



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

To,  
 Dy. Director (Maint)  
 National Highway Authority  
 Lahore  
 (Construction of Steel Pedestrian overhead Bridge at km 1122-1126)

Reference # CED/TFL **36109** (Dr. Qasim Khan) Dated: 19-02-2021  
 Reference of the request letter # DD(M)/NHA/LHR/BC-PN-18-05-01/21/117 Dated: 08-02-2021

**Tension Test Report** (Page – 1/3)

Date of Test 08-03-2021  
 Gauge length 2 inches  
 Description Steel Structure 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)										
1	I Beam	600x200	25.10x10.50	263.55	9300	12900	346.17	480.17	0.80	40.00	
2			25.10x10.50	263.55	9200	12900	342.45	480.17	0.80	40.00	
3	H Beam	250x250	25.50x14.20	362.10	12400	19200	335.94	520.17	0.60	30.00	
4			25.50x14.20	362.10	12900	20200	349.49	547.26	0.70	35.00	
5	Channel	200x75	24.90x9.00	224.10	8500	13700	372.09	599.72	0.65	32.50	
6			24.90x9.00	224.10	8400	13700	367.71	599.72	0.65	32.50	
7	Angle	100x100	24.90x8.80	219.12	7800	12500	349.21	559.62	0.75	37.50	
8			24.90x9.50	236.55	8200	13300	340.06	551.57	0.70	35.00	
9	H Beam	150x150	24.90x9.80	244.02	9200	14500	369.85	582.92	0.70	35.00	
10			24.95x10.20	254.49	9600	15400	370.06	593.63	0.70	35.00	
<b>Only Ten Samples for Tensile Test</b>											
<b>Bend Test</b>											

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

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To,  
Dy. Director (Maintenance)  
NHA Lahore

Reference # CED/TFL **36043** (Dr. M Rizwan Riaz)

Dated: 04-02-2021

Reference of the request letter # DD(M)/NHA/LHR/BC-PN-18-05-05/20/1063 Dated: 17-12-2020

**Weight & Size Test Report** (Page – 2/3)

Date of Test 08-03-2021

Description H Beam, H Beam & Channel Weight and Size Test

Sr. No.	Designation		Weight	Length	Weight per Unit Length	Depth (d)	Flange Width (b <sub>f</sub> )	Flange Thickness (t <sub>f</sub> )	Web Thickness (t <sub>w</sub> )	Remark
	(mm)									
1	I Beam	600x200	64000	63.50	100.79	600.00	200.00	17.50	10.50	
2	H Beam	250x250	50900	62.00	82.10	255.00	250.00	14.50	14.10	
3	Channel	200x75	15450	61.60	25.08	201.00	75.00	11.50	9.20	
4	H Beam	150x150	20600	61.80	33.33	150.00	149.00	11.20	9.60	
-	-		-	-	-	-	-	-	-	
-	-		-	-	-	-	-	-	-	
-	-		-	-	-	-	-	-	-	
-	-		-	-	-	-	-	-	-	
<b>Only Four Samples for Test</b>										

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To,  
Dy. Director (Maintenance)  
NHA Lahore

Reference # CED/TFL **36043** (Dr. M Rizwan Riaz)

Dated: 04-02-2021

Reference of the request letter # DD(M)/NHA/LHR/BC-PN-18-05-05/20/1063 Dated: 17-12-2020

**Weight & Size Test Report** (Page – 3/3)

Date of Test 08-03-2021

Description Angle Weight and Size Test

Sr. No.	Designation	Weight	Length	Weight per Unit Length	L-1	L-2	Wall Thickness	Remark
	(mm)	(g)	(cm)	(kg/m)	(mm)	(mm)	(mm)	
1	100x100	8800	62.60	14.06	102.00	100.00	10.00	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
<b>Only One Sample for Test</b>								

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To,  
 Assistant Engineer Buildings  
 Public Health Engineering City-III  
 Sewerage Sub Division, Muzaffarabad  
 (Construction of Remaining Works / Rehabilitation of Water Supply System Muzaffargarh  
 (Package-III)

Reference # CED/TFL **36136, 137** (Dr. Qasim Khan)  
 Reference of the request letter # 40-42/AE/City-III /2121

Dated: 25-02-2021  
 Dated: 22-02-2021

**Tension Test Report** (Page – 1/2)

Date of Test 08-03-2021  
 Gauge length 2 inches  
 Description GI Pipe 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 <sup>2</sup> )	(kg)	(kg)	(MPa)	(MPa)	(in)		
1	GI Pipe	8	23.30x9.40	219.02	8700	11700	389.68	524.05	0.60	30.00	
2			23.40x9.40	219.96	8800	11700	392.47	521.81	0.60	30.00	
3	GI Pipe	6	23.70x6.30	149.31	4400	5200	289.09	341.65	0.60	30.00	
4			23.70x6.40	151.68	4500	5200	291.04	336.31	0.60	30.00	
5	GI Pipe	4	23.60x4.30	101.48	4000	4400	386.68	425.34	0.30	15.00	
6			23.60x4.30	101.48	3900	4300	377.01	415.68	0.30	15.00	
<b>Only Six Samples for Tensile and three Samples for Bend Test</b>											
<b>Bend Test</b>											
Strip Taken from GI Pipe (8") Bend Test Through 180° is Satisfactory											
Strip Taken from GI Pipe (6") Bend Test Through 180° is Satisfactory											
Strip Taken from GI Pipe (4") Bend Test Through 180° is Satisfactory											

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

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To,  
Assistant Engineer Buildings  
Public Health Engineering City-III  
Sewerage Sub Division, Muzaffarabad  
(Construction of Remaining Works / Rehabilitation of Water Supply System Muzaffargarh  
(Package-III)

Reference # CED/TFL **36136, 137** (Dr. Qasim Khan)  
Reference of the request letter # 40-42/AE/City-III /2121

Dated: 25-02-2021  
Dated: 22-02-2021

**Weight & Size Test Report** (Page – 2/2)

Date of Test 08-03-20201  
Description GI Pipe Weight and Size Test

Sr. No.	Designation	Weight	Length	Weight per Unit Length	External Diameter	Internal Diameter	Wall Thickness	Remark
	(inch)	(g)	(cm)	(kg/m)	(mm)	(mm)	(mm)	
1	8	49100	100.20	49.00	221.00	201.80	9.60	
2	6	24700	100.10	24.68	168.00	155.00	6.50	
3	4	11300	100.10	11.29	113.00	104.00	4.50	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
<b>Only Three Sample for Test</b>								

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Ref: CED/TFL/03/36167

Dated: 03-03-2021

Dated of Test: 08-03-2021

To,  
**Resident Engineer**  
**ACC - CEC (Jv)**  
**Dualization of Mardan - Swabi Road Project**

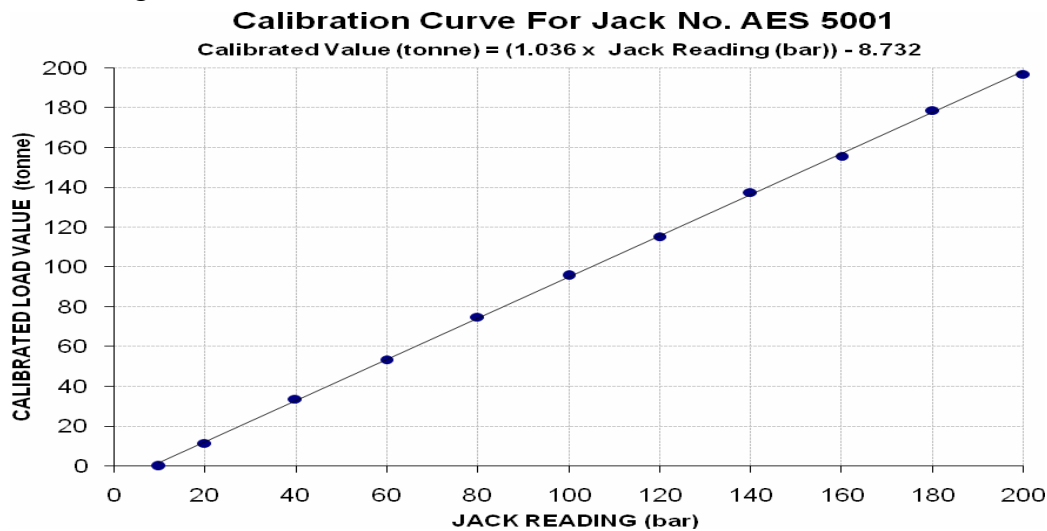
Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/03/36167)** (Page -1/2)

Reference to your Letter No. ACC-CEC (JV)/M-S/RE/101, Dated: 01/03/2021 on the subject cited above. One Hydraulic Jack (Jack No 5001, Gauge No. AES-5001) as received by us has been calibrated. The results are tabulated as under:

**Total Range : Zero - 1000 (bar)**  
**Calibrated Range : Zero - 200 (bar)**

Hydraulic Jack Reading (bar)	10	20	40	60	80	100	120	140	160	180	200	
Calibrated Load	(kg)	0	11600	33600	53600	75000	95800	115400	137600	155800	178800	197000
	Tonne	0	11.60	33.60	53.60	75.00	95.80	115.40	137.60	155.80	178.80	197.00
Calibrated Pressure (bar)	0	11.31	32.76	52.27	73.13	93.42	112.53	134.18	151.93	174.35	192.10	

1 Tonne = 1000 kg, The Ram Area of Jack = 1005.71 cm<sup>2</sup>



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Ref: CED/TFL/03/36167

Dated: 03-03-2021

Dated of Test: 08-03-2021

To,  
**Resident Engineer**  
**ACC - CEC (Jv)**  
**Dualization of Mardan - Swabi Road Project**

Subject: - **CALIBRATION OF HYDRAULIC JACK (MARK: TFL/03/36167)** (Page -2/2)

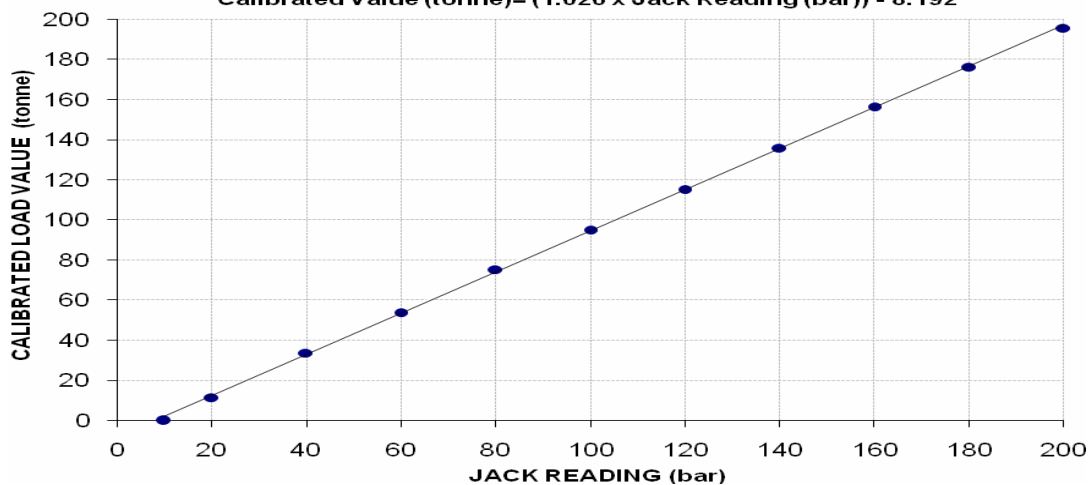
Reference to your Letter No. ACC-CEC (JV)/M-S/RE/101, Dated: 01/03/2021 on the subject cited above. One Hydraulic Jack (Jack No 5002, Gauge No. AES-5002) as received by us has been calibrated. The results are tabulated as under:

**Total Range : Zero - 1000 (bar)**  
**Calibrated Range : Zero - 200 (bar)**

Hydraulic Jack Reading (bar)		10	20	40	60	80	100	120	140	160	180	200
Calibrated Load	(kg)	0	11600	33800	54000	75400	95000	115400	136000	156400	176200	195600
	Tonne	0	11.60	33.80	54.00	75.40	95.00	115.40	136.00	156.40	176.20	195.60
Calibrated Pressure (bar)		0	11.31	32.96	52.66	73.52	92.64	112.53	132.62	152.51	171.82	190.74

1 Tonne = 1000 kg, The Ram Area of Jack = 1005.71 cm<sup>2</sup>

**Calibration Curve For Jack No. AES 5002**  
**Calibrated Value (tonne) = (1.026 x Jack Reading (bar)) - 8.192**



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To,  
Dy. General Manager (Works)  
Future Developments Holdings (Pvt) Ltd  
Development of Capital Smart City, Islamabad

Reference # CED/TFL **36172** (Dr. Qasim Khan)  
Reference of the request letter # FDHL/CSC/03/2021/0126

Dated: 05-03-2021  
Dated: 05-03-2021

**Tension Test Report** (Page – 1/4)

Date of Test 08-03-2021  
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	782.0	18300	179.52	19700	193.26	199	>3.50	22265
2	12.70 (1/2")	775.0	785.0	18100	177.56	19700	193.26	198	>3.50	22269
3	12.70 (1/2")	775.0	784.0	18500	181.49	19900	195.22	199	>3.50	22273
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	

**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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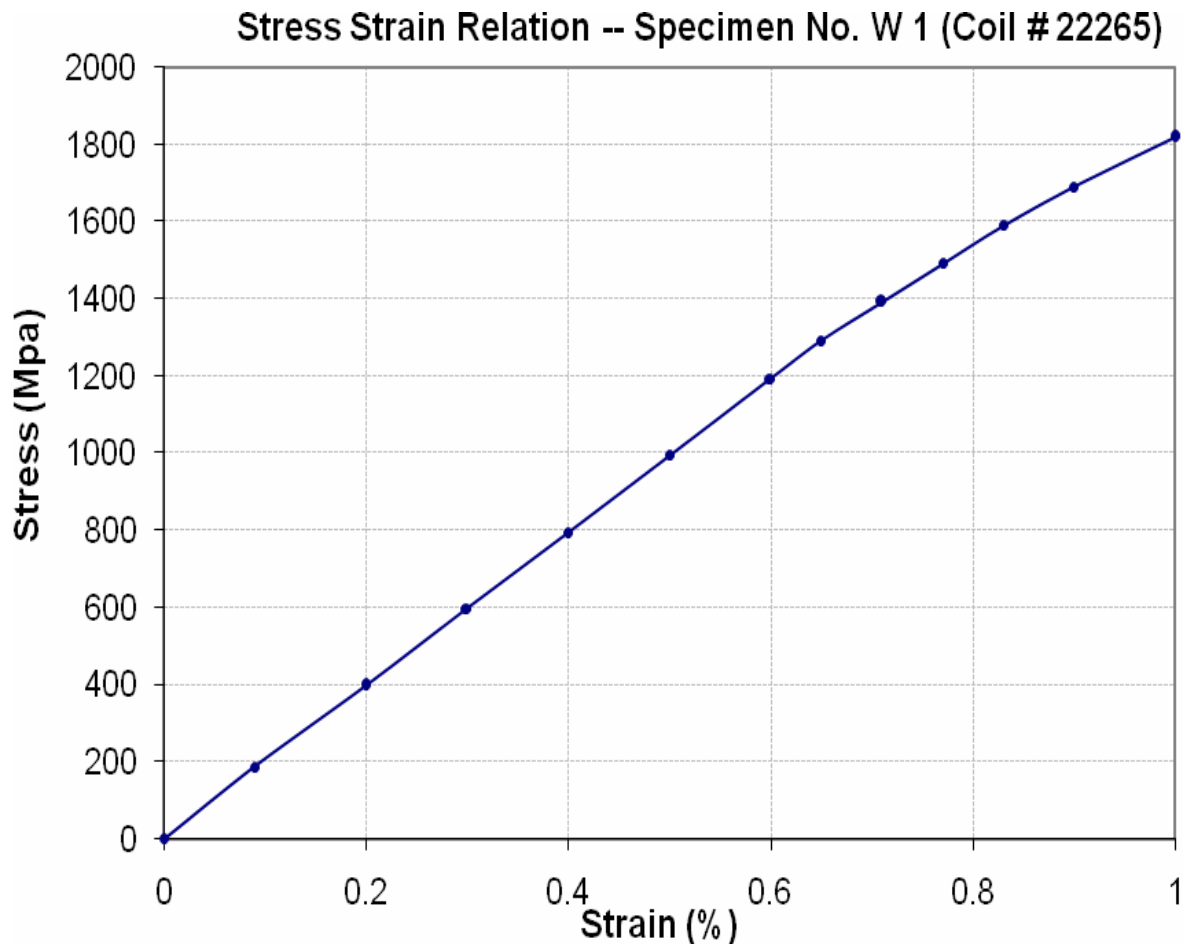
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To,  
Dy. General Manager (Works)  
Future Developments Holdings (Pvt) Ltd  
Development of Capital Smart City, Islamabad

Reference # CED/TFL **36172** (Dr. Qasim Khan)  
Reference of the request letter # FDHL/CSC/03/2021/0126

Dated: 05-03-2021  
Dated: 05-03-2021

**Graph** (Page – 2/4)



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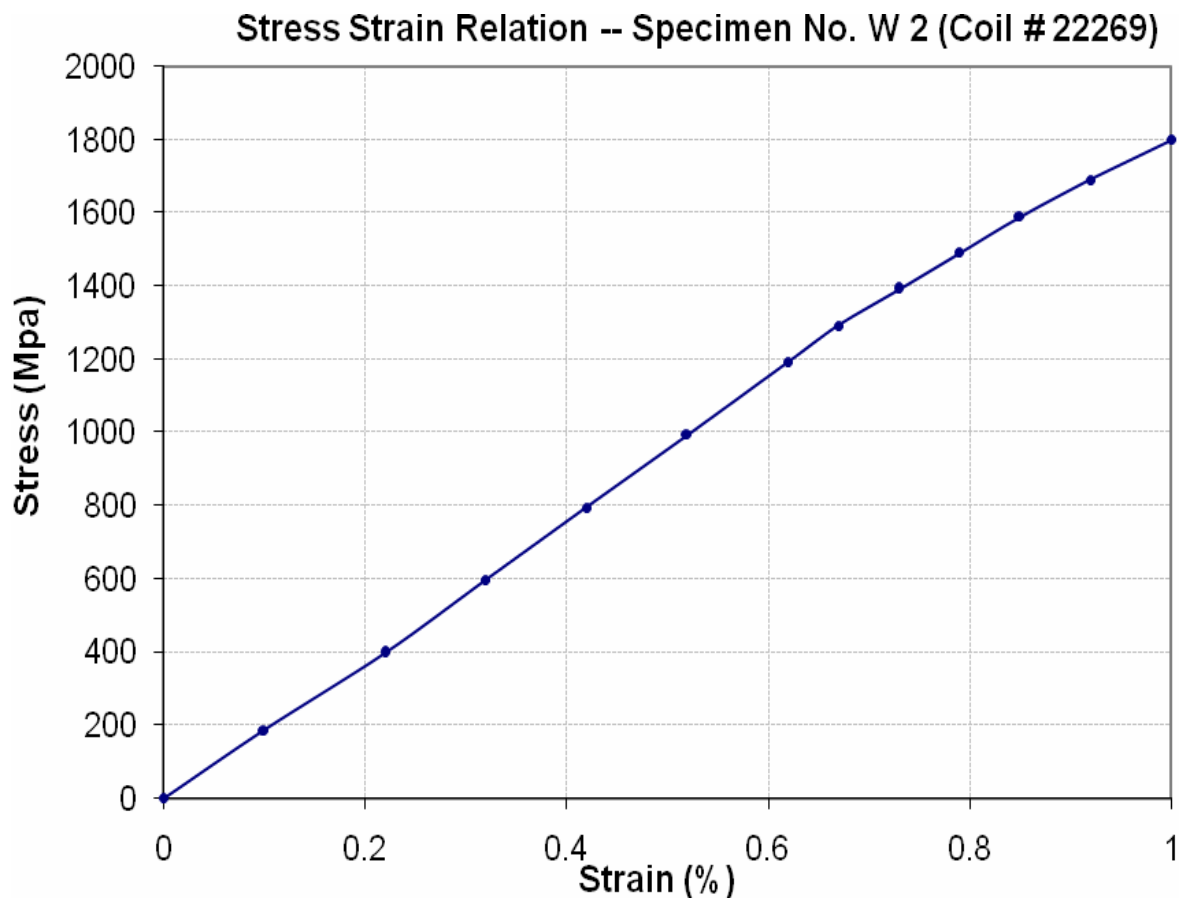
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Dated: 05-03-2021  
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**Graph** (Page – 3/4)



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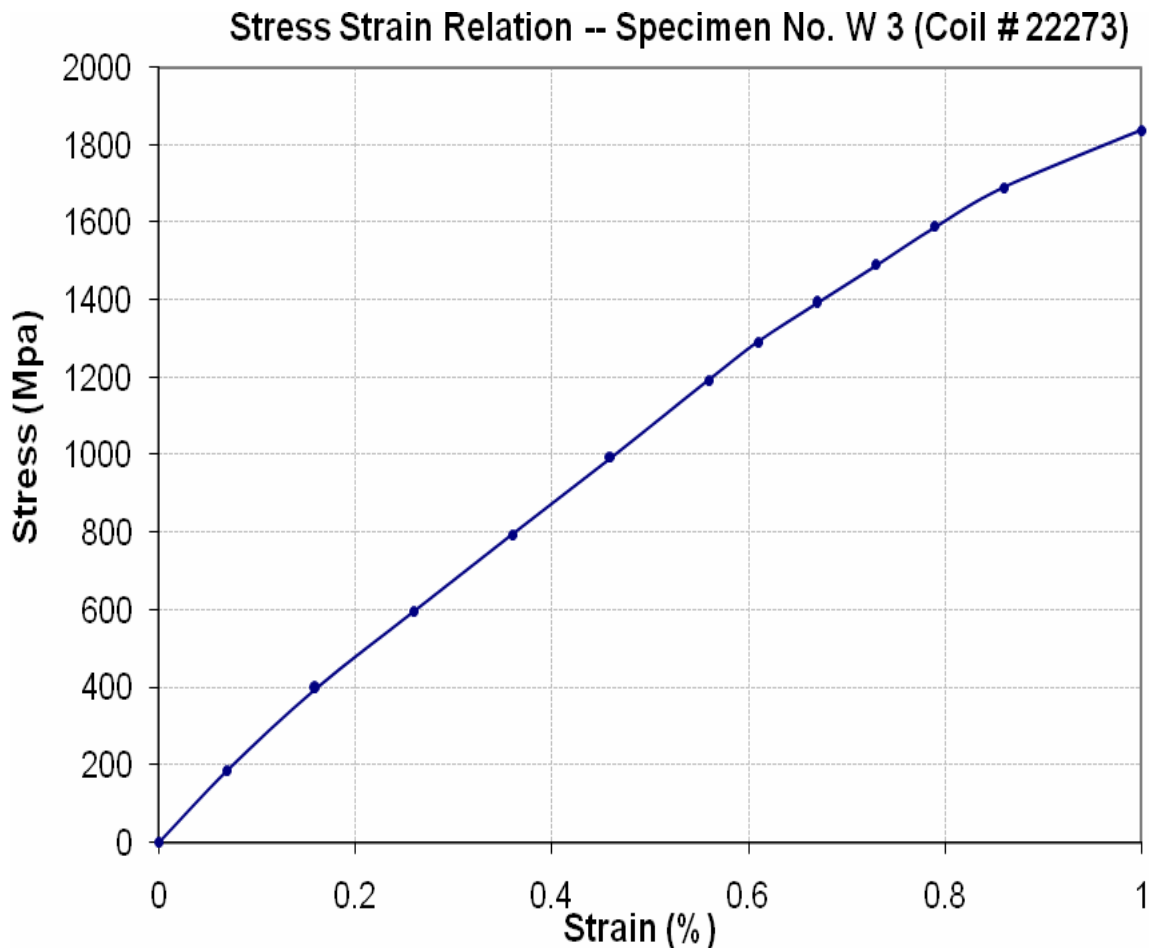
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Dated: 05-03-2021  
Dated: 05-03-2021

**Graph** (Page – 4/4)



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To,  
 Assisatnt Director (Q)  
 Sewerage Sub Division  
 WASA (MDA) Multan  
 (Sewerage Scheme in UC 54, 55 & 56 in District Multan)

Reference # CED/TFL **36174** (Dr. Qasim Khan)  
 Reference of the request letter # 72/AD(Q)/WASA

Dated: 05-03-2021  
 Dated: 28-12-2020

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

Date of Test 08-03-2021  
 Gauge length 8 inches  
 Description Deformed Steel Bar Tensile and Bend Test

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	0.097	3/16	0.191	-----	0.029	1040	1240	-----	80090	-----	95500	0.70	8.8	
2	0.094	3/16	0.187	-----	0.028	1000	1160	-----	80110	-----	93000	0.80	10.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Note: only two samples for tensile and one sample for bend test</b>														
Bend Test														
3/16" Dia Bar Bend Test Through 180° is Satisfactory														

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