



**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/11/34203

Dated: 20-11-19

Dated of Test: 12-12-19

**To**  
**M/S Model Steel (Pvt) Limited**  
**Lahore**

**Subject:- CALIBRATION OF UNIVERSAL TESTING MACHINE OF 1000kN**  
**(MARK: CED/TFL/11/34203) (Page # 1/2)**

Reference to your letter No. Nil, dated: 20/11/2019 on the subject cited above. One Universal Testing Machine (WAW -1000 H) has been calibrated by using standard calibration device. The results are tabulated as under:

**Total Range : Zero - 1000 (kN)**

**Calibrated Range : Zero - 800 (kN)**

Machine Reading (kN)	Corrected Load Value (kN)
50	49
100	99
150	150
200	200
250	250
300	301
350	351
400	401

Machine Reading (kN)	Corrected Load Value (kN)
450	453
500	504
550	553
600	605
650	656
700	705
750	758
800	808

**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

Note:

- 1- You can See your reports On Internet in the following web site  
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Ref: CED/TFL/11/34203

Dated: 20-11-19

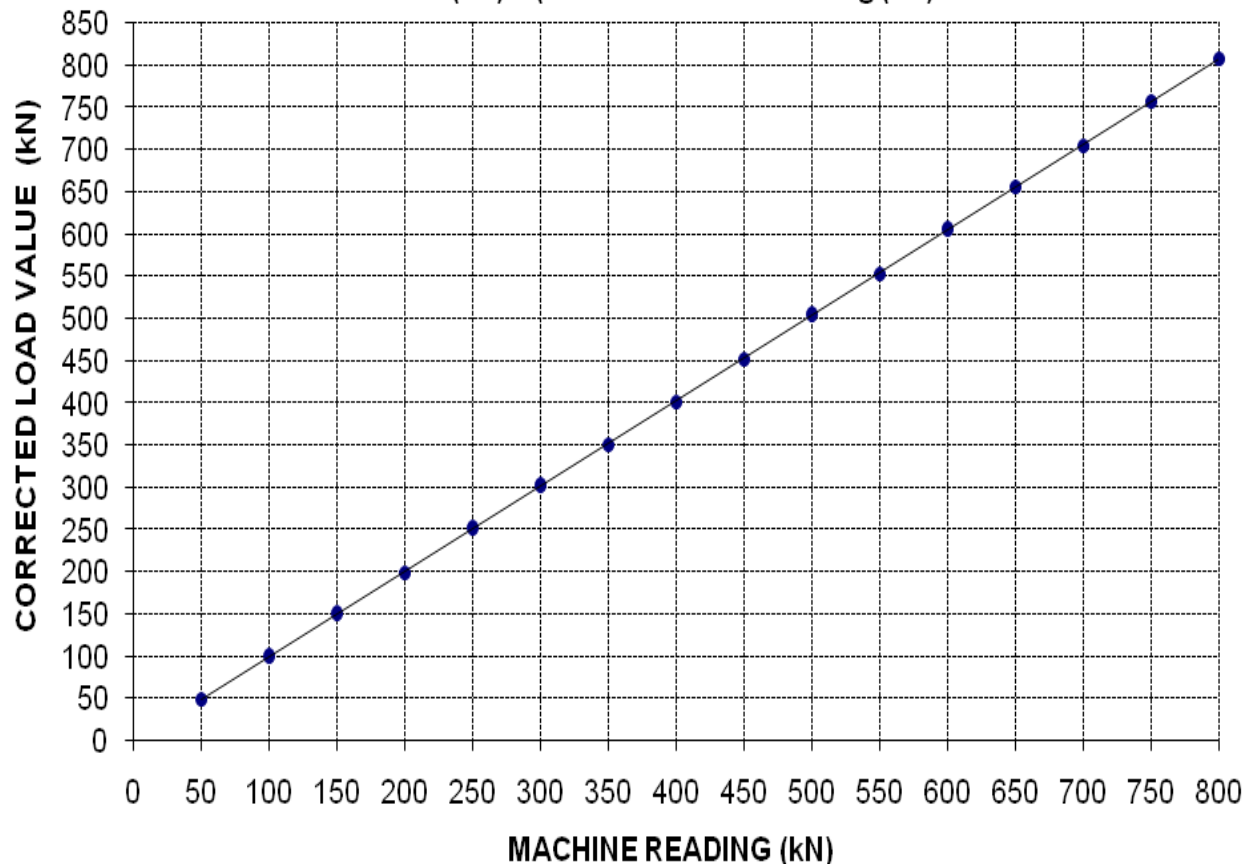
Dated of Test: 12-12-19

To  
**M/S Model Steel (Pvt) Limited**  
**Lahore**

Subject:- **CALIBRATION OF UNIVERSAL TESTING MACHINE OF 1000kN**  
**(MARK: CED/TFL/11/34203) (Page # 2/2)**

**CALIBRATION CURVE FOR UNIVERSAL TESTING MACHINE**

$$\text{Calibrated Value (kN)} = (1.012 \times \text{Machine Reading (kN)}) - 2.533$$



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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To,  
Deputy CRE  
Zeeruk International (Pvt) Ltd  
Lahore Sialkot Motorway Project

Reference # CED/TFL **34266** (Dr. Qasim Khan)  
Reference of the request letter # LSM/DCRE/2019/1259

Dated: 04-12-2019  
Dated: 04-12-2019

**Tension Test Report** (Page – 1/1)

Date of Test 12-12-2019  
Gauge length 2 inches  
Description W- Beam & Steel Post Strip Tensile Test

Sr. No.	Designation	Size of Strip	X Section Area	Yield load	Breaking Load	Yield Stress	Ultimate Stress	Elongation	% Elongation	Remarks
1	Steel W- Beam	2.31x0.280	0.65	2500	3200	3865	4947	0.80	40.00	S # 1
2		2.31x0.280	0.65	2500	3300	3865	5102	0.75	37.50	
3	Steel Beam	2.30x0.280	0.64	2400	3300	3727	5124	0.60	30.00	S # 2
4		2.30x0.280	0.64	2400	3200	3727	4969	0.70	35.00	
5	Steel Post	2.36x0.700	1.65	5800	8200	3511	4964	0.80	40.00	S # 1
6		2.38x0.700	1.67	5900	8400	3541	5042	0.70	35.00	
7	Steel Post	2.38x0.70	1.67	5900	8300	3541	4982	0.70	35.00	S # 2
8		2.38x0.70	1.67	5900	8300	3541	4982	0.80	40.00	
<b>Only Eight Samples for Tensile Test</b>										
<b>Bend Test</b>										

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Ref: CED/TFL/12/34292

Dated: 10-12-19

Dated of Test: 12-12-19

To  
CGGC Suki Kinari Project Management in Pakistan  
874 MW Suki Kinari Hydro Power Project

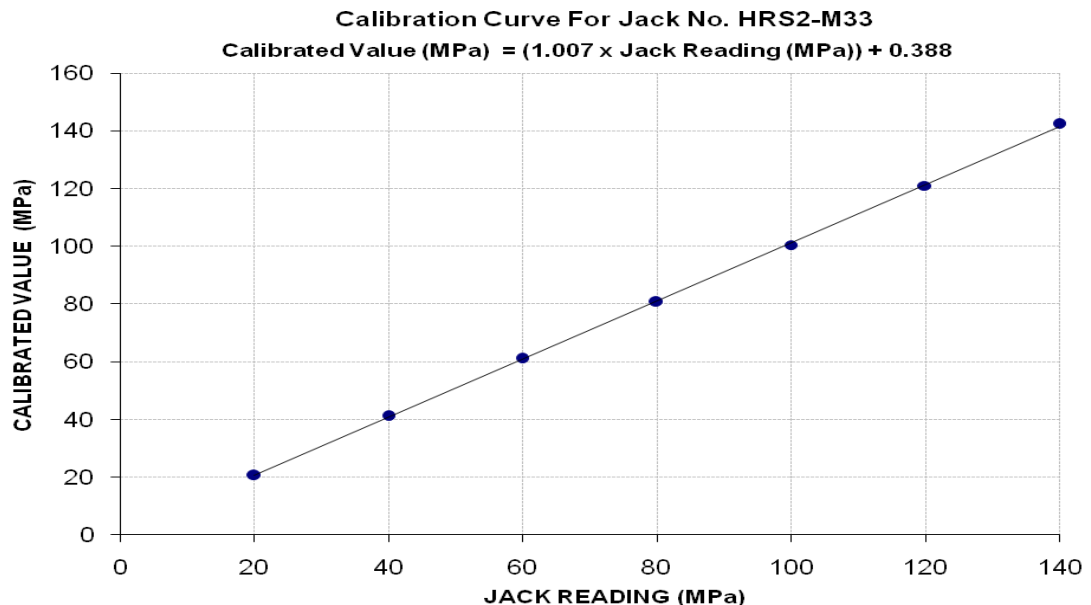
Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34292)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack No. HRS2-M33 as received by us has been calibrated. The results are tabulated as under:

**Total Range : Zero - 200 (MPa)**  
**Calibrated Range : Zero - 140 (MPa)**

Hydraulic Jack Reading (MPa)	20	40	60	80	100	120	140
Calibrated Load (kg)	6800	13600	20200	26700	33200	40000	47100
Calibrated Pressure (Mpa)	20.56	41.11	61.07	80.72	100.37	120.92	142.39

The Ram Area of Jack = 32.44 cm<sup>2</sup>



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**UET Lahore, Pakistan.**

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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
CGGC Suki Kinari Project Management in Pakistan  
874 MW Suki Kinari Hydro Power Project

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page -1/20)

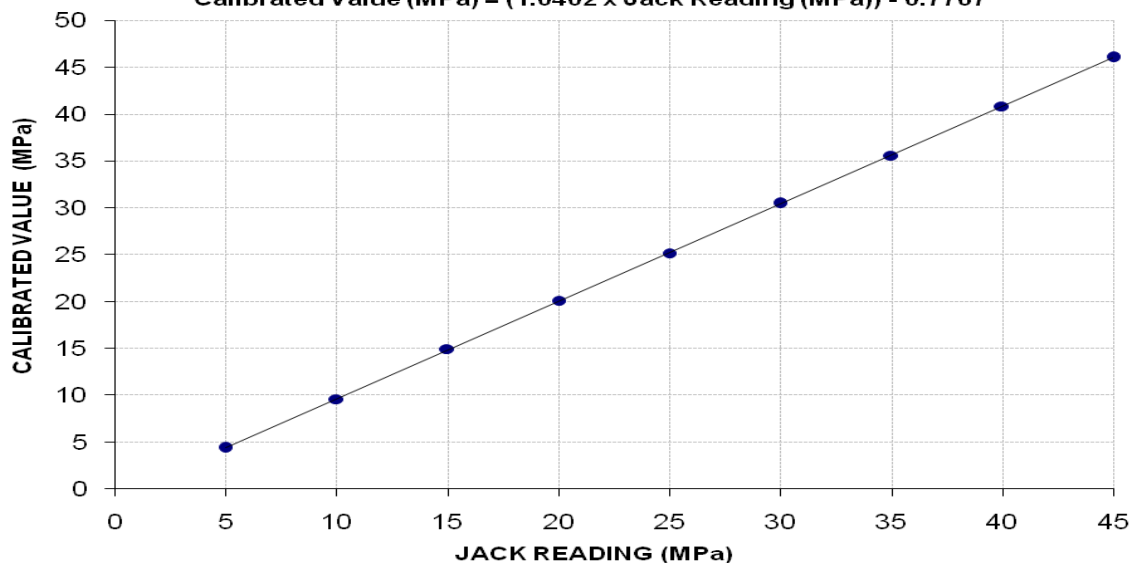
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1436, Gauge No. 2863) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	12900	28200	44000	59200	74200	89800	104800	120400	135600
Calibrated Pressure (Mpa)	4.38	9.57	14.93	20.09	25.18	30.47	35.56	40.86	46.01

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1436 (Gauge # 2863)**  
**Calibrated Value (MPa) = (1.0402 x Jack Reading (MPa)) - 0.7767**



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**UET Lahore, Pakistan.**

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Dated: 10-12-19

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To  
CGGC Suki Kinari Project Management in Pakistan  
874 MW Suki Kinari Hydro Power Project

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page -2/20)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1436, Gauge No. 2688) as received by us has been calibrated. The results are tabulated as under:

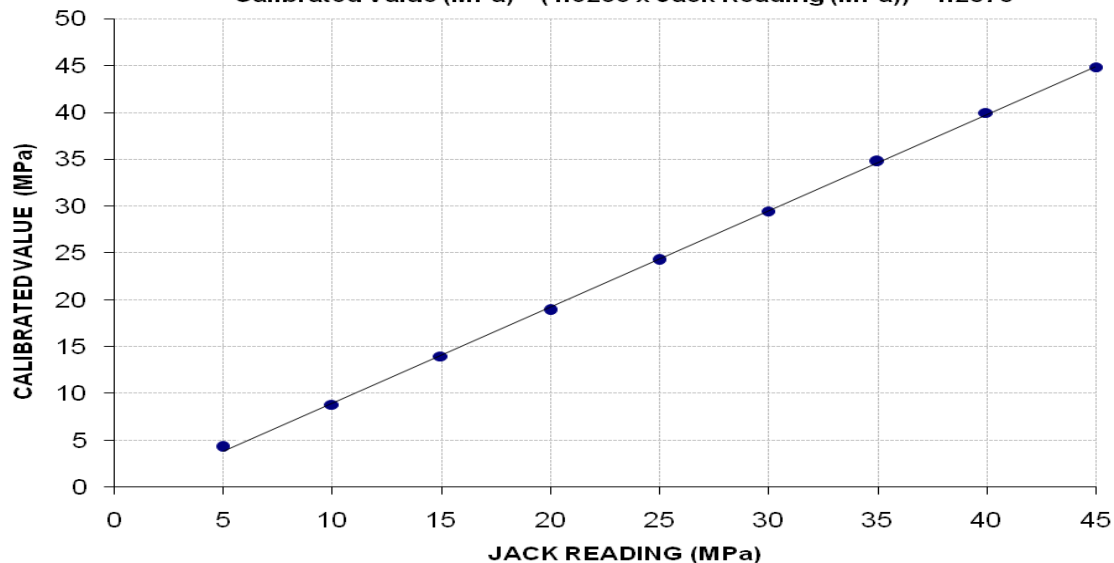
**Total Range : Zero - 60 (MPa)**  
**Calibrated Range : Zero - 45 (MPa)**

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	12600	26000	41200	55600	71400	86800	102400	117800	132000
Calibrated Pressure (Mpa)	4.28	8.82	13.98	18.87	24.23	29.45	34.75	39.97	44.79

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1436 (Gauge # 2688)**

**Calibrated Value (MPa) = (1.0255 x Jack Reading (MPa)) - 1.2876**



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To  
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874 MW Suki Kinari Hydro Power Project

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page -3/20)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1436, Gauge No. 2694 as received by us has been calibrated. The results are tabulated as under:

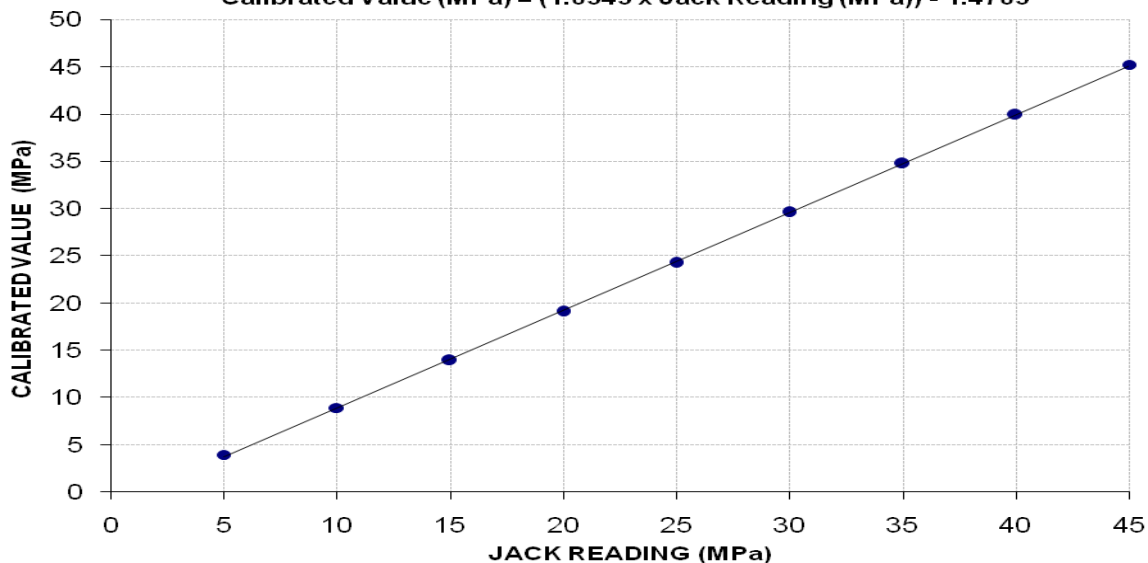
**Total Range : Zero - 60 (MPa)**  
**Calibrated Range : Zero - 45 (MPa)**

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	11600	26200	41000	56200	71400	87200	102400	117600	133200
Calibrated Pressure (Mpa)	3.94	8.89	13.91	19.07	24.23	29.59	34.75	39.91	45.20

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1436 (Gauge # 2694)**

**Calibrated Value (MPa) = (1.0343 x Jack Reading (MPa)) - 1.4705**



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To  
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**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page -4/20)

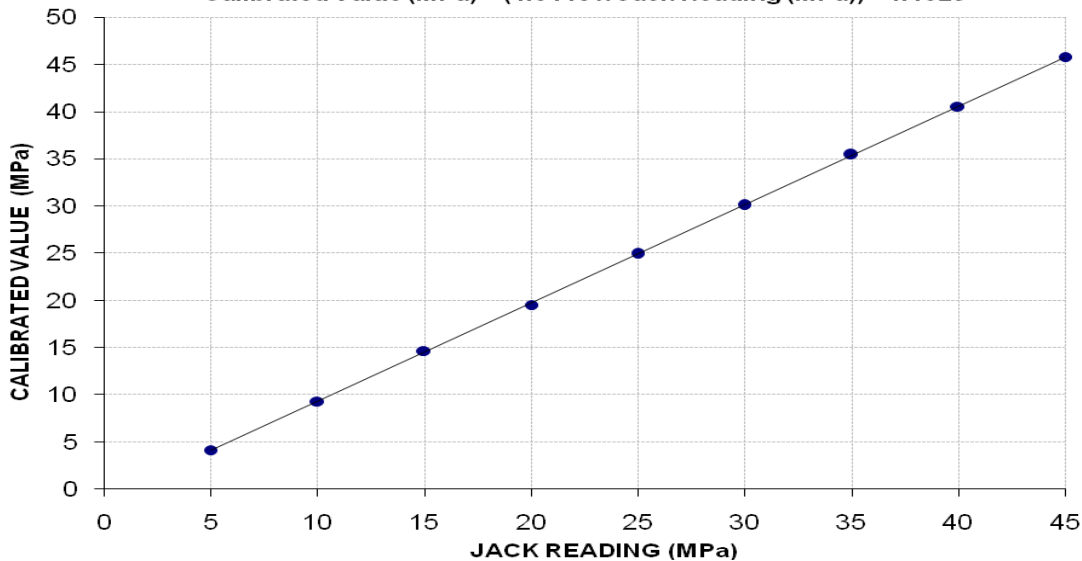
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1436, Gauge No. 2872) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	12200	27400	43200	57600	73400	88600	104400	119400	135000
Calibrated Pressure (Mpa)	4.14	9.30	14.66	19.55	24.91	30.07	35.43	40.52	45.81

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1436 (Gauge # 2872)**  
**Calibrated Value (MPa) = (1.0413 x Jack Reading (MPa)) - 1.1029**



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To  
CGGC Suki Kinari Project Management in Pakistan  
874 MW Suki Kinari Hydro Power Project

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page -5/20)

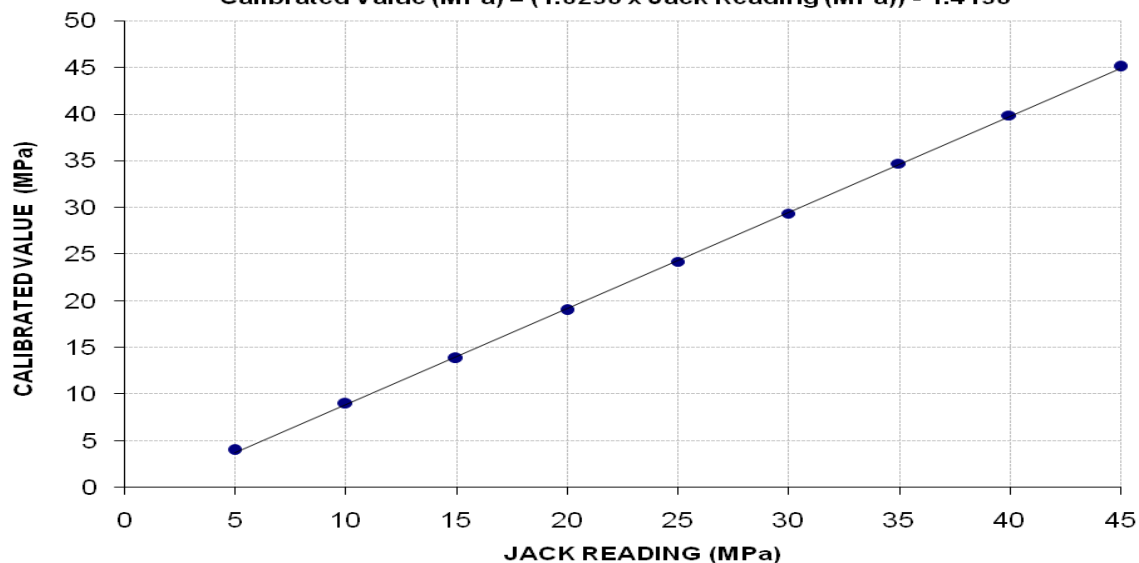
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1493, Gauge No. 2863) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	13200	28400	44000	59000	74000	89200	104200	119400	134800
Calibrated Pressure (Mpa)	4.48	9.64	14.93	20.02	25.11	30.27	35.36	40.52	45.74

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1493 (Gauge # 2688)**  
**Calibrated Value (MPa) = (1.0296 x Jack Reading (MPa)) - 1.4196**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
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**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page -6/20)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1493, Gauge No. 2688) as received by us has been calibrated. The results are tabulated as under:

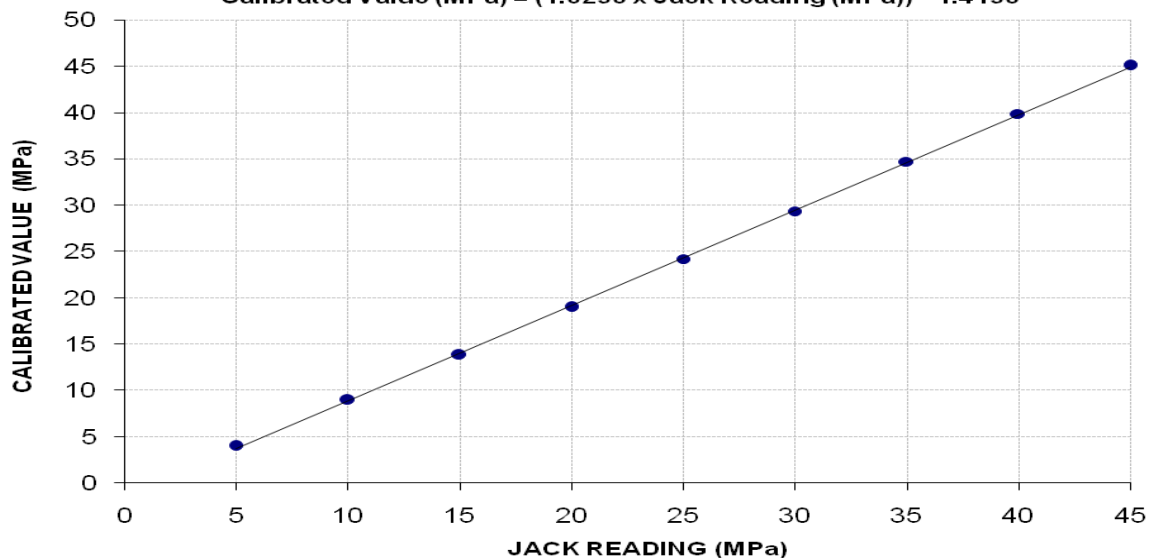
**Total Range : Zero - 60 (MPa)**  
**Calibrated Range : Zero - 45 (MPa)**

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	11800	26400	40800	56000	71200	86400	102200	117400	132800
Calibrated Pressure (Mpa)	4.00	8.96	13.85	19.00	24.16	29.32	34.68	39.84	45.06

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1493 (Gauge # 2688)**

**Calibrated Value (MPa) = (1.0296 x Jack Reading (MPa)) - 1.4196**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
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**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page -7/20)

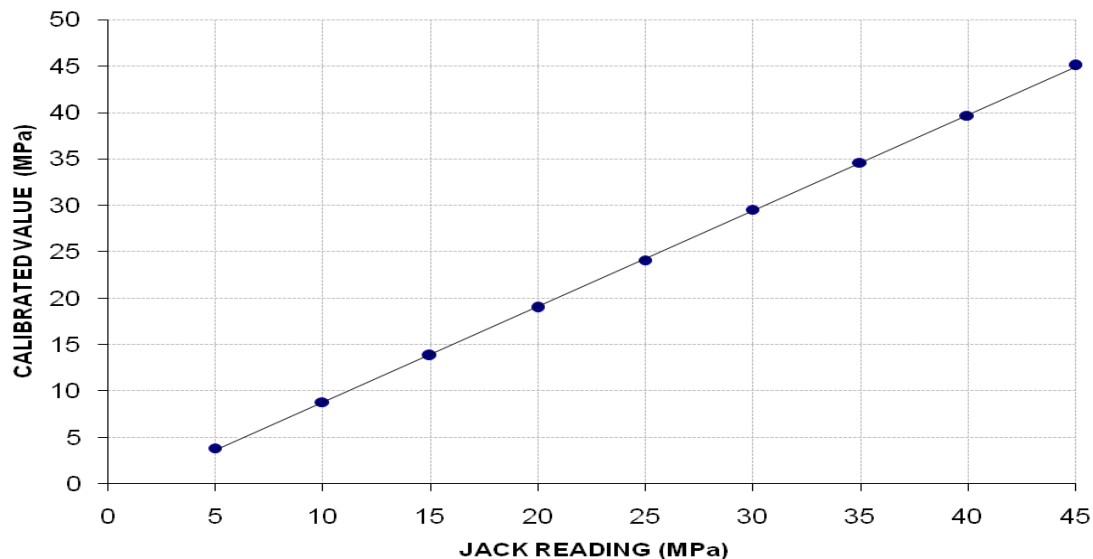
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1493, Gauge No. 2694 as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	11400	26000	40800	56000	71000	87000	102000	116800	132800
Calibrated Pressure (Mpa)	3.87	8.82	13.85	19.00	24.09	29.52	34.61	39.64	45.06

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1493 (Gauge # 2694)**  
**Calibrated Value (MPa) = (1.0309 x Jack Reading (MPa)) - 1.4988**



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**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page -8/20)

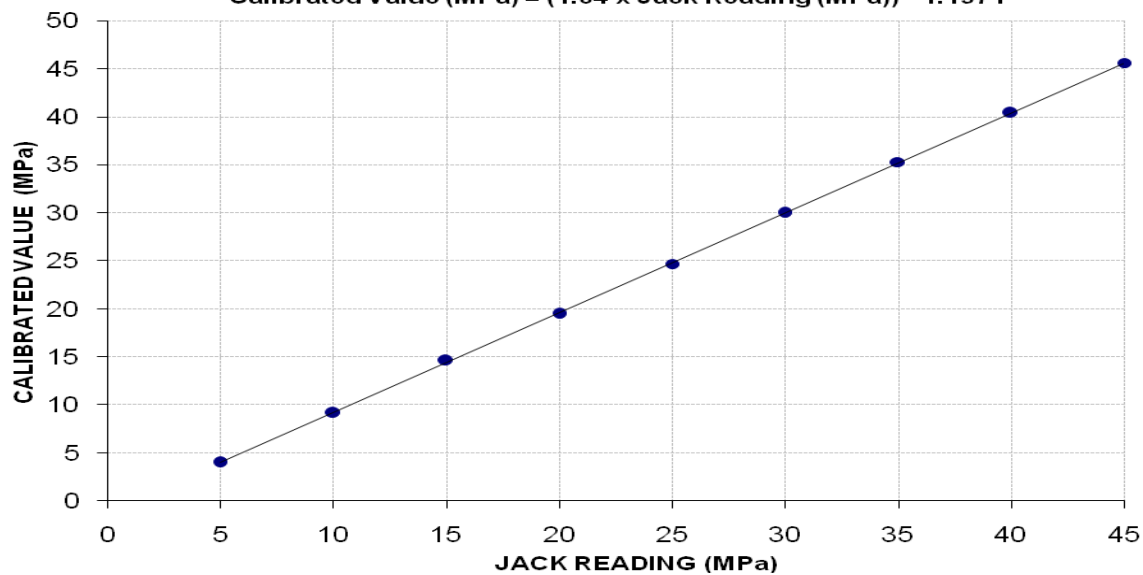
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1493, Gauge No. 2872) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	11800	27000	43000	57400	72800	88400	104000	119000	134400
Calibrated Pressure (Mpa)	4.00	9.16	14.59	19.48	24.70	30.00	35.29	40.38	45.61

The Ram Area of Jack = 298 cm<sup>2</sup>

**Calibration Curve For Jack No. 1493 (Gauge # 2872)**  
**Calibrated Value (MPa) = (1.04 x Jack Reading (MPa)) - 1.1971**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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To  
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Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page -9/20)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17114, Gauge No. 2863) as received by us has been calibrated. The results are tabulated as under:

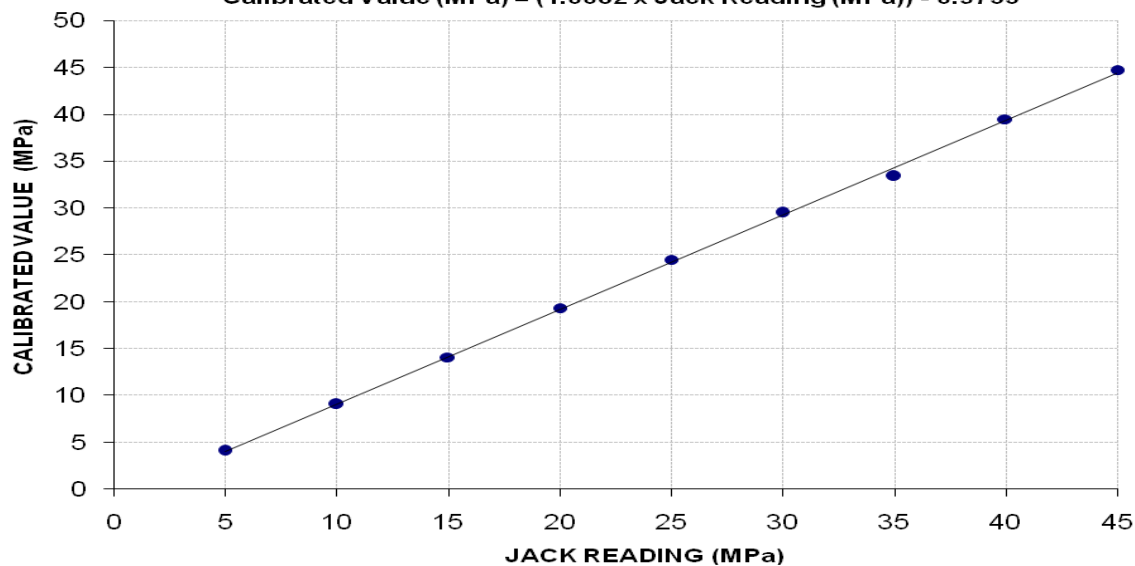
**Total Range : Zero - 60 (MPa)**  
**Calibrated Range : Zero - 45 (MPa)**

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	2000	4400	6850	9400	11900	14350	16250	19200	21750
Calibrated Pressure (Mpa)	4.11	9.04	14.08	19.32	24.46	29.50	33.40	39.47	44.71

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17114 (Gauge # 2863)**

**Calibrated Value (MPa) = (1.0082 x Jack Reading (MPa)) - 0.9735**



**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](http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing_reports)
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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/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 10/20)

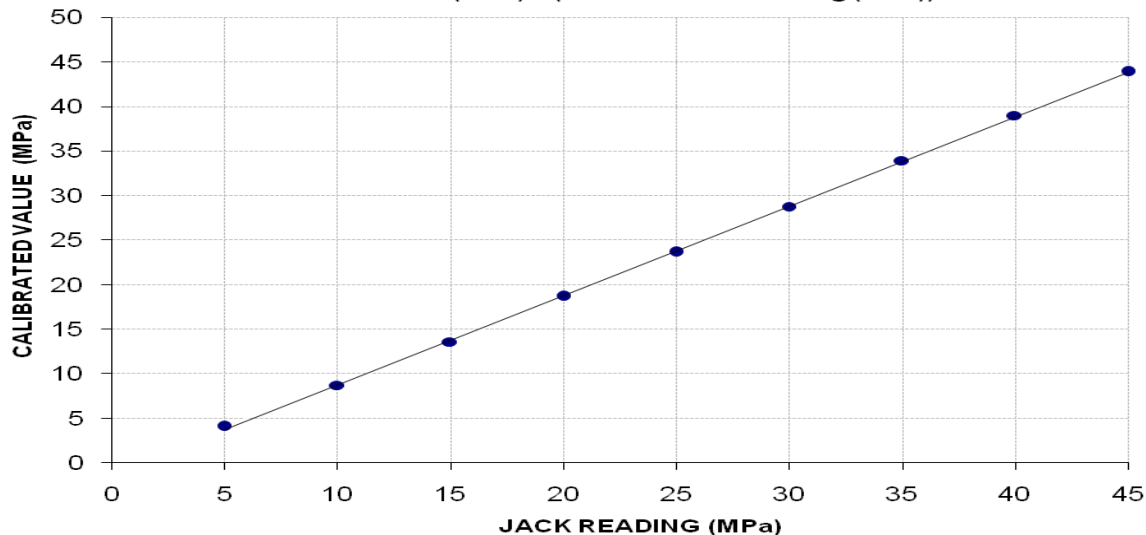
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17114, Gauge No. 2688) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	2000	4250	6600	9100	11500	14000	16500	18950	21350
Calibrated Pressure (Mpa)	4.11	8.74	13.57	18.71	23.64	28.78	33.92	38.95	43.89

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17114 (Gauge # 2688)**  
**Calibrated Value (MPa) = (1.0017 x Jack Reading (MPa)) - 1.2333**



**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](http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing_reports)
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**Test Floor Laboratory**  
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**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 11/20)

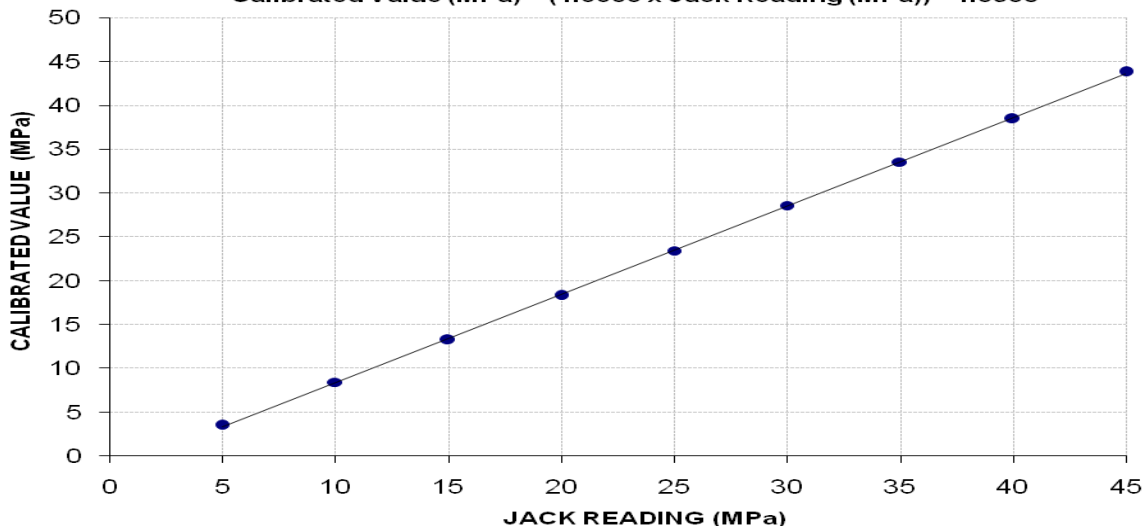
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17114, Gauge No. 2694 as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	1700	4100	6450	8900	11400	13900	16300	18700	21300
Calibrated Pressure (Mpa)	3.49	8.43	13.26	18.29	23.43	28.57	33.51	38.44	43.78

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17114 (Gauge # 2694)**  
**Calibrated Value (MPa) = (1.0065 x Jack Reading (MPa)) - 1.6958**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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[http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing\\_reports](http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing_reports)
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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 12/20)

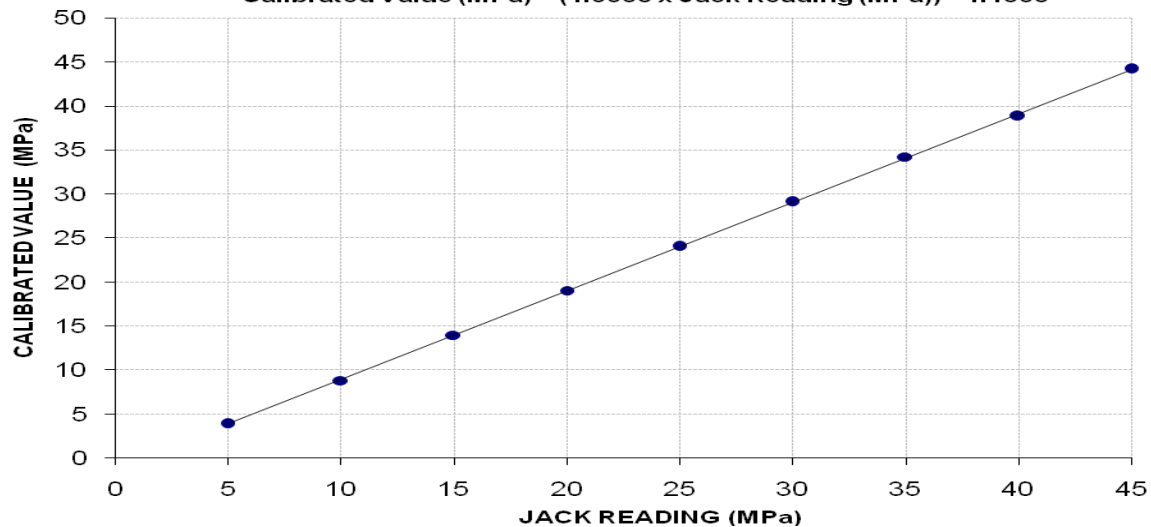
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17114, Gauge No. 2872) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	1900	4300	6800	9250	11700	14150	16650	18900	21500
Calibrated Pressure (Mpa)	3.91	8.84	13.98	19.01	24.05	29.09	34.22	38.85	44.19

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17114 (Gauge # 2872)**  
**Calibrated Value (MPa) = (1.0058 x Jack Reading (MPa)) - 1.1305**



**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](http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing_reports)
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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/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 13/20)

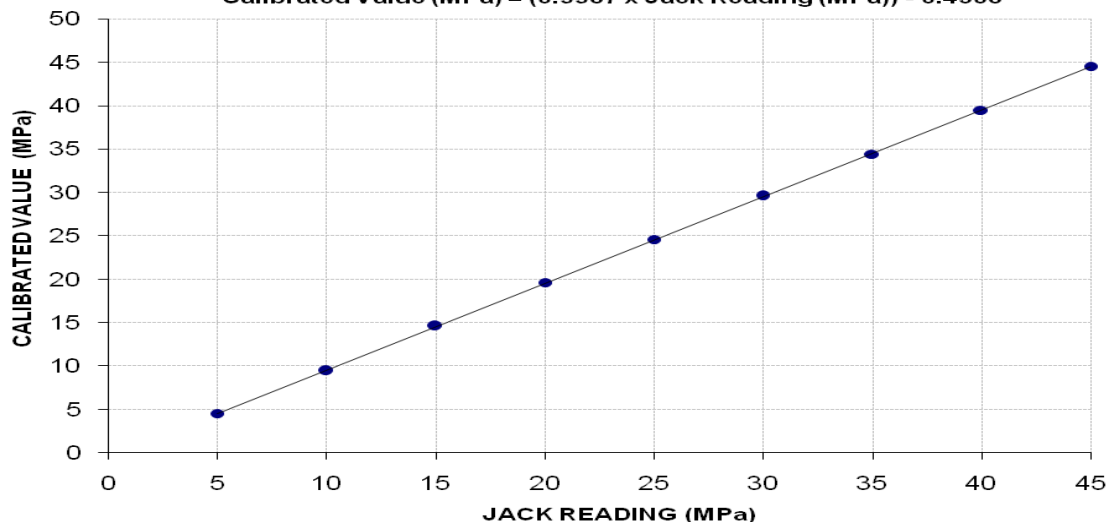
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17175, Gauge No. 2863) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	2200	4600	7100	9550	11950	14400	16750	19200	21650
Calibrated Pressure (Mpa)	4.52	9.46	14.59	19.63	24.56	29.60	34.43	39.47	44.50

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17175 (Gauge # 2863)**  
**Calibrated Value (MPa) = (0.9987 x Jack Reading (MPa)) - 0.4368**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
CGGC Suki Kinari Project Management in Pakistan  
874 MW Suki Kinari Hydro Power Project

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page - 14/20)

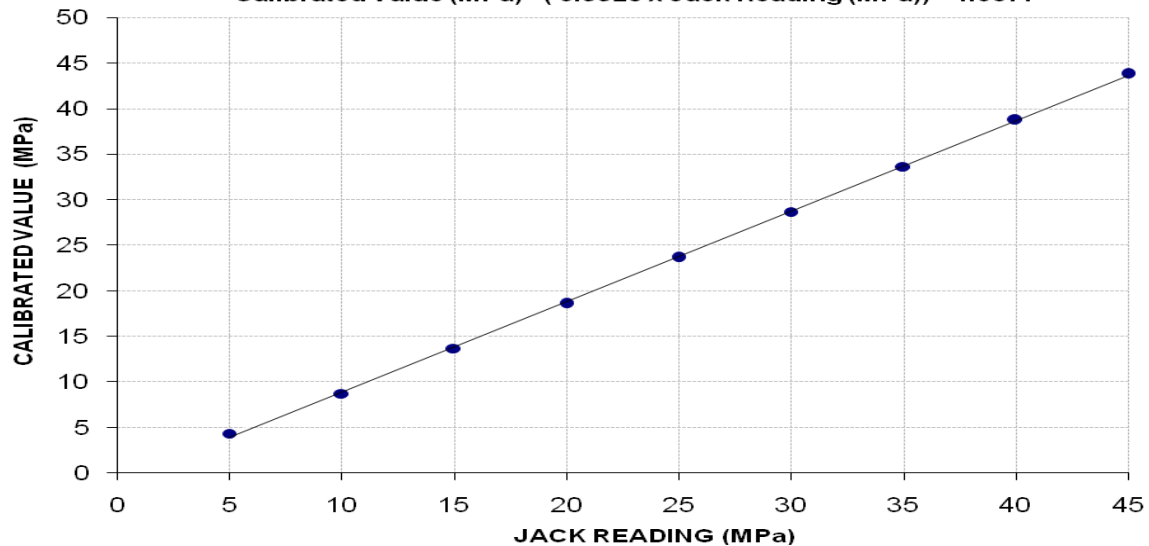
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17175, Gauge No. 2688) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	2100	4250	6650	9050	11500	13950	16350	18850	21300
Calibrated Pressure (Mpa)	4.32	8.74	13.67	18.60	23.64	28.67	33.61	38.75	43.78

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17175 (Gauge # 2688)**  
**Calibrated Value (MPa) = ( 0.9928 x Jack Reading (MPa) ) - 1.0677**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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

Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
CGGC Suki Kinari Project Management in Pakistan  
874 MW Suki Kinari Hydro Power Project

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293) (Page - 15/20)

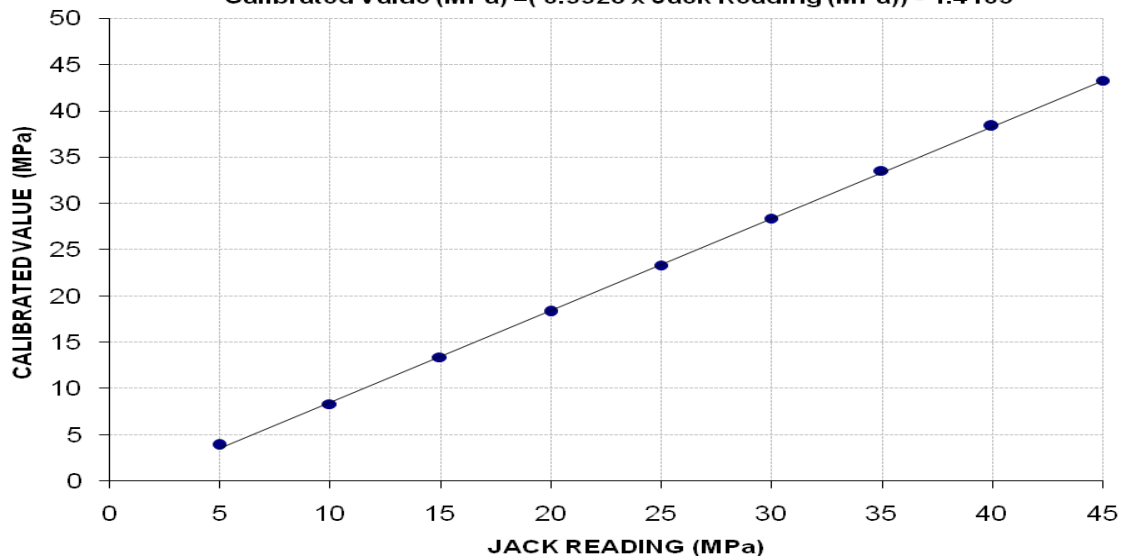
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17175, Gauge No. 2694 as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	1900	4050	6500	8900	11350	13800	16300	18650	21050
Calibrated Pressure (Mpa)	3.91	8.32	13.36	18.29	23.33	28.37	33.51	38.34	43.27

The Ram Area of Jack = 47.71 cm<sup>2</sup>

**Calibration Curve For Jack No. 17175 (Gauge # 2694)**  
**Calibrated Value (MPa) = ( 0.9928 x Jack Reading (MPa) ) - 1.4103**



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

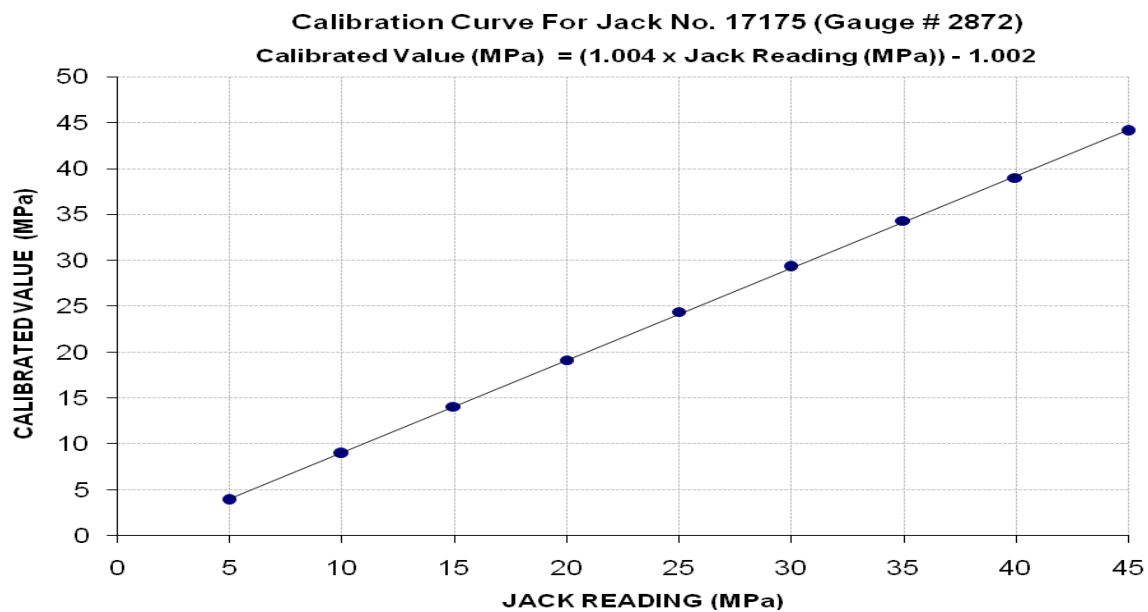
Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 16/20)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 17175, Gauge No. 2872) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	1900	4350	6850	9300	11850	14250	16700	18950	21450
Calibrated Pressure (Mpa)	3.91	8.94	14.08	19.12	24.36	29.29	34.33	38.95	44.09

The Ram Area of Jack = 47.71 cm<sup>2</sup>



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**Department of Civil Engineering**  
**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 17/20)

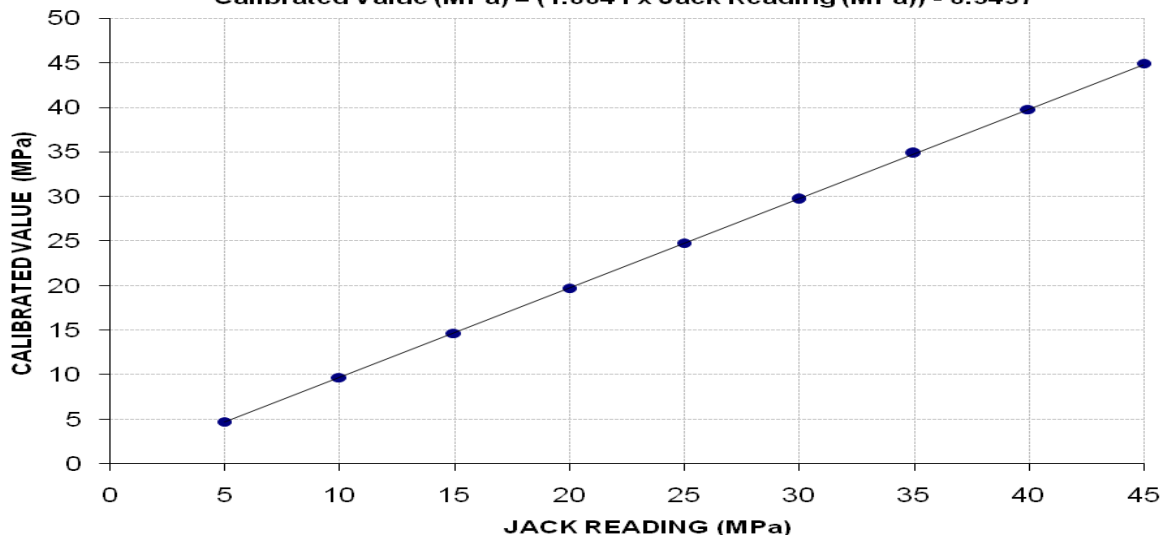
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1709, Gauge No. 2856) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	18200	37200	56400	75800	95200	114200	134000	152800	172600
Calibrated Pressure (Mpa)	4.73	9.68	14.67	19.72	24.76	29.71	34.86	39.75	44.90

The Ram Area of Jack = 377 cm<sup>2</sup>

**Calibration Curve For Jack No. 1709 (Gauge # 2856)**  
**Calibrated Value (MPa) = (1.0041 x Jack Reading (MPa)) - 0.3497**



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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**STRUCTURAL ENGINEERING DIVISION**  
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**University of Engineering and Technology Lahore, 54890**  
**Pakistan. Ph: 92-42-99029202**

Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
**CGGC Suki Kinari Project Management in Pakistan**  
**874 MW Suki Kinari Hydro Power Project**

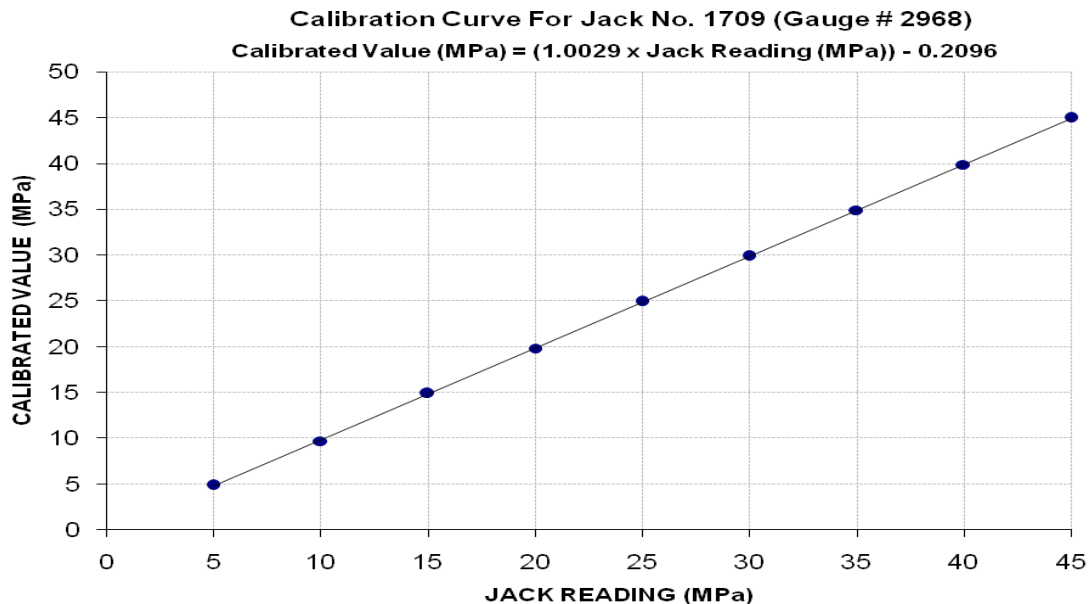
Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 18/20)

Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1709, Gauge No. 2968) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	18800	37200	57200	76200	95800	114800	134200	153200	172800
Calibrated Pressure (Mpa)	4.89	9.68	14.88	19.82	24.92	29.86	34.91	39.85	44.95

The Ram Area of Jack = 377 cm<sup>2</sup>



**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
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**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 19/20)

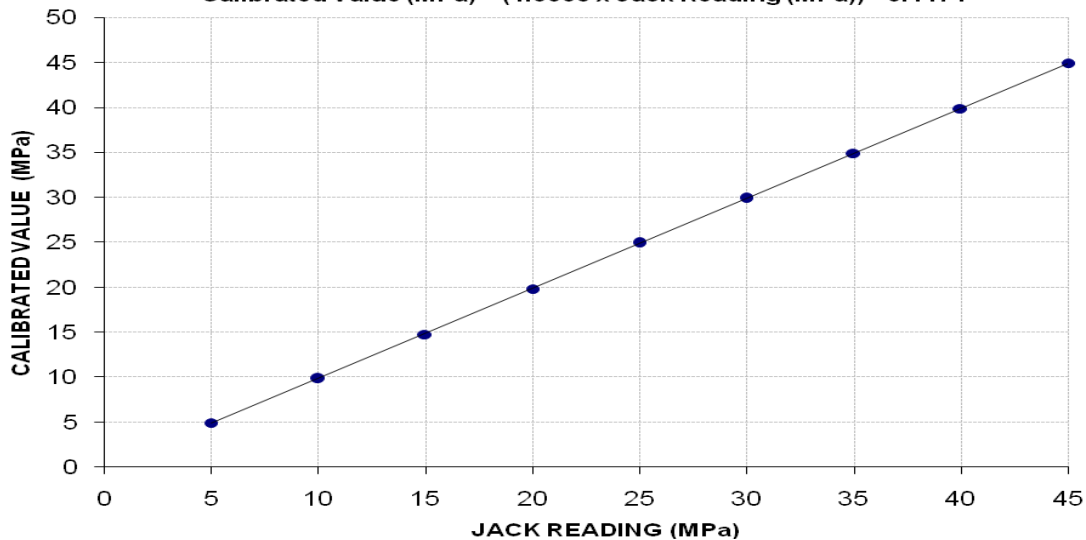
Reference to your LetteNo. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1520, Gauge No. 2856) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	19000	37800	56800	76200	95800	114800	134200	153200	172600
Calibrated Pressure (Mpa)	4.94	9.83	14.78	19.82	24.92	29.86	34.91	39.85	44.90

The Ram Area of Jack = 377 cm<sup>2</sup>

**Calibration Curve For Jack No. 1520 (Gauge # 2856)**  
**Calibrated Value (MPa) = (1.0006 x Jack Reading (MPa)) - 0.1474**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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Ref: CED/TFL/12/34293

Dated: 10-12-19

Dated of Test: 12-12-19

To  
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**874 MW Suki Kinari Hydro Power Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/12/34293)** (Page - 18/20)

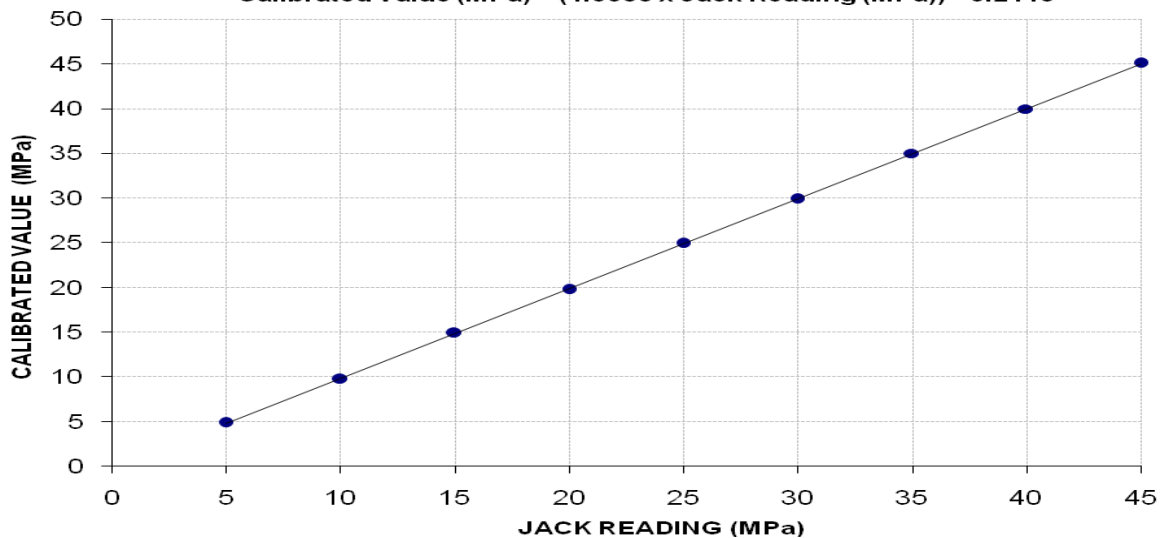
Reference to your Letter No. Nil, dated: 10/12/2019 on the subject cited above. One Hydraulic Jack (Jack No. 1520, Gauge No. 2968) as received by us has been calibrated. The results are tabulated as under:

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

Hydraulic Jack Reading (MPa)	5	10	15	20	25	30	35	40	45
Calibrated Load (kg)	18800	37400	57200	76000	95800	114800	134400	153600	173200
Calibrated Pressure (Mpa)	4.89	9.73	14.88	19.77	24.92	29.86	34.96	39.96	45.05

The Ram Area of Jack = 377 cm<sup>2</sup>

**Calibration Curve For Jack No. 1520 (Gauge # 2968)**  
**Calibrated Value (MPa) = (1.0053 x Jack Reading (MPa)) - 0.2413**



**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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**

To,  
 Sub Divisional Officer  
 Highway Sub Division  
 Kamolke  
 (Rehabilitation/ Widening of Road from Sadhoke to Chandiali, District Gujranwala, Length = 6.83 km)

Reference # CED/TFL **34301** (Dr. Qasim Khan)  
 Reference of the request letter # 103/K

Dated: 11-12-2019  
 Dated: 02-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (inch)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.328	3/8	0.350	0.11	0.096	3000	3700	60200	68670	74200	84700	1.70	21.3	
2	0.327	3/8	0.350	0.11	0.096	3100	3700	62200	71080	74200	84900	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only two samples for tensile and one sample for bend test</b>														
Bend Test														
3/8" Dia Bar Bend Test Through 180° is Satisfactory														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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**

To,  
 Team Leader  
 Garuk Storage Dam Project Consultants  
 Garuk Storage Dam Project

Reference # CED/TFL **34302** (Dr. Qasim Khan)  
 Reference of the request letter # TL/83/GRK/12/19

Dated: 11-12-2019  
 Dated: 11-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (mm)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.442	10	10.33	0.12	0.130	4500	5500	82673	76410	101044	93400	1.00	12.5	
2	0.419	10	10.06	0.12	0.123	4400	5400	80835	78770	99207	96700	1.00	12.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only two samples for tensile and one sample for bend test</b>														
Bend Test														
10mm Dia Bar Bend Test Through 180° is Satisfactory														

**I/C Testing Laboratories**  
**UET Lahore, Pakistan.**

Note:

- 1- You can See your reports On Internet in the following web site  
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2. The above results pertain to sample /samples supplied to this laboratory.
- 3- Sealed sample / Unsealed sample / Marked sample/Signed Samples



**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 Zikar Construction  
Sheikhupura  
(31-K Model Toiwn)(Mughal Supreme)

Reference # CED/TFL **34304** (Dr. Qasim Khan)  
Reference of the request letter # Nil

Dated: 11-12-2019  
Dated: 09-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
Gauge length 8 inches  
Description Deformed Steel Bar Tensile Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size		Area (in <sup>2</sup> )		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	0.346	3	0.360	0.11	0.102	3600	4600	72200	77960	92200	99700	0.80	10.0	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	
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.	.	.	.	.	.	.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	.	.	.	.	.	.	
<b>Note: only one sample for tensile test</b>														
Bend Test														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

- 1- You can See your reports On Internet in the following web site  
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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**

To,  
 Senior Resident Engineer  
 ProMag Pvt Ltrd  
 Civil Infrastructure Works Main Trunk Sewer Package II, DHA Multan  
 (Amjad Steel)

Reference # CED/TFL **34305** (Dr. Qasim Khan)  
 Reference of the request letter # Sec-D/MTS/390

Dated: 11-12-2019  
 Dated: 10-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (mm)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.082	5	4.45	-----	0.024	1160	1240	-----	106180	-----	113500	0.20	2.5	
2	0.079	5	4.36	-----	0.023	1000	1080	-----	95350	-----	103000	0.80	10.0	
3	0.150	6	6.02	-----	0.044	1160	1440	-----	58040	-----	72100	1.10	13.8	
4	0.150	6	6.03	-----	0.044	1240	1560	-----	61840	-----	77800	1.30	16.3	
5	0.268	8	8.05	-----	0.079	1840	2520	-----	51430	-----	70500	1.60	20.0	
6	0.264	8	7.99	-----	0.078	1840	2440	-----	52200	-----	69300	1.60	20.0	

**Note: only Six samples for tensile and three samples for bend test**

**Bend Test**

5mm Dia Bar Bend Test Through 180° is Satisfactory

6mm Dia Bar Bend Test Through 180° is Satisfactory

8mm Dia Bar Bend Test Through 180° is Satisfactory

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

- 1- You can See your reports On Internet in the following web site  
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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**

To,  
 Resident Engineer  
 NESPAK  
 Construction of Under Passes at Kashmir Bridge along Canal Faisalabad  
 (Mughal Steel)  
 Reference # CED/TFL **34306** (Dr. Qasim Khan)  
 Reference of the request letter # 3994/103/AS/02/170A

Dated: 11-12-2019  
 Dated: 28-11-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (inch)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	4.233	10	1.259	1.27	1.244	40800	56200	70900	72270	97600	99600	1.60	20.0	
2	4.238	10	1.259	1.27	1.246	40600	56200	70500	71840	97600	99500	1.60	20.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only two samples for tensile and two samples for bend test</b>														
Bend Test														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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**

To,  
 M/S Haris & Company  
 Lahore  
 (Edotco B2S Project Site ID:- UNH003, UNH004, UNH010, UNH011, QUJA09, QUDA01, QUDA02, QUDA09, QUTA08, QUJR07)

Reference # CED/TFL **34307** (Dr. Qasim Khan)  
 Reference of the request letter # 0010

Dated: 11-12-2019  
 Dated: 10-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (mm)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.356	10	9.27	0.12	0.105	3200	4700	58789	67440	86347	99100	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only one sample for tensile and one sample for bend test</b>														
Bend Test														
10mm Dia Bar Bend Test Through 180° is Satisfactory														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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**

To,  
 Manager Coordination  
 Izhar Construction (Pvt) Ltd  
 Lahore

Reference # CED/TFL **34309** (Dr. Qasim Khan)  
 Reference of the request letter # ICPL/CONST-MISC./19/125

Dated: 11-12-2019  
 Dated: 11-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (mm)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	5.375	36	36.03	1.560	1.580	52400	67400	74052	73100	95250	94100	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only one sample for tensile test</b>														
Bend Test														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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**

To,  
M/S Defence Housing Authority.  
Lahore Cantt  
(Foundation of Stadium Pole Lights, Sports Complex at DHA Ph-VI (M/s OMECTA  
International Pvt Ltd)

Reference # CED/TFL **341311** (Dr. Qasim Khan)  
Reference of the request letter # 408/241/E/Lab/798/09

Dated: 11-12-2019

Dated: 11-12-2019

**Tension Test Report** (Page – 1/1)

Date of Test 12-12-2018  
Gauge length 2 inches  
Description J-Bolt Tensile Test as per ASTM F-1554

Sr. No.	Diameter / size	Area	Yield load	Breaking Load	Yield Stress	Ultimate Stress	Elongation	% Elongation	Reduction Area	% Reduction of Area	Remarks
	(mm)								(mm <sup>2</sup> )		
1	38.20	1146.08	43600	81000	373.20	693.33	0.50	25.00	728.2	36.5	
<b>Only One Sample for Tensile Test</b>											

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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[http://www.uet.edu.pk/faculties/facultiesinfo/civil/index.html?RID=testing\\_reports](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.
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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**

To,  
M/S Madena Steel Industry  
Kasur

Reference # CED/TFL **34312** (Dr. Qasim Khan)  
Reference of the request letter # Nil

Dated: 11-12-2019  
Dated: 11-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
Gauge length 8 inches  
Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight (lbs/ft)	Diameter/ Size (inch)		Area (in <sup>2</sup> )		Yield load (kg)	Breaking Load (kg)	Yield Stress (psi)		Ultimate Stress (psi)		Elongation (inch)	% Elongation	Remarks
		Nominal	Actual	Nominal	Actual			Nominal	Actual	Nominal	Actual			
1	0.384	3/8	0.379	0.11	0.113	3600	5500	72200	70330	110200	107500	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only one sample for tensile and one sample for bend test</b>														
Bend Test														
3/8" Dia Bar Bend Test Through 180° is Satisfactory														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

Note:

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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**

To,  
M/S Defence Housing Authority.  
Lahore Cantt  
(Infra Dev Works Ph-IX Prism (Pkg-II, III & IV), DHA Ph-IX (M/s NLC))

Reference # CED/TFL **34313** (Dr. Qasim Khan)  
Reference of the request letter # 408/241/E/Lab/797/1788

Dated: 11-12-2019  
Dated: 10-12-2019

**Tension Test Report** (Page -1/1)

Date of Test 12-12-2019  
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 <sup>2</sup> )		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	0.375	3	0.375	0.11	0.110	3400	4900	68200	68020	98200	98100	1.10	13.8	S.J. Steel
2	0.386	3	0.380	0.11	0.114	3600	5100	72200	69850	102200	99000	1.20	15.0	
-	5.228	11	1.399	1.56	1.537	47000	72000	66500	67420	101800	103300	1.40	17.5	
-	5.182	11	1.393	1.56	1.523	46800	71200	66200	67720	100600	103100	1.65	20.6	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only four samples for tensile and two samples for bend test</b>														
Bend Test														
#3 Bar Bend Test Through 180° is Satisfactory														
#11 Bar Bend Test Through 180° is Satisfactory														

**I/C Testing Laboratoires**  
**UET Lahore, Pakistan.**

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