



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
 Associated Consulting Engineers - ACE Ltd (Jv)
 Engineering General Consultants (Pvt) Ltd
 CPEC Project Western Route, Hakla (M-1) Yarak D.I Khan Motorway, Package – V to Pindi
 Gheb (km 0+00 to 62+767.422)

Reference # CED/TFL **37524** (Dr. M Rizwan Riaz) Dated: 16-12-2021
 Reference of the request letter # RE/ACE/CPEC/P-V/21/1340 Dated: 10-12-2021

Tension Test Report (Page – 1/1)

Date of Test 28-12-2021
 Gauge length 2 inches
 Description Steel Structure Steel Strip Tensile and Bend Test

Sr. No.	Designation		Size of Strip	X Section Area	Yield load	Breaking Load	Yield Stress	Ultimate Stress	Elongation	% Elongation	Remarks
	(inch)		(mm)	(mm ²)	(kg)	(kg)	(MPa)	(MPa)	(in)		
1	Channel	2x4	26.40x7.40	195.36	6300	10000	316	502	0.60	30.00	
2	Channel	5x2 ¹ / ₂	26.30x7.30	191.99	6500	10500	332	537	0.70	35.00	
3	I-Beam	16x6	26.10x13.30	347.13	13500	19300	382	545	0.60	30.00	
4	H-Beam	16x16	25.90x20.70	536.13	14500	24000	265	439	0.85	42.50	
-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	
Only Four Samples for Tensile and Four Samples for Bend Test											
Bend Test											
Strip Taken from Channel (2"x4") Bend Test Through 180° is Satisfactory											
Strip Taken from Channel (5"x2 ¹ / ₂ ") Bend Test Through 180° is Satisfactory											
Strip Taken from I-Beam (16"x6") Bend Test Through 180° is Satisfactory											
Strip Taken from H-Beam (16"x16") 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
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Pakistan. Ph: 92-42-99029202

To,
 Resident Engineer
 Engineering Consultancy Services Punjab (Pvt) Ltd.
 Infrastructure Development and Construction of Affordable Housing Unit at Chak 48 NB
 Sargodha

Reference # CED/TFL **37595** (Dr. M Rizwan Riaz)
 Reference of the request letter # ECSP/RE/SG/16

Dated: 27-12-2021
 Dated: 15-11-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
 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	0.383	3	0.378	0.11	0.113	3800	5100	76200	74440	102200	99900	1.00	12.5	Ittefaq Steel
2	0.377	3	0.375	0.11	0.111	3900	5100	78200	77670	102200	101600	0.90	11.3	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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

Bend Test

#3 Bar Bend Test Through 180° is Satisfactory

I/C Testing Laboratoires
UET Lahore, Pakistan.

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To,
M/S Naveena Steel Mills (Pvt) Ltd.
Karachi

Reference # CED/TFL 37597 (Dr. M Rizwan Riaz)
Reference of the request letter # Nil

Dated: 27-12-2021

Dated: 27-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021

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 ²)		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	0.422	10	10.10	0.12	0.124	4300	5700	78998	76320	104719	101200	1.00	12.5	
2	0.416	10	10.02	0.12	0.122	4100	5400	75324	73980	99207	97500	1.30	16.3	
3	4.174	32	31.75	1.25	1.227	38400	53000	67725	68980	93475	95300	1.40	17.5	
4	4.188	32	31.80	1.25	1.231	40400	53400	71253	72340	94181	95700	1.30	16.3	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only four samples for tensile and two samples for bend test														
Bend Test														
10mm Dia Bar Bend Test Through 180° is Satisfactory														
32mm Dia Bar Bend Test Through 180° is Satisfactory														

I/C Testing Laboratoires
UET Lahore, Pakistan.

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STRUCTURAL ENGINEERING DIVISION
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To,
 Project Manager
 State Grid
 Design, Supply, Installation, Testing & Commissioning of 500kV/D/C Transmission Line Nokhar
 S/S – Lahore North S/S- Lahore HVDC Switching / Converter Station
 (Kamran Steel (Sharqpur Warehouse)
 Reference # CED/TFL **37598** (Dr. M Rizwan Riaz) Dated: 27-12-2021
 Reference of the request letter # CET/ADB-301A//SEC-II/UET-21-234 Dated: 27-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
 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	4.210	10	1.255	1.27	1.237	35600	53400	61800	63410	92700	95200	1.50	18.8	
2	4.243	10	1.260	1.27	1.247	35400	53200	61500	62570	92400	94100	1.70	21.3	
3	4.221	10	1.257	1.27	1.241	36600	53000	63600	65020	92000	94200	1.50	18.8	
4	4.225	10	1.257	1.27	1.242	36400	52800	63200	64610	91700	93800	1.70	21.3	
5	4.227	10	1.258	1.27	1.243	34400	53000	59700	61020	92000	94100	1.50	18.8	
6	4.263	10	1.263	1.27	1.253	34600	53400	60100	60870	92700	94000	1.50	18.8	

Note: only six samples for tensile and six samples for bend test

Bend Test														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														

Witness by Umair Khalid (NESPAK)

I/C Testing Laboratories
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
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To,
 Project Manager
 State Grid
 Design, Supply, Installation, Testing & Commissioning of 500kV/D/C Transmission Line Nokhar
 S/S – Lahore North S/S- Lahore HVDC Switching / Converter Station
 (Kamran Steel (Noshehra Virka Warehouse)
 Reference # CED/TFL **37599** (Dr. M Rizwan Riaz) Dated: 27-12-2021
 Reference of the request letter # CET/ADB-301A//SEC-I/UET-21-235 Dated: 27-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
 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	4.349	10	1.276	1.27	1.278	42600	55200	74000	73450	95800	95200	1.40	17.5	
2	4.340	10	1.274	1.27	1.276	39600	56600	68800	68420	98300	97800	1.30	16.3	
3	4.365	10	1.278	1.27	1.283	41200	57800	71500	70780	100400	99300	1.60	20.0	
4	4.389	10	1.282	1.27	1.290	41400	54200	71900	70740	94100	92700	1.50	18.8	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only four samples for tensile and four samples for bend test														
Bend Test														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														
#10 Bar Bend Test Through 180° is Satisfactory														

Witness by Umair Khalid (NESPAK)

I/C Testing Laboratoires
UET Lahore, Pakistan.

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STRUCTURAL ENGINEERING DIVISION
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Department of Civil Engineering
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To,
M/S Majeed Associates
Lahore
(Allied Bank Warehouse at Pakpattan Road, Sahiwal)

Reference # CED/TFL **37602** (Dr. M Rizwan Riaz)
Reference of the request letter # Nil

Dated: 27-12-2021
Dated: 27-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
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 ²)		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	0.373	3/8	0.374	0.11	0.110	4000	5300	80200	80450	106200	106600	1.00	12.5	
2	0.374	3/8	0.374	0.11	0.110	4100	5300	82200	82150	106200	106200	0.75	9.4	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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

Bend Test

3/8" Dia Bar Bend Test Through 180° is Satisfactory

I/C Testing Laboratoires
UET Lahore, Pakistan.

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To,
 M/S M. Saleem Construction Company
 Shiekhupura

Reference # CED/TFL **37603** (Dr. M Rizwan Riaz)
 Reference of the request letter # Nil

Dated: 27-12-2021
 Dated: 27-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
 Gauge length 8 inches
 Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight	Diameter/ Size (inch)		Area (in ²)		Yield load	Breaking Load	Yield Stress (psi)		Ultimate Stress (psi)		Elongation	% Elongation	Remarks
	(lbs/ft)	Nominal	Actual	Nominal	Actual	(kg)	(kg)	Nominal	Actual	Nominal	Actual	(inch)		
1	0.367	3/8	0.371	0.11	0.108	3500	4900	70200	71470	98200	100100	1.00	12.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only one sample for tensile and one samples for bend test														
Bend Test														
3/8" Dia Bar Bend Test Through 180° is Satisfactory														

I/C Testing Laboratoires
UET Lahore, Pakistan.

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To,
M/S Defence Housing Authority.
Lahore Cantt
Construction of Mosque at Sector-G, DHA Phase-V (M/s Waha Enterprises)

Reference # CED/TFL **37605** (Dr. M Rizwan Riaz)
Reference of the request letter # 408/241/E/Lab/194/09

Dated: 28-12-2021
Dated: 27-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
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	0.410	3	0.392	0.11	0.121	4230	5320	84800	77300	106600	97300	1.00	12.5	Agha Steel
2	0.408	3	0.391	0.11	0.120	4200	5300	84200	77250	106200	97500	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
UET Lahore, Pakistan.

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To,
M/S Defence Housing Authority.
Lahore Cantt
(Infra Dev Works of Prism Pkg-01, DHA Phase-IX and IVY Green Z-Sector DHA Ph-VIII (M/s DHA-C)
Reference # CED/TFL **37606** (Dr. M Rizwan Riaz) Dated: 28-12-2021
Reference of the request letter # 408/241/E/Lab/195-196/176&6677 Dated: 28-12-2021

Tension Test Report (Page -1/1)

Date of Test 28-12-2021
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	0.368	3	0.371	0.11	0.108	3570	5500	71600	72660	110200	112000	1.10	13.8	Saeed Kasur
2	0.379	3	0.377	0.11	0.111	3620	5610	72600	71650	112500	111100	1.10	13.8	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
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
UET Lahore, Pakistan.

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Ref: CED/TFL/12/37607
2021

Dated: 28-12-

Dated of Test: 28-12-2021

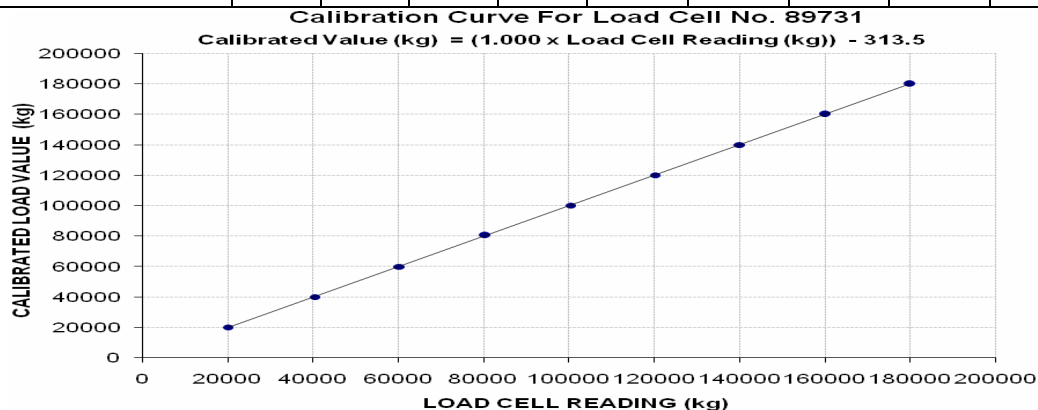
To
M/S Direct Line Engineering Corporation
Lahore

Subject: - CALIBRATION OF COMPRESSION LOAD CELL (MARK: TFL/12/37607)
(Page -1/1)

Reference to your Letter No. DLE/M-12/CAL-OS/030, Dated: 28/12/2021 on the subject cited above. One Load Cell No. 89731 (Model: C2PI, BLH Eletronics USA) with Digital Indicator No. 00040021 (Model: C1-2001A, CAS) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 200000 (kg)
Calibrated Range : Zero - 180000 (kg)

Load Cell Reading (kg)	20150	40400	60400	80500	100400	120250	140200	160250	180065
Calibrated Load (kg)	20000	40000	60000	80000	100000	120000	140000	160000	180000



NOTE: The load cell is calibrated with the standard calibration device. It is recommended that this device can be used as load cell but should not be used to calibrate any other device or machine.

I/C Testing Laboratoires
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