



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/08/35298

Dated: 31-08-2020

Date of Calibration: 07-09-2020

To

Resident Engineer

Associated Consulting Engineers - ACE Ltd. Jv Engineering General Consultants (Pvt) Ltd
China - Pakistan Economic Corridor (CPEC), Western Route, Construction of Hakla (on M-1) to D.I. Khan Motorway, Package-5

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/08/35298) (Page – 1/2)

Reference to your Letter No. RE/ACE/CPEC/P-V/20/892, dated: 28/08/2020 on the subject cited above. One Hydraulic Jack (Jack No. 071, Pump No. B1-970) as received by us has been calibrated. The results are tabulated as under:

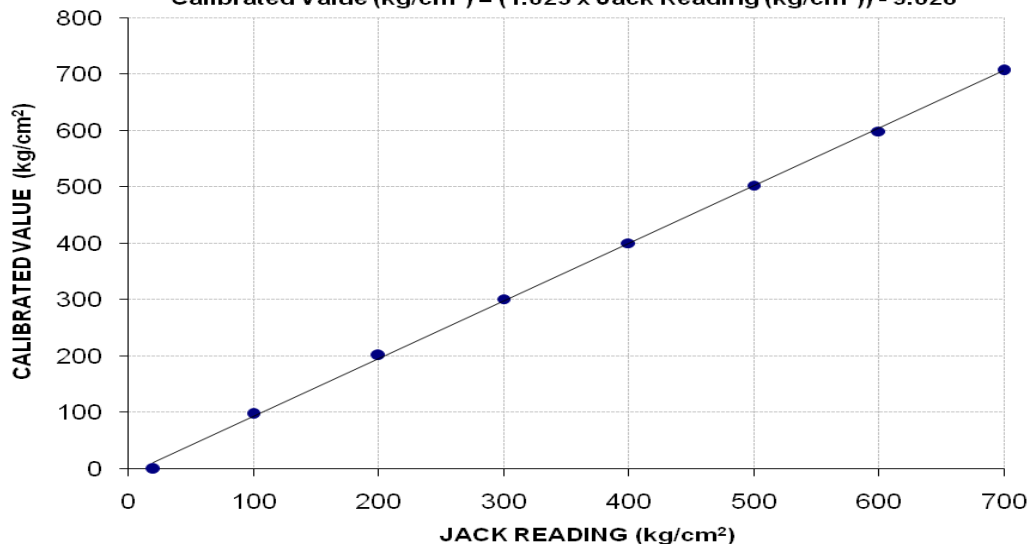
Total Range : Zero - 1000 (kg/cm²)
Calibrated Range : Zero - 700 (kg/cm²)

Hydraulic Jack Reading (kg/cm ²)	20	100	200	300	400	500	600	700
Calibrated Load (kg)	0	26000	53800	80600	107100	134400	160000	188900
Calibrated Pressure (kg/cm ²)	0	97.30	201.33	301.62	400.79	502.96	598.76	706.91

The Ram Area of Jack = 267.2 cm²

Calibration Curve For Jack No. 071

Calibrated Value (kg/cm²) = (1.023 x Jack Reading (kg/cm²)) - 9.628



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UET Lahore, Pakistan.

Note:

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Associated Consulting Engineers - ACE Ltd. Jv Engineering General Consultants (Pvt) Ltd
China - Pakistan Economic Corridor (CPEC), Western Route, Construction of Hakla (on M-1) to D.I. Khan Motorway, Package-5

Subject: - CALIBRATION OF HYDRAULIC JACK (MARK: TFL/08/35298) (Page – 2/2)

Reference to your Letter No. RE/ACE/CPEC/P-V/20/892, dated: 28/08/2020 on the subject cited above. One Hydraulic Jack (Jack No. 087, Pump No. B1-951) as received by us has been calibrated. The results are tabulated as under:

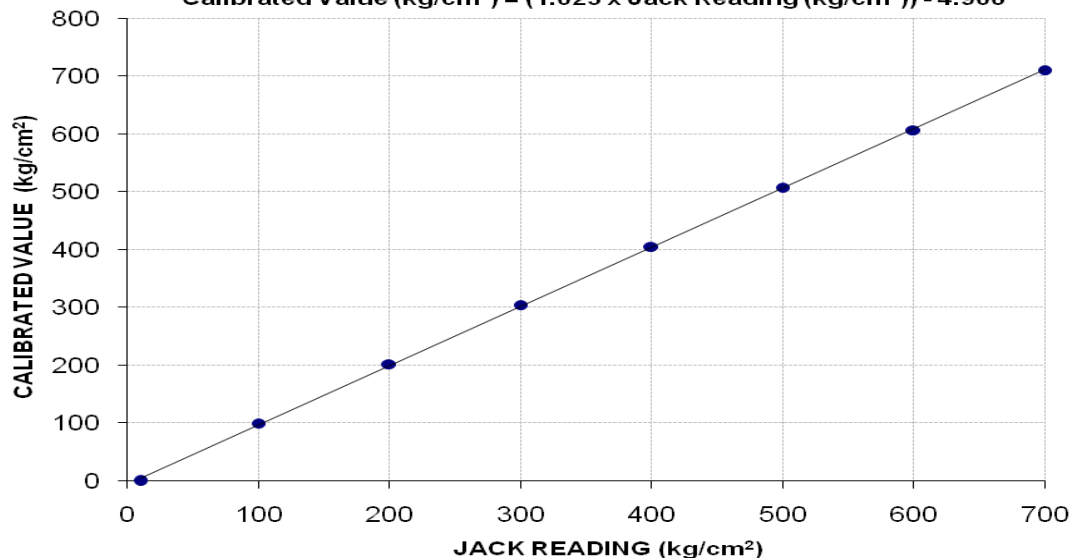
Total Range : Zero - 1000 (kg/cm²)
Calibrated Range : Zero - 700 (kg/cm²)

Hydraulic Jack Reading (kg/cm ²)	10	100	200	300	400	500	600	700
Calibrated Load (kg)	0	26600	54000	81400	108400	135600	162200	189800
Calibrated Pressure (kg/cm ²)	0	99.54	202.08	304.62	405.66	507.45	606.99	710.28

The Ram Area of Jack = 267.2 cm²

Calibration Curve For Jack No. 087

Calibrated Value (kg/cm²) = (1.023 x Jack Reading (kg/cm²)) - 4.906



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STRUCTURAL ENGINEERING DIVISION
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To,
 Project Manager
 MA Engineering Services
 Construction of Commercial Plaza at Al Rehman Garden Lahore

Reference # CED/TFL **35311** (Dr. Usman Akmal)
 Reference of the request letter # MA/UETL/008

Dated: 03-09-2020
 Dated: 03-09-2020

Tension Test Report (Page -1/1)

Date of Test 07-09-2020
 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	0.372	3	0.373	0.11	0.109	3600	5000	72200	72550	100200	100800	1.00	12.5	FF Steel
2	0.370	3	0.372	0.11	0.109	3700	5100	74200	75060	102200	103500	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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STRUCTURAL ENGINEERING DIVISION
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To,
M/S Defence Housing Authority.
Lahore Cantt
(Infra Dev Works Sector-R, Phase-9 (M/s DHA Const Coy)

Reference # CED/TFL **35312** (Dr. Usman Akmal)
Reference of the request letter # 408/241/E/Lab/968/888

Dated: 03-09-2020
Dated: 28-08-2020

Tension Test Report (Page -1/1)

Date of Test 07-09-2020
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	5.225	11	1.398	1.56	1.536	47200	69800	66700	67740	98700	100200	1.40	17.5	S.J. Steel
2	5.267	11	1.404	1.56	1.548	47600	70200	67300	67770	99200	100000	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and one sample for bend test														
Bend Test														
#11 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,
 Assistant Manager Civil
 Al Hussain Traders Contractors
 Civil Works, Erection, Testing and Commissioning for 220 / 132 kV Grid Station Jhimpir-II

Reference # CED/TFL **35313** (Dr. Usman Akmal)
 Reference of the request letter # AHT/NOR-701/4397-4401

Dated: 03-09-2020
 Dated: 03-09-2020

Tension Test Report (Page -1/1)

Date of Test 07-09-2020
 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	0.418	10	10.05	0.12	0.123	3750	5100	68894	67240	93696	91500	1.30	16.3	Union Steel
2	0.426	10	10.14	0.12	0.125	3900	5150	71650	68620	94614	90700	1.60	20.0	
3	0.419	10	10.06	0.12	0.123	3900	4900	71650	69750	90021	87700	1.50	18.8	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only three samples for tensile and two samples for bend test														
Bend Test														
10mm Dia Bar Bend Test Through 180° is Satisfactory														
10mm Dia Bar Bend Test Through 180° is Satisfactory														

Witness by M. Farhan (Sr. Engr. (Civil) Barqaab)

I/C Testing Laboratoires
UET Lahore, Pakistan.

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STRUCTURAL ENGINEERING DIVISION
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To,
 Project Engineer
 NETRACON Technologies (Pvt) Ltd
 Design, Manufacture, Supply, Installation, Testing and Commission of Plant for 500 / 220 / 132
 kV Faisalabad West Substation
 Reference # CED/TFL **35314** (Dr. Usman Akmal) Dated: 03-09-2020
 Reference of the request letter # NTT-HO/FSDW-GS/019 Dated: 03-09-2020

Tension Test Report (Page -1/1)

Date of Test 07-09-2020
 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	0.363	3	0.369	0.11	0.107	3200	4900	64200	66050	98200	101200	1.30	16.3	
2	0.371	3	0.372	0.11	0.109	3200	5100	64200	64740	102200	103200	1.20	15.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and two samples for bend test														
Bend Test														
#3 Bar Bend Test Through 180° is Satisfactory														
#3 Bar Bend Test Through 180° is Satisfactory														

Witness by Sohaib Ali (Sub Engr. NESPAK)

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STRUCTURAL ENGINEERING DIVISION
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To,
Material Engineer
NESPAK
Up-Gradation/Dualization of Motorway Link from Kohat via Jand Pindigheb Khushal Garh to
Kohat (Pkg-3)(King Kong)

Reference # CED/TFL **35316** (Dr. Usman Akmal)
Reference of the request letter # 36264/103/JH/055

Dated: 04-09-2020
Dated: 22-08-2020

Tension Test Report (Page – 1/4)

Date of Test 07-09-2020
Gauge length 640 mm
Description Steel Strand Tensile Test as per ASTM A-416-94a

Sr. No.	Nominal Diameter	Nominal Weight	Measured weight	Yield strength clause (6.3)		Breaking strength clause (6.2)		Young's Modulus of Elasticity "E"	% Elongation	Remarks / Coil No.
	(mm)	(kg/km)	(kg/km)	(kg)	(kN)	(kg)	(kN)	GPa		
1	12.70 (1/2")	775.0	778.0	17700	173.64	20200	198.16	199	>3.50	xx
2	12.70 (1/2")	775.0	777.0	18100	177.56	20100	197.18	198	>3.50	xx
3	12.70 (1/2")	775.0	773.0	17800	174.62	20000	196.20	199	>3.50	xx
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
Only three samples for Test										

Note:

1. Modulus of Elasticity is based on nominal steel area of the steel strand vide clause 13.3 of ASTM – A416a
2. Load versus percentage strain graphs are attached

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UET Lahore, Pakistan.

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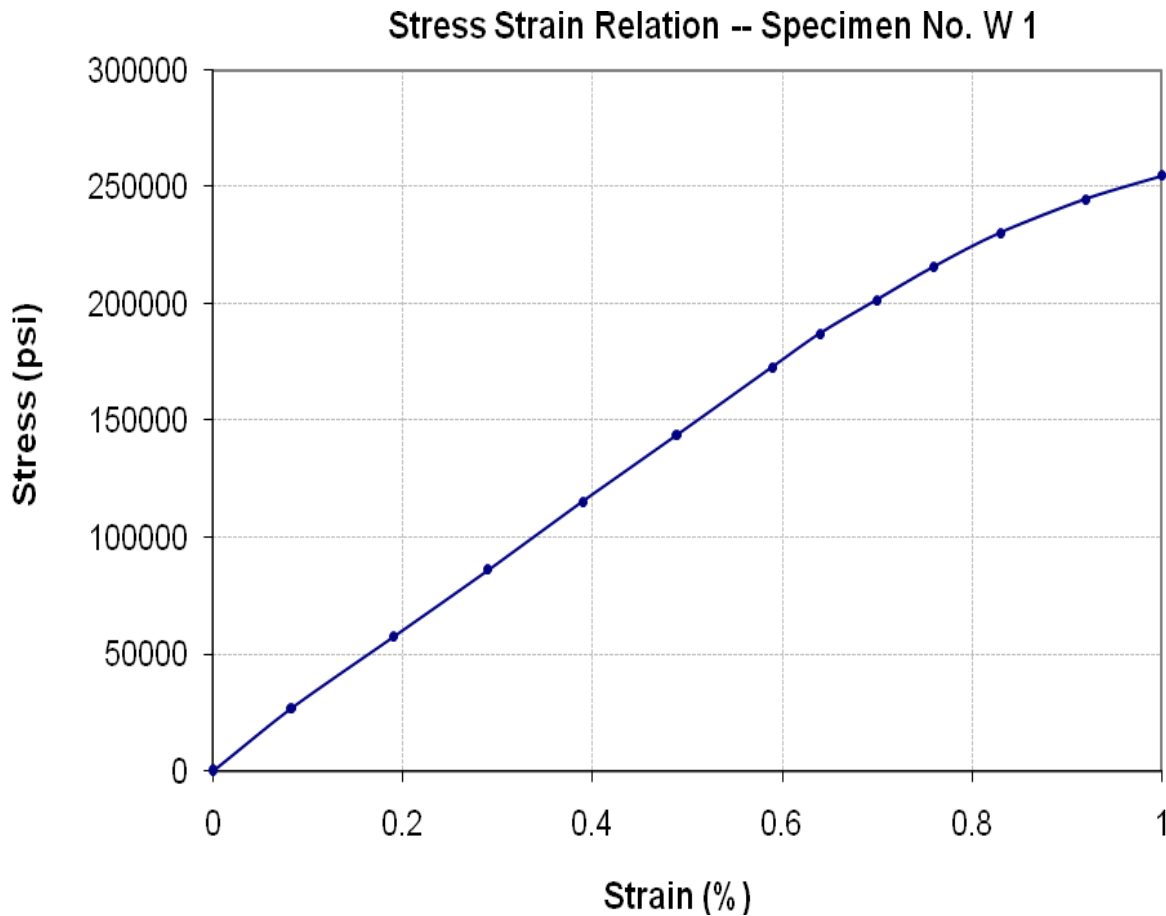
STRUCTURAL ENGINEERING DIVISION
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Department of Civil Engineering
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Pakistan. Ph: 92-42-99029202

To,
Material Engineer
NESPAK
Up-Gradation/Dualization of Motorway Link from Kohat via Jand Pindigheb Khushal Garh to
Kohat (Pkg-3)(King Kong)

Reference # CED/TFL **35316** (Dr. Usman Akmal)
Reference of the request letter # 36264/103/JH/055

Dated: 04-09-2020
Dated: 22-08-2020

Graph (Page – 2/4)



I/C Testing Laboratories
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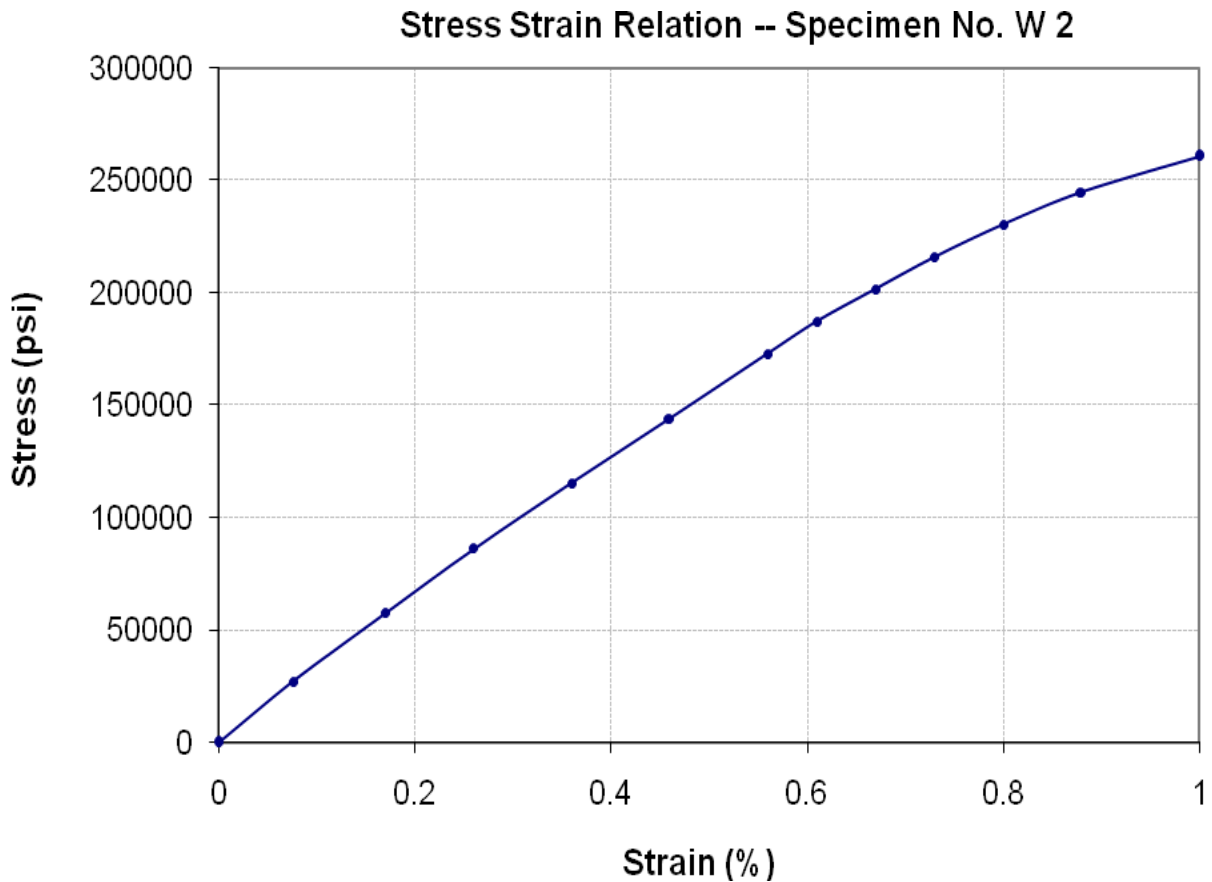
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To,
Material Engineer
NESPAK
Up-Gradation/Dualization of Motorway Link from Kohat via Jand Pindigheb Khushal Garh to
Kohat (Pkg-3)(King Kong)

Reference # CED/TFL **35316** (Dr. Usman Akmal)
Reference of the request letter # 36264/103/JH/055

Dated: 04-09-2020
Dated: 22-08-2020

Graph (Page – 3/4)



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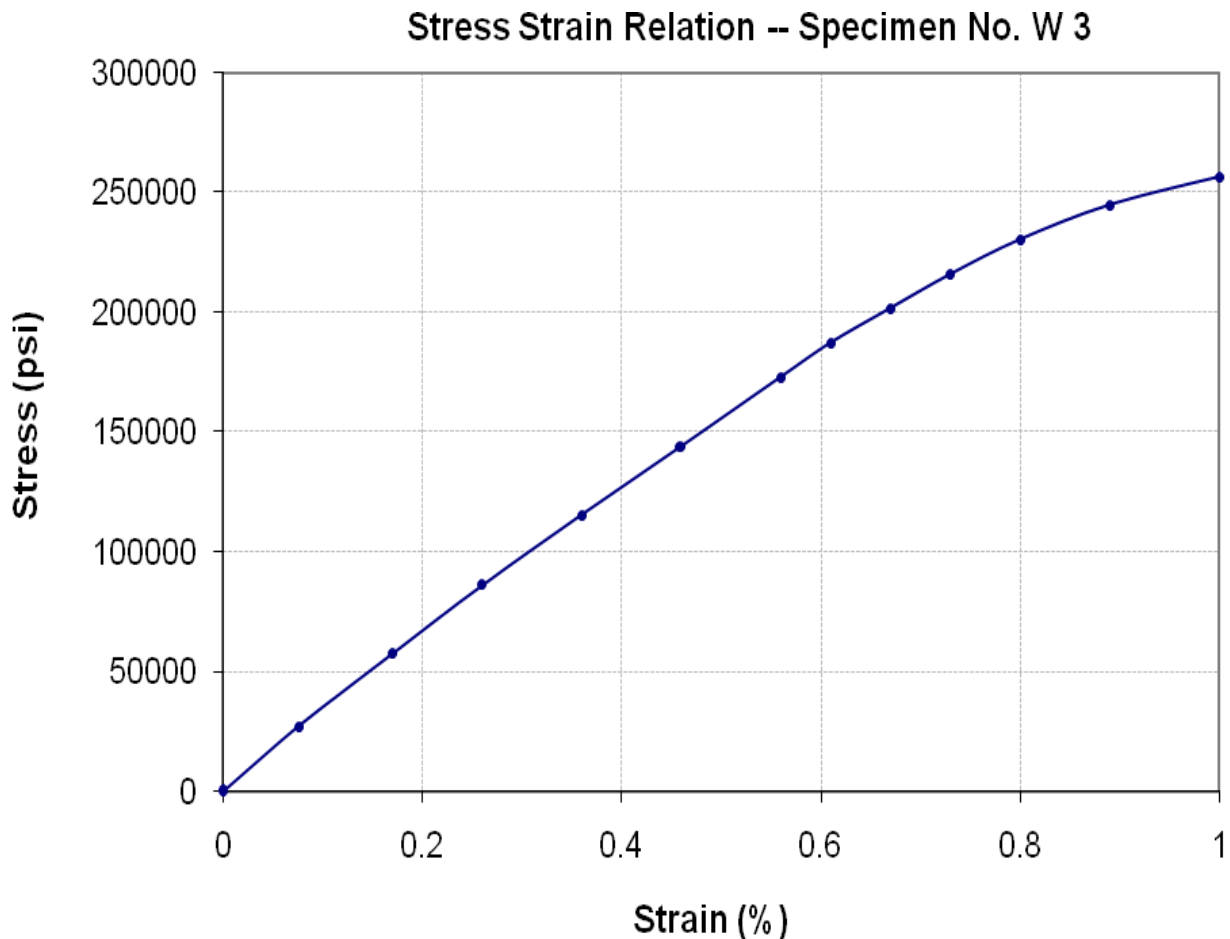
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To,
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NESPAK
Up-Gradation/Dualization of Motorway Link from Kohat via Jand Pindigheb Khushal Garh to
Kohat (Pkg-3)(King Kong)

Reference # CED/TFL **35316** (Dr. Usman Akmal)
Reference of the request letter # 36264/103/JH/055

Dated: 04-09-2020
Dated: 22-08-2020

Graph (Page – 4/4)



I/C Testing Laboratoires
UET Lahore, Pakistan.

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Test Floor Laboratory
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To,
 Material Engineer
 NESPAK
 Up-Gradation/Dualization of Motorway Link from Kohat via Jand Pindigheb Khushal Garh to Kohat (Pkg-3)

Reference # CED/TFL **35317** (Dr. Usman Akmal)
 Reference of the request letter # 36264/103/JH/053

Dated: 04-09-2020
 Dated: 22-08-2020

Tension Test Report (Page -1/1)

Date of Test 07-09-2020
 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	5.215	11	1.397	1.56	1.533	43400	65400	61400	62400	92400	94100	1.60	20.0	Moiz Steel
2	5.243	11	1.401	1.56	1.541	44200	65400	62500	63210	92400	93600	1.60	20.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and one sample for bend test														
Bend Test														
#11 Bar Bend Test Through 180° is Satisfactory														

I/C Testing Laboratoires
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Test Floor Laboratory
Department of Civil Engineering
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Pakistan. Ph: 92-42-99029202

To,
 Resident Engineer
 Architectural & Civil Engineering Services
 Civil Infrastructure Works Sector A DHA Multan

Reference # CED/TFL **35319** (Dr. Usman Akmal)
 Reference of the request letter # ACES-DHAM-SEC-A-030

Dated: 07-09-2020
 Dated: 05-09-2020

Tension Test Report (Page -1/1)

Date of Test 07-09-2020
 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	0.385	10	9.64	0.12	0.113	3400	5000	62464	66200	91858	97400	1.20	15.0	
2	0.381	10	9.59	0.12	0.112	3400	5100	62464	66880	93696	100400	0.80	10.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and one sample for bend test														
Bend Test														
10mm Dia Bar Bend Test Through 180° is Satisfactory														

I/C Testing Laboratoires
UET Lahore, Pakistan.

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