



STRUCTURAL ENGINEERING DIVISION
Test Floor Laboratory
Department of Civil Engineering
University of Engineering and Technology Lahore, 54890
Pakistan. Ph: 92-42-99029202

To,
M/S MS Civoool Steel Pvt. Ltd.
Lahore

Reference # CED/TFL **1780** (Dr. Usman Akmal)
Reference of the request letter # Nil

Dated: 15-08-2022

Dated: 15-08-2022

Tension Test Report (Page – 1/1)

Date of Test 17-08-2022
Gauge length 2 inches
Description Steel Strip Tensile Test

Sr. No.	Designation	Size of Strip	X Section Area	Yield load	Breaking Load	Yield Stress	Ultimate Stress	Elongation	% Elongation	Remarks
	(mm)	(mm)	(mm ²)	(kg)	(kg)	(MPa)	(MPa)	(in)		
1	1.5	27.50x1.50	41.25	1200	2400	285	571	0.35	17.50	
2	2	27.50x1.95	53.63	2000	3000	366	549	0.40	20.00	
3	4	27.50x3.80	104.50	4000	5000	376	469	0.60	30.00	
4	5	27.50x5.00	137.50	5500	7700	392	549	0.60	30.00	
5	6	27.60x5.85	161.46	6600	9200	401	559	0.60	30.00	
6	8	27.40x7.90	216.46	8100	11800	367	535	0.70	35.00	
7	10	27.40x9.90	271.26	11500	15900	416	575	0.60	30.00	
Only Seven Samples for Tensile Test										
Bend Test										

To,

I/C Testing Laboratoires
UET Lahore, Pakistan.

Note:

- 1- You can See your reports On Internet in the following web site
http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing_reports
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Project Engineer
 Defence Housing Authority
 Gujranwala

Reference # CED/TFL **1790** (Dr. Usman Akmal)
 Reference of the request letter # 111/15/PE/RS/Pkg-1/564

Dated: 16-08-2022
 Dated: 05-08-2022

Tension Test Report (Page -1/2)

Date of Test 17-08-2022
 Gauge length 8 inches
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size		Area (in ²)		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal (#)	Actual (inch)	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.371	3	0.372	0.11	0.109	4000	5200	80200	80950	104200	105300	0.80	10.0	FF Steel
2	0.375	3	0.375	0.11	0.110	3900	5100	78200	78010	102200	102100	0.90	11.3	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Note: only two samples for tensile and one sample for bend test

Bend Test

#3 Bar Bend Test Through 180° is Satisfactory

I/C Testing Laboratoires
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To,
 Project Engineer
 Defence Housing Authority
 Gujranwala

Reference # CED/TFL **1790** (Dr. Usman Akmal)
 Reference of the request letter # 111/15/PE/RS/Pkg-32A/527

Dated: 16-08-2022
 Dated: 15-08-2022

Tension Test Report (Page -2/2)

Date of Test 17-08-2022
 Gauge length 8 inches
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size		Area (in ²)		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal (#)	Actual (inch)	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.378	3	0.376	0.11	0.111	4000	5000	80200	79370	100200	99300	1.00	12.5	FF Steel
2	0.378	3	0.376	0.11	0.111	4000	5000	80200	79270	100200	99100	0.90	11.3	
3	4.153	10	1.247	1.27	1.221	39800	55000	69100	71870	95500	99400	1.60	20.0	
4	4.149	10	1.246	1.27	1.220	40000	55200	69500	72290	95800	99800	1.50	18.8	
5	5.042	11	1.374	1.56	1.482	35200	48000	49800	52350	67900	71400	1.40	17.5	
6	5.264	11	1.404	1.56	1.547	47000	65600	66500	66950	92700	93500	1.60	20.0	
Note: only six samples for tensile and three samples for bend test														
Bend Test														
#3 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#11 Bar Bend Test Through 180° is Satisfactory														

I/C Testing Laboratoires
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Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/08/1791)** (Page -1/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Hydraulic Jack (Jack No. 1839, Gauge No. 3509) as received by us has been calibrated. The results are tabulated as under:

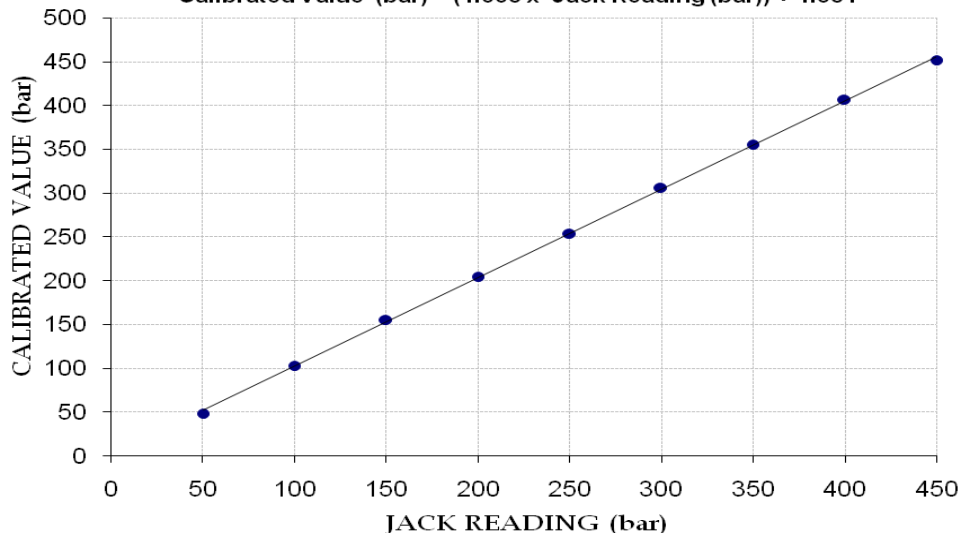
Total Range : Zero - 700 (bar)
Calibrated Range : Zero - 450 (bar)

Hydraulic Jack Reading (bar)	50	100	150	200	250	300	350	400	450
Calibrated Load (kg)	14600	31300	47200	62200	77000	93000	108000	123600	137200
Calibrated Pressure (bar)	48	103	155	205	253	306	355	407	452

The Ram Area of Jack = 298 cm²

Calibration Curve For Jack No. 1839 (Gauge # 3509)

Calibrated Value (bar) = (1.008 x Jack Reading (bar)) + 1.581



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Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

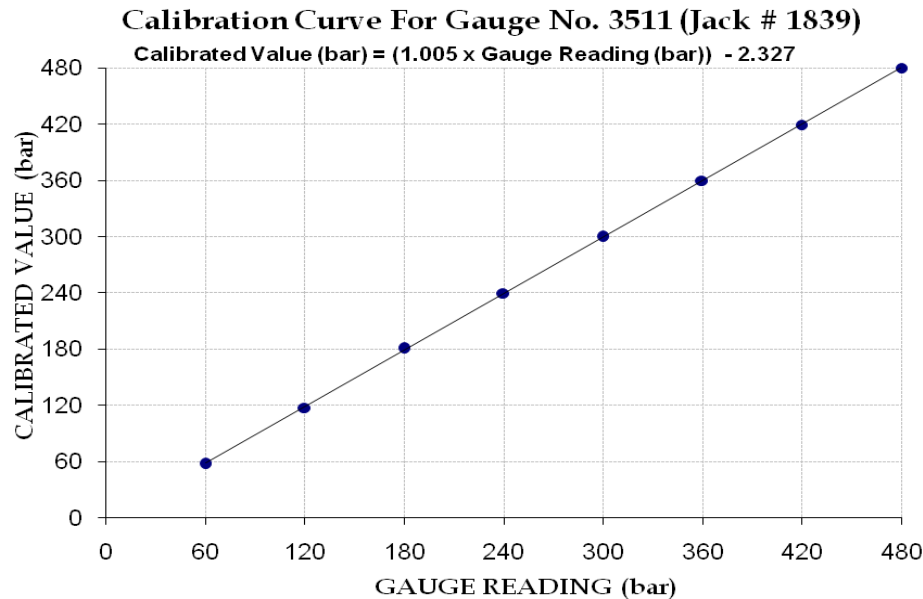
Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -2/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3511, Jack No. 1839) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (MPa)	60	120	180	240	300	360	420	480
Calibrated Load (Kg)	17400	35600	54800	72800	91000	109200	127400	145800
Calibrated Pressure (Mpa)	57	117	180	240	299	359	419	480

The Ram Area of Jack = 298 cm²



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Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -3/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3512, Jack No. 1839) as received by us has been calibrated. The results are tabulated as under:

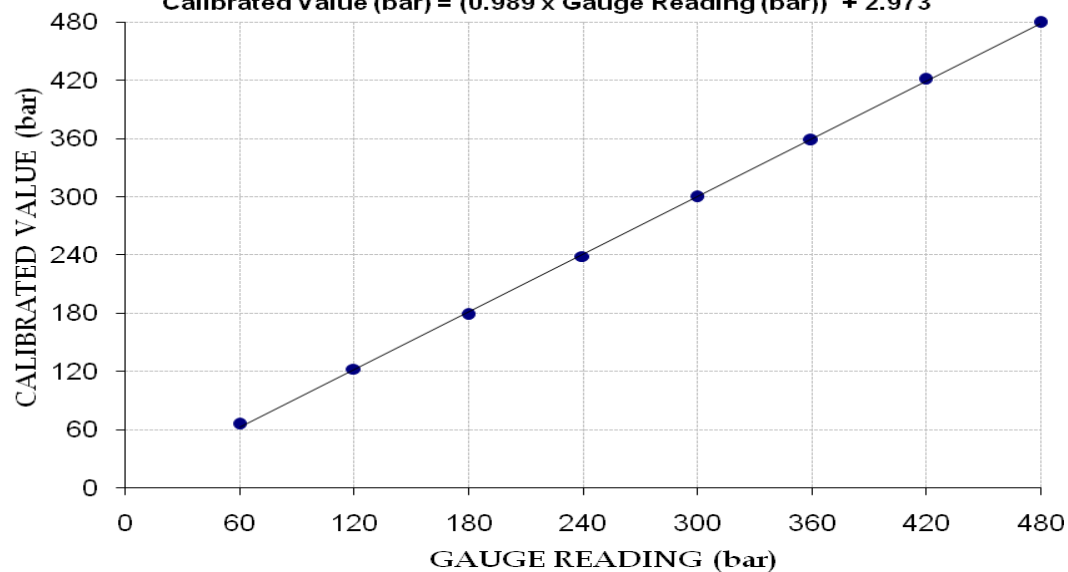
Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (kg)	19800	37200	54200	72500	91000	108800	127800	145600
Calibrated Pressure (bar)	65	122	178	239	299	358	421	479

The Ram Area of Jack = 298 cm²

Calibration Curve For Gauge No. 3512 (Jack # 1839)

Calibrated Value (bar) = (0.989 x Gauge Reading (bar)) + 2.973



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Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -4/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3514, Jack No. 1839) as received by us has been calibrated. The results are tabulated as under:

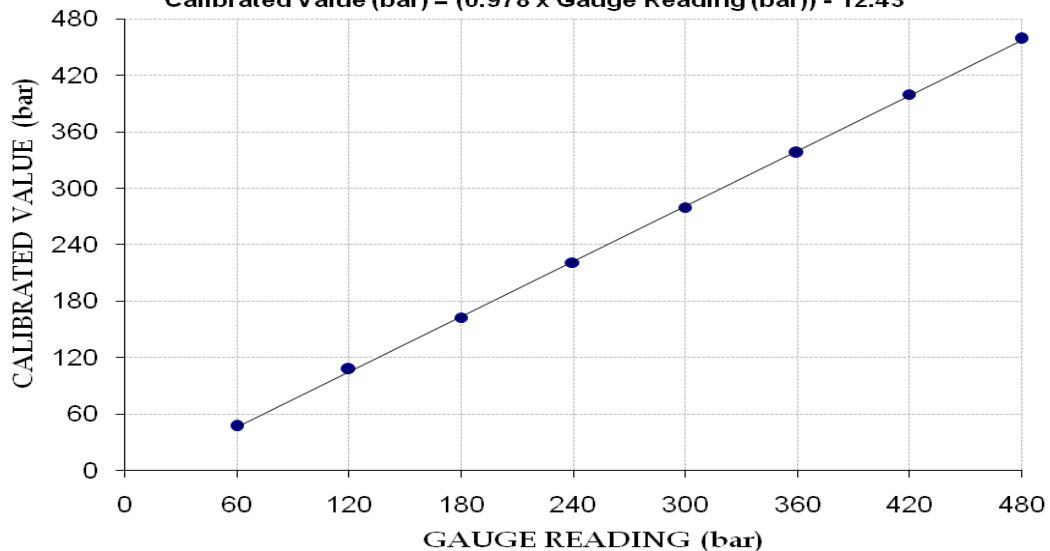
Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (Kg)	14200	32600	49400	67200	85000	102600	121500	139400
Calibrated Pressure (bar)	47	107	163	221	280	338	400	459

The Ram Area of Jack = 298 cm²

Calibration Curve For Gauge No. 3514 (Jack # 1839)

Calibrated Value (bar) = (0.978 x Gauge Reading (bar)) - 12.43



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Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/08/1791)** (Page -5/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Hydraulic Jack (Jack No. 1801, Gauge No. 3510) as received by us has been calibrated. The results are tabulated as under:

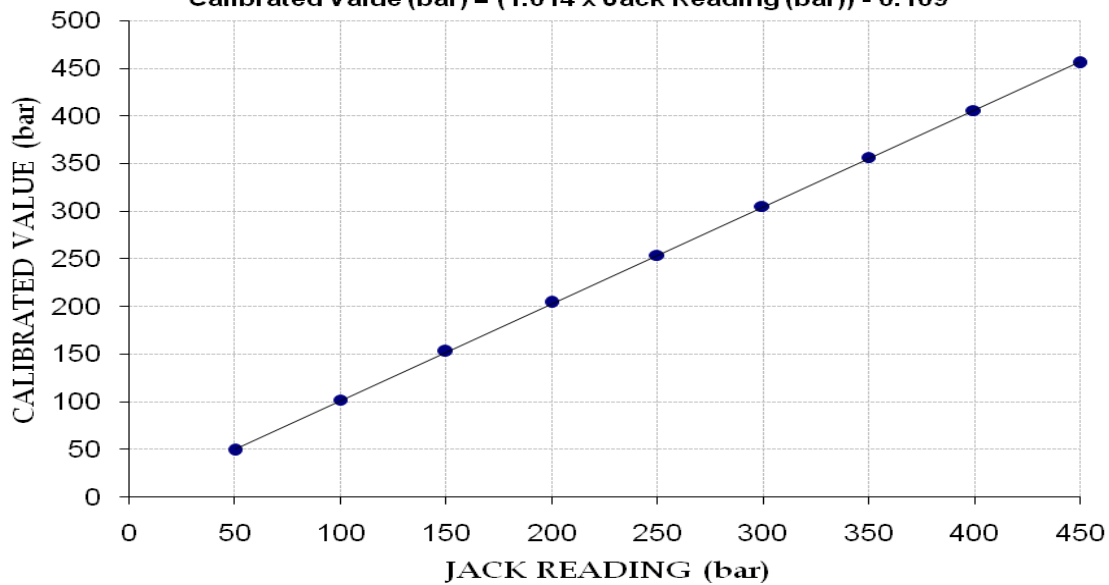
Total Range : Zero - 700 (bar)
Calibrated Range : Zero - 450 (bar)

Hydraulic Jack Reading (bar)	50	100	150	200	250	300	350	400	450
Calibrated Load (Kg)	14800	31000	46400	62000	77000	92600	108200	123200	138400
Calibrated Pressure (bar)	49	102	153	204	253	305	356	405	455

The Ram Area of Jack = 298 cm²

Calibration Curve For Jack No. 1801 (Gauge # 3510)

Calibrated Value (bar) = (1.014 x Jack Reading (bar)) - 0.109



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Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -6/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3517, Jack No. 1801) as received by us has been calibrated. The results are tabulated as under:

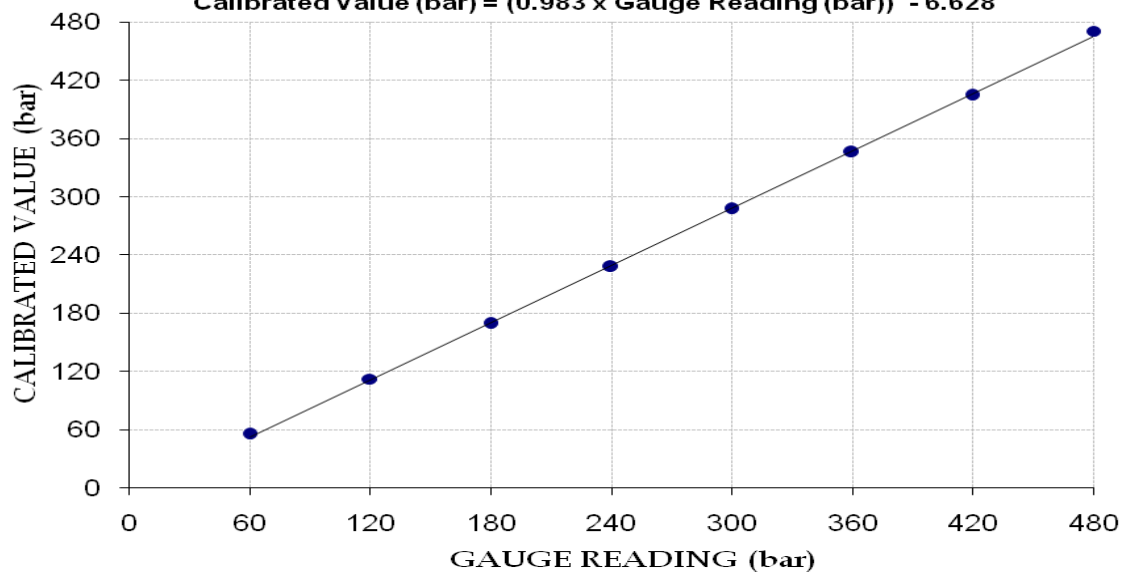
Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (Kg)	16800	34000	51400	69200	87200	105000	122800	143000
Calibrated Pressure (bar)	55	112	169	228	287	346	404	471

The Ram Area of Jack = 298 cm²

Calibration Curve For Gauge No. 3517 (Jack # 1801)

Calibrated Value (bar) = (0.983 x Gauge Reading (bar)) - 6.628



I/C Testing Laboratories
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Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 12-05-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -7/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3518, Jack No. 1801) as received by us has been calibrated. The results are tabulated as under:

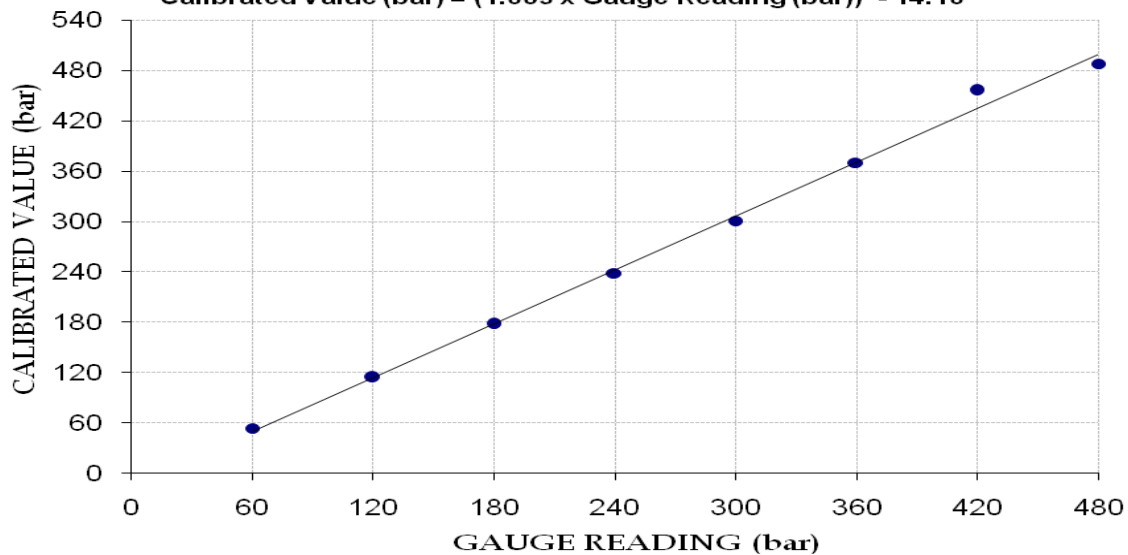
Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (kg)	16200	34600	54000	72400	91400	112400	138600	148200
Calibrated Pressure (bar)	53	114	178	238	301	370	456	488

The Ram Area of Jack = 298 cm²

Calibration Curve For Gauge No. 3518 (Jack # 1801)

Calibrated Value (bar) = (1.069 x Gauge Reading (bar)) - 14.10



I/C Testing Laboratories
UET Lahore, Pakistan.

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Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 12-05-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

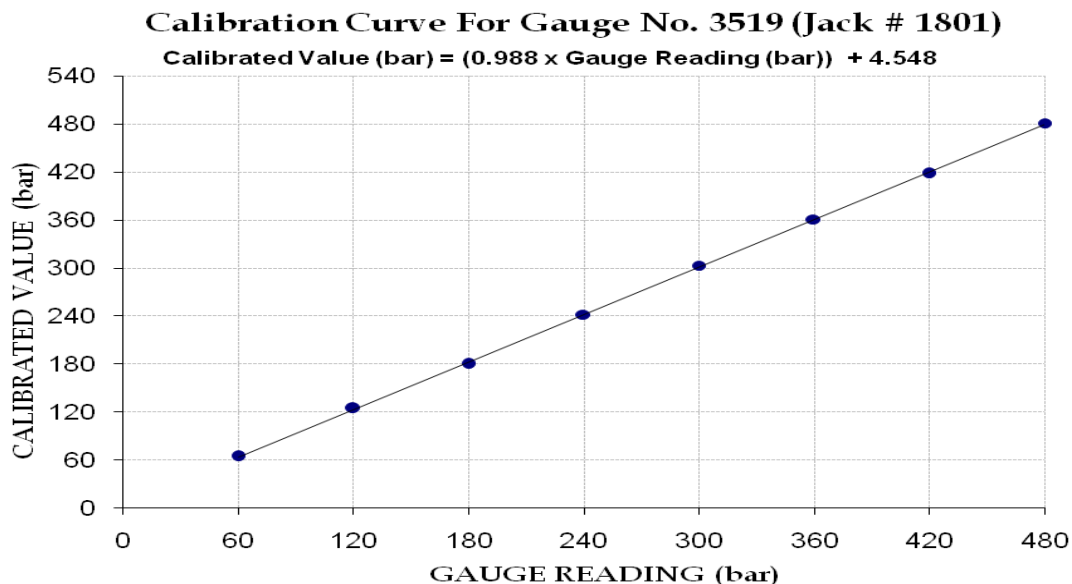
Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -8/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3519, Jack No. 1801) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (kg)	19600	37800	54600	73400	92000	109500	126950	146000
Calibrated Pressure (bar)	65	124	180	242	303	360	418	480

The Ram Area of Jack = 298 cm²



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Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/08/1791)** (Page -9/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Hydraulic Jack (Jack No. 2006, Gauge No. 3515) as received by us has been calibrated. The results are tabulated as under:

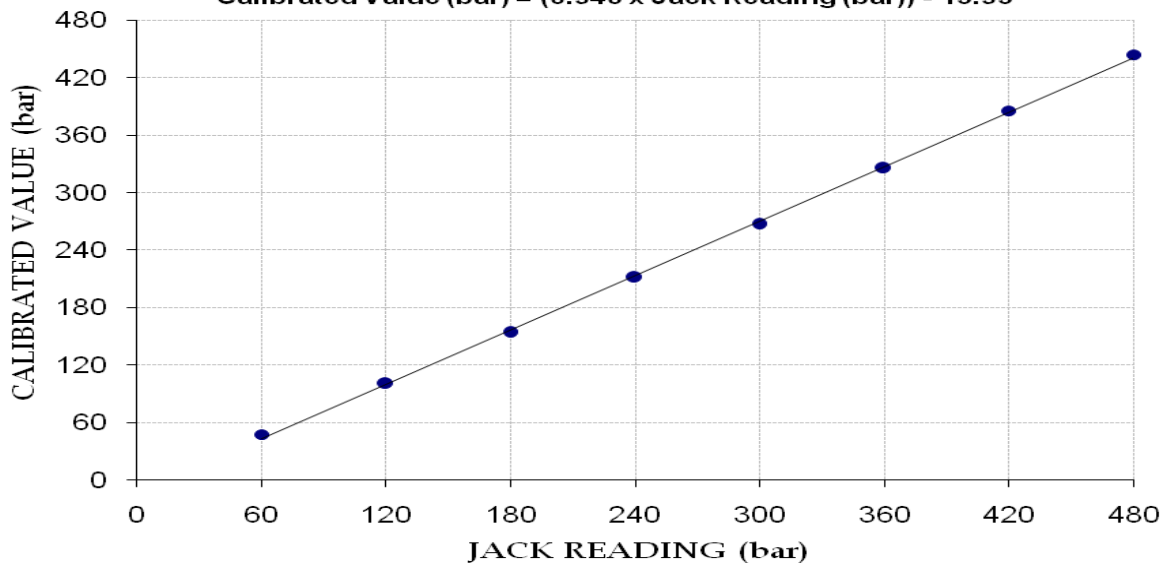
Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Hydraulic Jack Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (kg)	9200	19500	29900	41100	51900	63300	74900	86400
Calibrated Pressure (bar)	47	100	154	211	267	325	385	444

The Ram Area of Jack = 190.8 cm²

Calibration Curve For Jack No. 2006 (Gauge # 3515)

Calibrated Value (bar) = (0.946 × Jack Reading (bar)) - 13.93



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Dated: 16-08-2022

Dated: 12-05-2022

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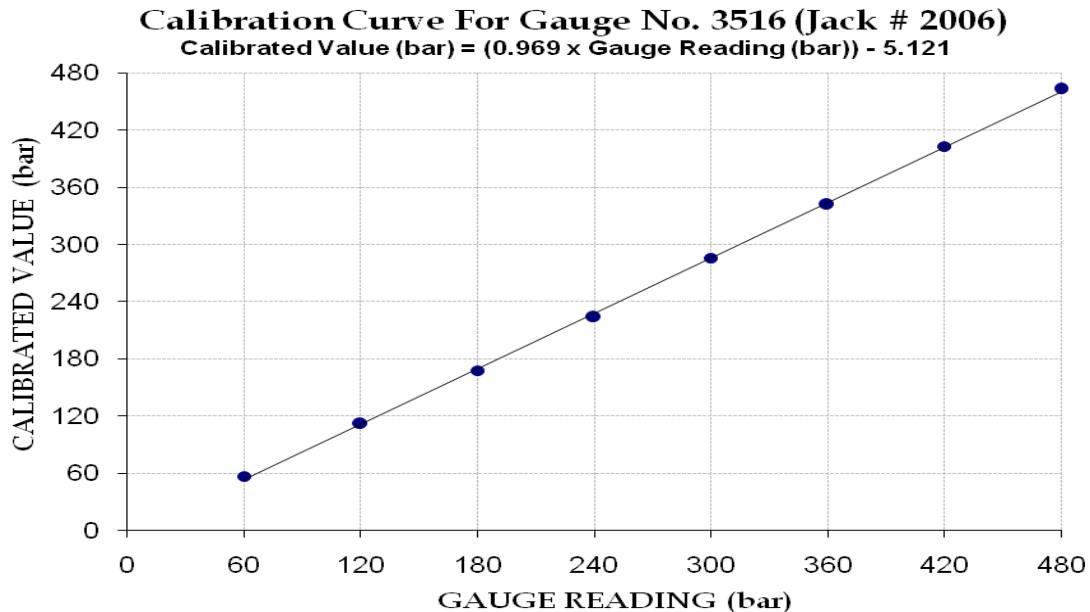
Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -9/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3516, Jack No. 2006) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (kg)	11000	21700	32600	43500	55600	66500	78400	90000
Calibrated Pressure (bar)	57	112	168	224	286	342	403	463

The Ram Area of Jack = 190.8 cm²



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Dated: 16-08-2022

Dated: 17-08-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -11/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 3513, Jack No. 2006) as received by us has been calibrated. The results are tabulated as under:

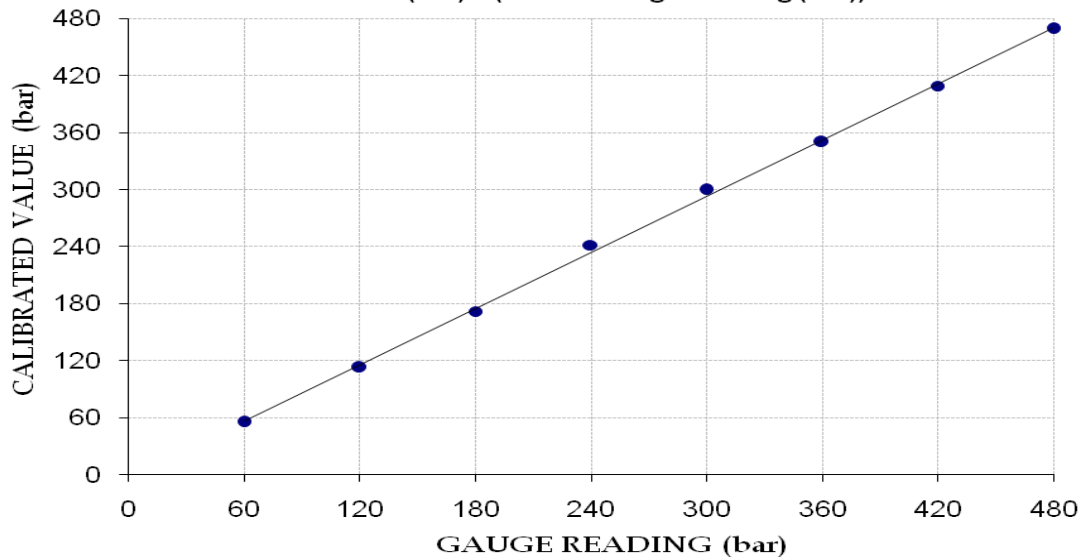
Total Range : Zero - 600 (bar)
Calibrated Range : Zero - 480 (bar)

Pressure Gauge Reading (bar)	60	120	180	240	300	360	420	480
Calibrated Load (kg)	10700	21900	33400	47000	58300	68100	79500	91200
Calibrated Pressure (bar)	55	113	172	242	300	350	409	469

The Ram Area of Jack = 190.8 cm²

Calibration Curve For Gauge No. 3513 (Jack # 2006)

Calibrated Value (bar) = (0.986 x Gauge Reading (bar)) - 2.753



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STRUCTURAL ENGINEERING DIVISION
Test Floor Laboratory
Department of Civil Engineering
University of Engineering and Technology Lahore, 54890
Pakistan. Ph: 92-42-99029202

Ref: CED/TFL/08/1791, 1795

Dated: 16-08-2022

Dated: 12-05-2022

To

M/S China Gezhouba Group Co., Ltd
CGGC Dasu Hydropower Project Management in Pakistan

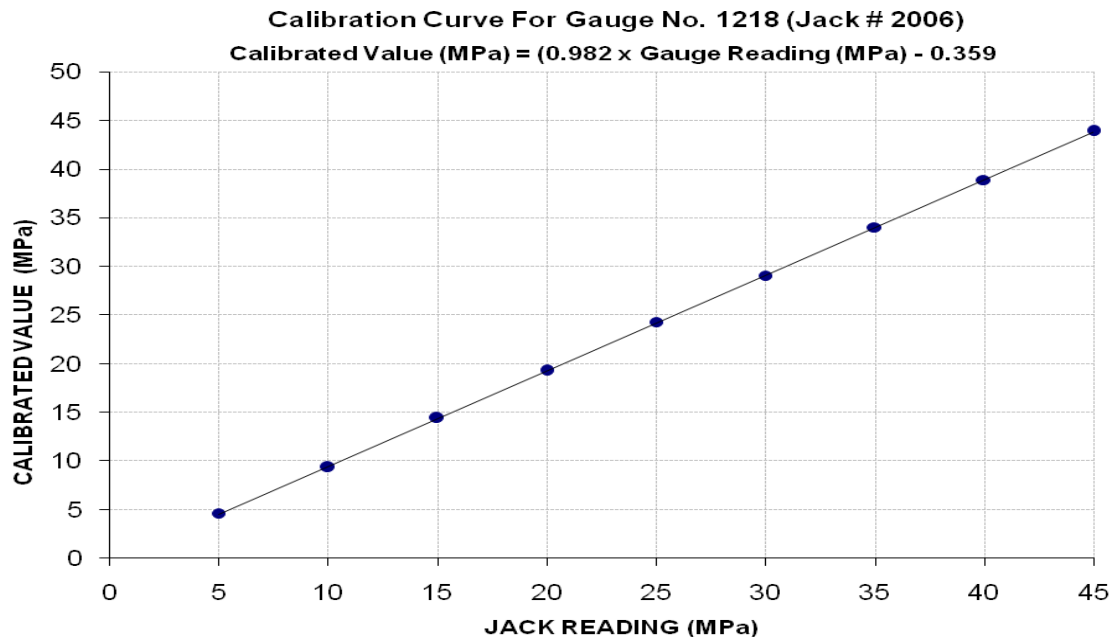
Subject: - **CALIBRATION OF PRESSURE GAUGE (MARK: TFL/08/1791)** (Page -2/12)

Reference to your Letter No. Nil, dated: 14/08/2022 on the subject cited above. One Pressure Gauge (Gauge No. 1218, Jack No. 2006) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 60 (MPa)
Calibrated Range : Zero - 45 (MPa)

Pressure Gauge Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	9000	18200	28000	37500	47200	56500	66200	75600	85400
Calibrated Pressure (Mpa)	4.63	9.35	14.39	19.27	24.26	29.04	34.03	38.86	43.90

The Ram Area of Jack = 190.8 cm²



I/C Testing Laboratoires
UET Lahore, Pakistan.

Note:

- 1- You can See your reports On Internet in the following web site
http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing_reports
2. The above results pertain to sample /samples supplied to this laboratory.
- 3- Sealed sample / Unsealed sample / Marked sample/Signed Samples



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Ref: CED/TFL/08/1793

Dated: 17-08-2022

Dated of Test: 17-08-2022

To

M/S National Heritage Contractors
Lahore

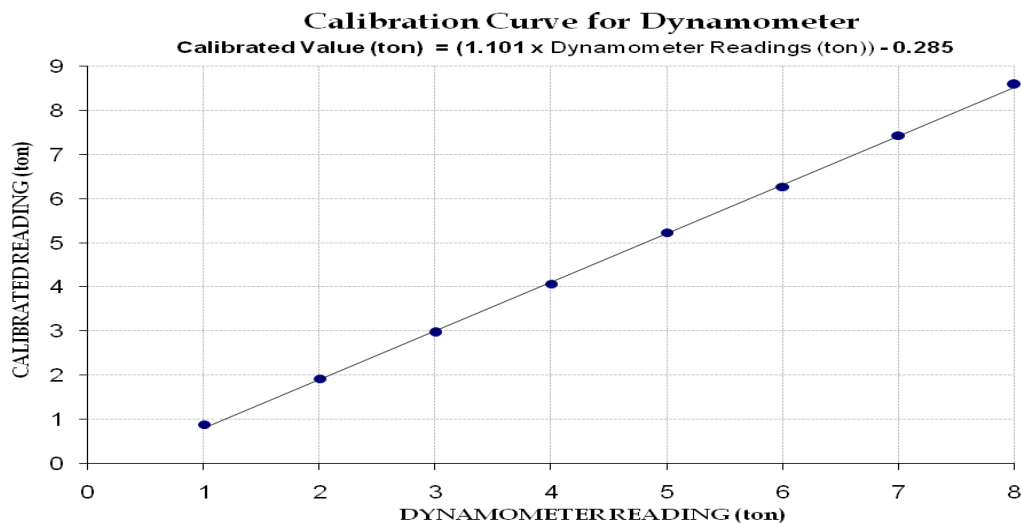
Subject: - **CALIBRATION OF DYNAMOMETER (MARK: TFL/08/1793)** (Page -1/1)

Ref: Your letter No. NHC/W-170/9846, dated: 17/08/2022 on the subject cited above. One Dynamometer (Brand PIAB, Model No. WS-1348) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 10 (ton)
Calibrated Range : Zero - 8 (ton)

Dynamometer Readings (ton)	1	2	3	4	5	6	7	8	
Calibrated Readings	(kg)	800	1750	2700	3700	4750	5700	6750	7800
	(ton)	0.88	1.93	2.97	4.07	5.23	6.28	7.43	8.59

1000 kg = 1.1011 Ton



I/C Testing Laboratories
UET Lahore, Pakistan.

Note:

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