STRUCTURAL ENGINEERING DIVISION

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

To,
Assistant Project Director
Project Management Unit (PMU)
South Region D.G. Khan
(Development of Cricket & Football Ground Khan Garh Distt. Muzaffargarh)
Reference # CED/TFL **32766** (Dr. Rizwan Azam) Dated: 05-03-2019
Reference of the request letter # APD/PMU/SBP/MUL/19 Dated: 25-02-2019

Tension Test Report (Page -1/2)

Date of Test 06-03-2019
Gauge length 2 inches
Description Anchor Bolt (MS Bar) Tensile Test

Sr. No.	Weight	Diameter/ size		Area (mm^2)		Yield load	Breaking Load	Yield Stress (MPa)	Ultimate Stress (MPa)	Elongation	% Elongation	Remarks
	(kg/m)	Nominal (inch)	Actual (mm)	Nominal	Actual	(kg)	(kg)	Actual	Actual	(inch)		
1	8.778	1.5	37.73	-------	1118.2	49800	80000	437	702	0.7	35.0	
2	8.891	1.5	37.97	-------	1132.6	50600	88800	438	769	0.6	30.0	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile test												
Bend Test												

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To,
Assistant Project Director
Project Management Unit (PMU)
South Region D.G. Khan
(Construction of Cricket Ground at Govt Post Graduat College Ali Pur Muzafargarh)
Reference # CED/TFL **32766** (Dr. Rizwan Azam) Dated: 05-03-2019
Reference of the request letter # APD/PMU/SBP/MUL/19 Dated: 25-02-2019

Tension Test Report (Page -1/2)

Date of Test 06-03-2019
Gauge length 2 inches
Description Anchor Bolt (MS Bar) Tensile Test

Sr. No.	Weight	Diameter/ size		Area (mm^2)		Yield load	Breaking Load	Yield Stress (MPa)	Ultimate Stress (MPa)	Elongation	% Elongation	Remarks
	(kg/m)	Nominal (inch)	Actual (mm)	Nominal	Actual	(kg)	(kg)	Actual	Actual	(inch)		
1	8.907	1.5	38.01	-------	1134.6	51000	88400	441	764	0.6	30.0	
2	8.881	1.5	37.95	-------	1131.4	50400	88000	437	763	0.7	35.0	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile test												
Bend Test												

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To,
DCRE/RE-1
Zeeruk International (Pvt) Ltd
Lahore Sialkot Motorway Project

Reference # CED/TFL **32729** (Dr. Rizwan Azam) Dated: 27-02-2019
Reference of the request letter # LSMP/RE-1/2018/674 Dated: 27-02-2019

Tension Test Report (Page – 1/1)

Date of Test 06-03-2019
Gauge length -------
Description Galvanized Strand Tension Wire & Chain Link Wire Tensile Test as per AASHTO-M-181

Sr. No.	Diameter of Single Wire	Breaking Load		Remarks
	(mm)	(kg)	(kN)	
1	**3.10**	**560**	**5.49**	**Strand Tension Wire**
2	**3.20**	**400**	**3.92**	
3	**2.80**	**180**	**1.77**	**Chain Link Wire**
4	**2.80**	**200**	**1.96**	
5	**3.00**	**200**	**1.96**	
-	-	-	-	
-	-	-	-	
Only Five Samples for Test				

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STRUCTURAL ENGINEERING DIVISION
Test Floor Laboratory
Department of Civil Engineering
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Ref: CED/TFL/03/32758,782 Dated: 04-03-19

To
Resident Engineer
NESPAK
Development of Kartarpur Corridor

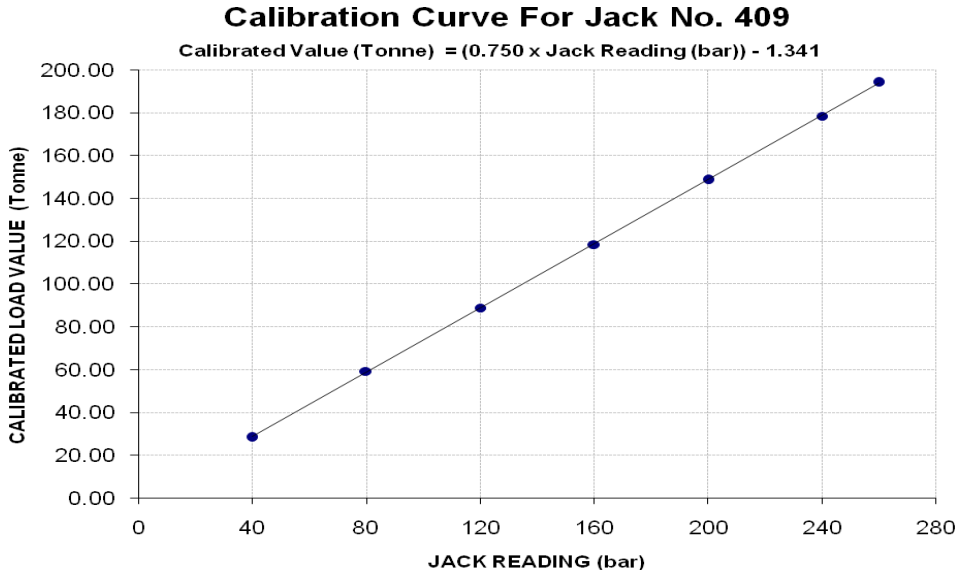
Subject: **- CALIBRATION OF HYDRAULIC JACK (MARK: TFL/03/32758)** (Page -1/2)

Reference to your Letter No. 3444/DKC/SW.Test/SM/44, dated: 27/02/2019 on the subject cited above. One Hydraulic Jack (Jack No 409, Gauge No. SF 409) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 1000 (bar)
Calibrated Range : Zero - 260 (bar)

Hydraulic Jack Reading (bar)		**40**	**80**	**120**	**160**	**200**	**240**	**260**
Calibrated Load	**(kg)**	**28400**	**59200**	**88800**	**118400**	**148600**	**178400**	**194200**
	(Tonne)	**28.40**	**59.20**	**88.80**	**118.40**	**148.60**	**178.40**	**194.20**
Calibrated Pressure (bar)		**37.95**	**79.10**	**118.65**	**158.20**	**198.55**	**238.37**	**259.48**

The Ram Area of Jack = 733.975 cm^2 Witness by Aftab Baluch (M.S NESPAK)



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Pakistan. Ph: 92-42-99029202

Ref: CED/TFL/03/32758,782 Dated: 04-03-19

To
Resident Engineer
NESPAK
Development of Kartarpur Corridor

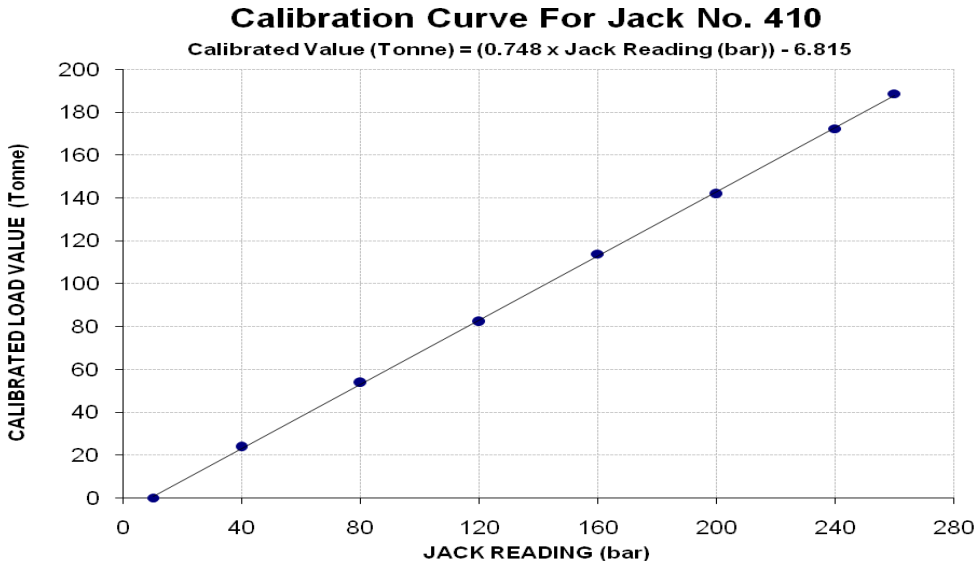
Subject: **- CALIBRATION OF HYDRAULIC JACK (MARK: TFL/03/32758)** (Page -2/2)

Reference to your Letter No. 3444/DKC/SW.Test/SM/44, dated: 27/02/2019 on the subject cited above. One Hydraulic Jack (Jack No 410, Gauge No. SF 410) as received by us has been calibrated. The results are tabulated as under:

Total Range : Zero - 1000 (bar)
Calibrated Range : Zero - 260 (bar)

Hydraulic Jack Reading (bar)		10	40	80	120	160	200	240	260
Calibrated Load	(kg)	0	23800	53800	82200	114000	141800	172400	188800
	(Tonne)	0	23.80	53.80	82.20	114.00	141.80	172.40	188.80
Calibrated Pressure (bar)		0	31.80	71.88	109.83	152.32	189.47	230.35	252.26

The Ram Area of Jack = 733.975 cm^2 Witness by Aftab Baluch (M.S NESPAK)



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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
PEPAC
Establishment of Workers Welfare Complex (Phase-I) Adjacent to Sundar Industrial Estate, District Kasur (Package-A & B) (Ittefaq Steel)
Reference # CED/TFL **32760** (Dr. Rizwan Azam) Dated: 05-03-2019
Reference of the request letter # RE/PEPAC/Sundar/AB-124 Dated: 04-03-2019

Tension Test Report (Page -1/1)

Date of Test 06-03-2019
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	0.371	3/8	0.373	0.11	0.109	3200	5100	64200	64680	102200	103100	1.20	15.0	
2	0.374	3/8	0.374	0.11	0.110	3600	5700	72200	72150	114300	114300	0.80	10.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and one sample for bend test														
Bend Test														
3/8" Dia Bar Bend Test Through 180º is Satisfactory														

Witness by Ch. Abdul Ghafoor (Resident Engineer PEPAC Pvt Ltd. Kasur)

I/C Testing Laboratoires
UET Lahore, Pakistan.

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STRUCTURAL ENGINEERING DIVISION

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Department of Civil Engineering
University of Engineering and Technology Lahore, 54890
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To,
Chief Resident Engineer
Trimmu Punjnad Barrages Consultants
Trimmu Punjnad Barrages Improvement Project (TPBIP)

Reference # CED/TFL **32764** (Dr. Ali Ahmed) Dated: 05-03-2019
Reference of the request letter # TPBC/CRE/TECH/10 Dated: 04-03-2019

Tension Test Report (Page -1/1)

Date of Test 06-03-2019
Gauge length 8 inches
Description Deformed Steel Bar Tensile and Bend Test as per ASTM-A615

Sr. No.	Weight	Diameter/ Size		Area (in^2)		Yield load	Breaking Load	Yield Stress (psi)		Ultimate Stress (psi)		Elongation	% Elongation	Remarks
	(lbs/ft)	Nominal (#)	Actual (inch)	Nominal	Actual	(kg)	(kg)	Nominal	Actual	Nominal	Actual	(inch)		
1	5.319	11	1.411	1.56	1.563	59600	74800	84300	84030	105700	105500	1.20	15.0	
2	5.257	11	1.403	1.56	1.545	57800	73800	81700	82450	104300	105300	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and one sample for bend test														
Bend Test														
#11 Bar Bend Test Through 180º is Satisfactory														

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STRUCTURAL ENGINEERING DIVISION

Test Floor Laboratory
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To,
Resident Engineer
NESPAK
Fabrication & Installation of Steel Pedestrian Bridge along Lytton Road at RD 19+377 near Jain Mandar, Lahore
Reference # CED/TFL **32765** (Dr. Ali Ahmed) Dated: 05-03-2019
Reference of the request letter # 3772/Al-Furqan (J.M)/MSW/018/14 Dated: 04-02-2019

Tension Test Report (Page -1/2)

Date of Test 06-03-2019
Gauge length 2 inches
Description J- Bolt Tensile Test as per ASTM-F1554

Sr. No.	Weight	Diameter/ size		Area (mm^2)		Yield load	Breaking Load	Yield Stress (MPa)	Ultimate Stress (MPa)	Elongation	% Elongation	Remarks
	(kg/m)	Nominal (mm)	Actual (mm)	Nominal	Actual	(kg)	(kg)	Actual	Actual	(inch)		
1	7.503	35	34.88	------	955.8	43200	74200	443	762	0.6	30.0	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	
Note: only one sample for tensile test												
Bend Test												

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

To,
Resident Engineer
NESPAK
Fabrication & Installation of Steel Pedestrian Bridge along Lytton Road at RD 19+377 near Jain Mandar, Lahore

Reference # CED/TFL **32765** (Dr. Ali Ahmed) Dated: 05-03-2019
Reference of the request letter # 3772/Al-Furqan (J.M)/MSW/018/14 Dated: 04-02-2019

Slippage Test Report (Page -2/2)

Date of Test 06-03-2019
Gauge length --
Description J-Bolt Slippage Test

Sr. No.	Dia	Failure Load	Mode of Failure	Remarks
	(mm)	(kg)	---	
1	35	45600	Thread Failure	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
Note: only one sample for test				

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To,
Resident Engineer
NESPAK
Development of Kartarpur Corridor

Reference # CED/TFL **32771** (Dr. M Rizwan Riaz) Dated: 06-03-2019
Reference of the request letter # 3444/DKC/SW.Test/SM/28 Dated: 05-03-2019

Tension Test Report (Page – 1/3)

Date of Test 06-03-2019
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**	**790.0**	**18800**	**184.43**	**20200**	**198.16**	**199**	**>3.50**	**xx**
2	**12.70 (1/2")**	**775.0**	**794.0**	**18600**	**182.47**	**20300**	**199.14**	**199**	**>3.50**	**xx**
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
Only two samples for Test										

Witness by Aftab Baluch (M.S NESPAK)

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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To,
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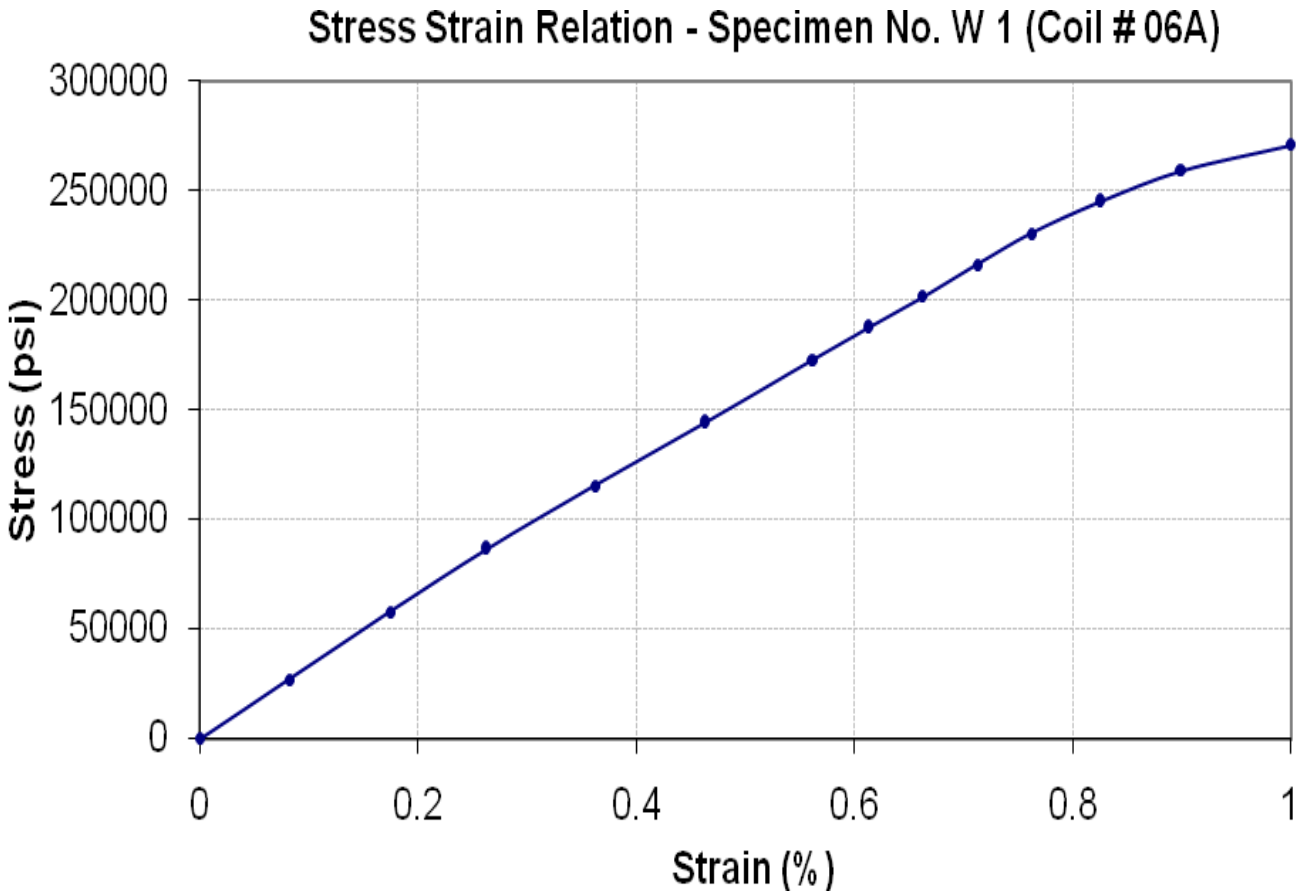
Development of Kartarpur Corridor

Reference # CED/TFL **32771** (Dr. M Rizwan Riaz) Dated: 06-03-2019
Reference of the request letter # 3444/DKC/SW.Test/SM/28 Dated: 05-03-2019

Graph (Page – 2/3)



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Development of Kartarpur Corridor

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Graph (Page – 3/3)

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