load Cell Set)

Admet Gage Buster Digital Readout, Serial # GB-9908261 and Load Cell(s) Listed Below:

Serial #	<u>Range</u>	<u>Calib. Date</u>	<u>Uncertainty</u>
71145-C	228.72 - 10,000 lbf	11/18/2009	0.572 lbf
030429S	9,132.57 -100,000 lbf	11/18/2009	22.831 lbf
990921	59,870.58 - 600,000 lbf	11/18/2009	149.676 lbf

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CALSER CORPORATION

Quality Control Director

Thomas R. Gagen

Form# 102-01-Rev.3