



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

To,
 Commanding Officer
 752 Construction Team Engineers
 Frontier Works Organization Camp Kuchlak
 Care of Signal Centre Quetta

Reference # CED/TFL **34752** (Dr. Usman Akmal)
 Reference of the request letter # 60701/General /Project

Dated: 27-02-2020
 Dated: 26-02-2020

Tension Test Report (Page -1/1)

Date of Test 28-02-2020
 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	0.426	10	10.14	0.12	0.125	4000	5800	73487	70430	106556	102200	1.40	17.5	Nomi Steel
2	0.426	10	10.14	0.12	0.125	4000	5800	73487	70430	106556	102200	1.30	16.3	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
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.

Note:

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To,
Chief Resident Engineer
Osmani & Company (Pvt) Ltd
Swat Motorway Project

Reference # CED/TFL **34755** (Dr. Usman Akmal)
Reference of the request letter # 364/CRE/QAT/SMP/2020

Dated: 27-02-2020
Dated: 27-02-2020

Tension Test Report (Page – 1/6)

Date of Test 28-02-2020
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	785	18300	179.52	19500	191.30	198	>3.50	48
2	12.70 (1/2")	775.0	778	17800	174.62	20200	198.16	199	>3.50	51
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
Only two 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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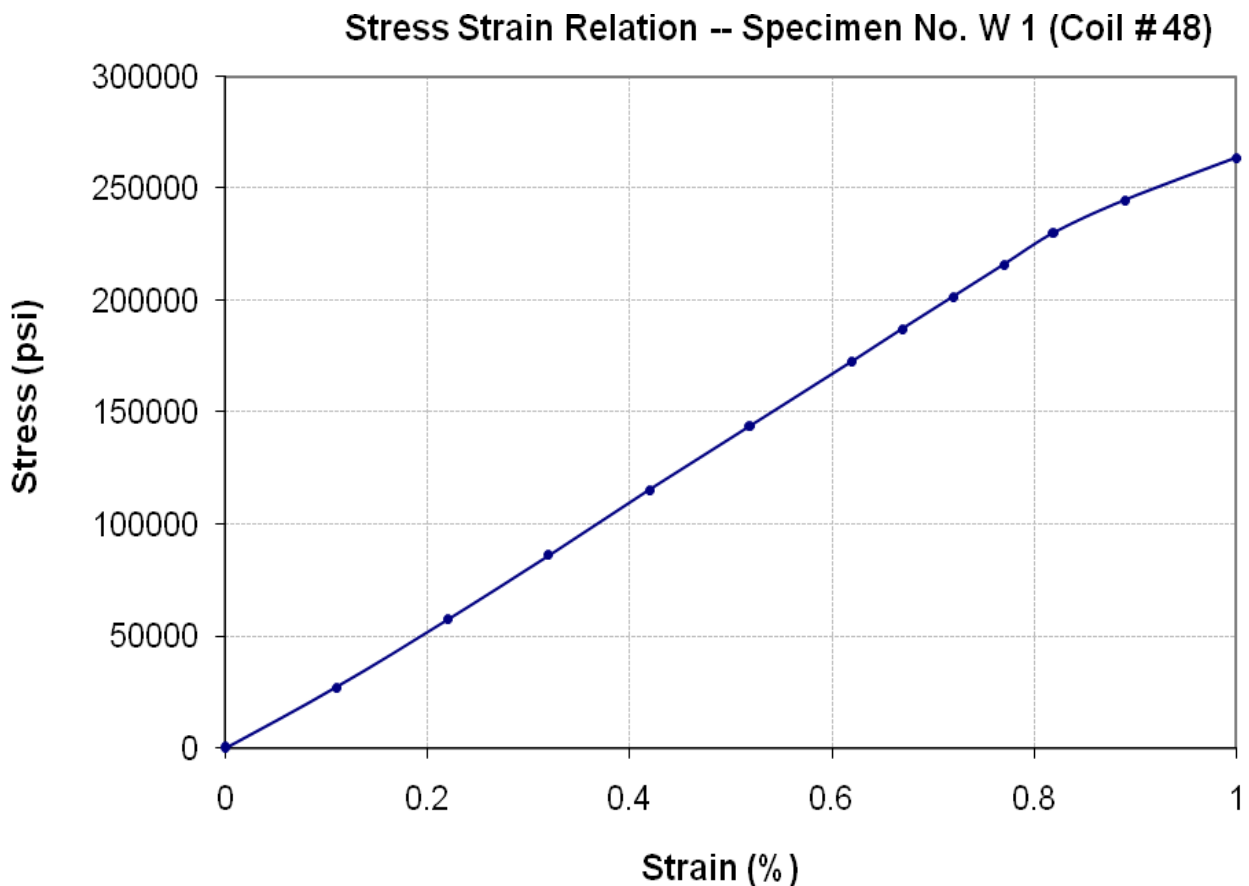
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Reference # CED/TFL **34755** (Dr. Usman Akmal)
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Dated: 27-02-2020
Dated: 27-02-2020

Graph (Page – 2/6)



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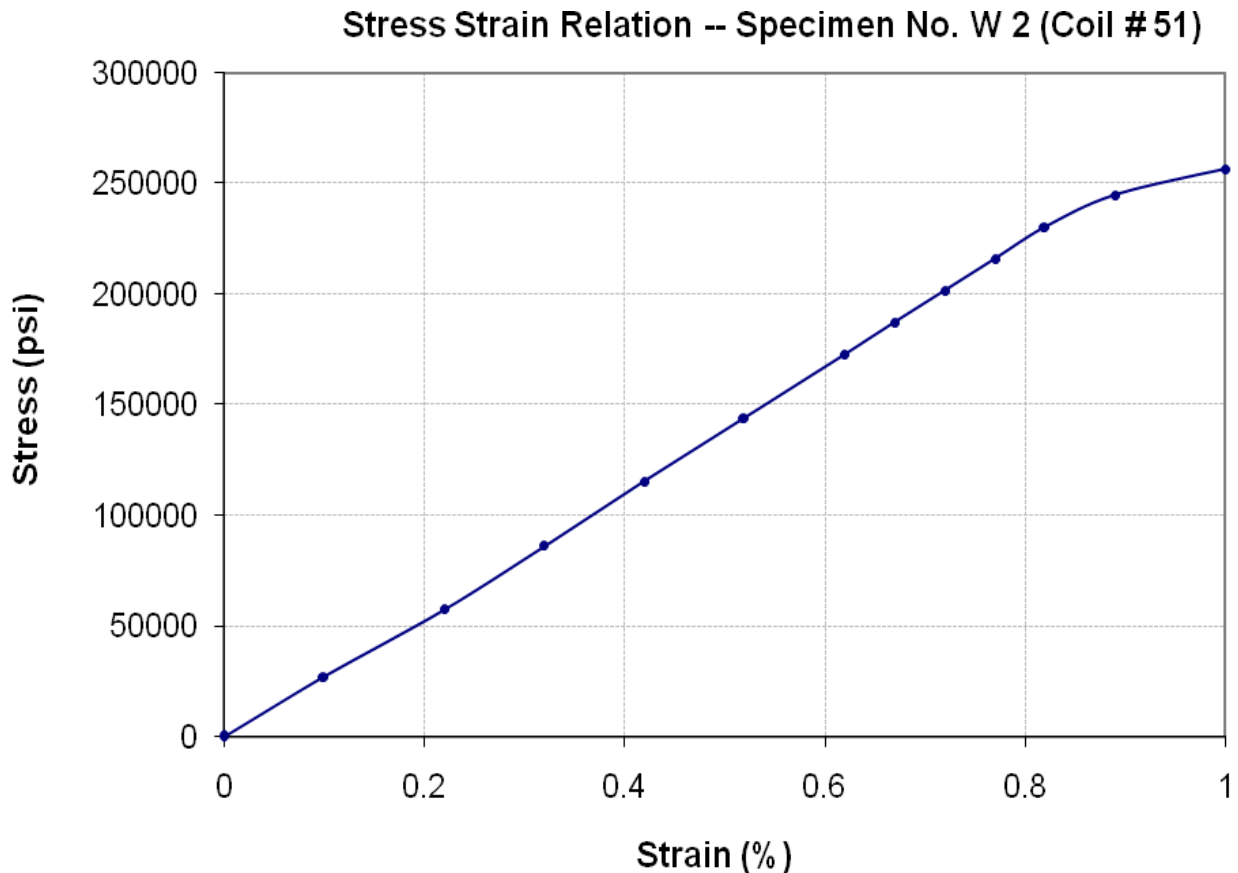
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Graph (Page – 3/6)



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Dated: 27-02-2020
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Tension Test Report (Page – 4/6)

Date of Test 28-02-2020
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	783.0	19000	186.39	20200	198.16	199	>3.50	54
2	12.70 (1/2")	775.0	778.0	18100	177.56	19500	191.30	198	>3.50	58
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-
Only two 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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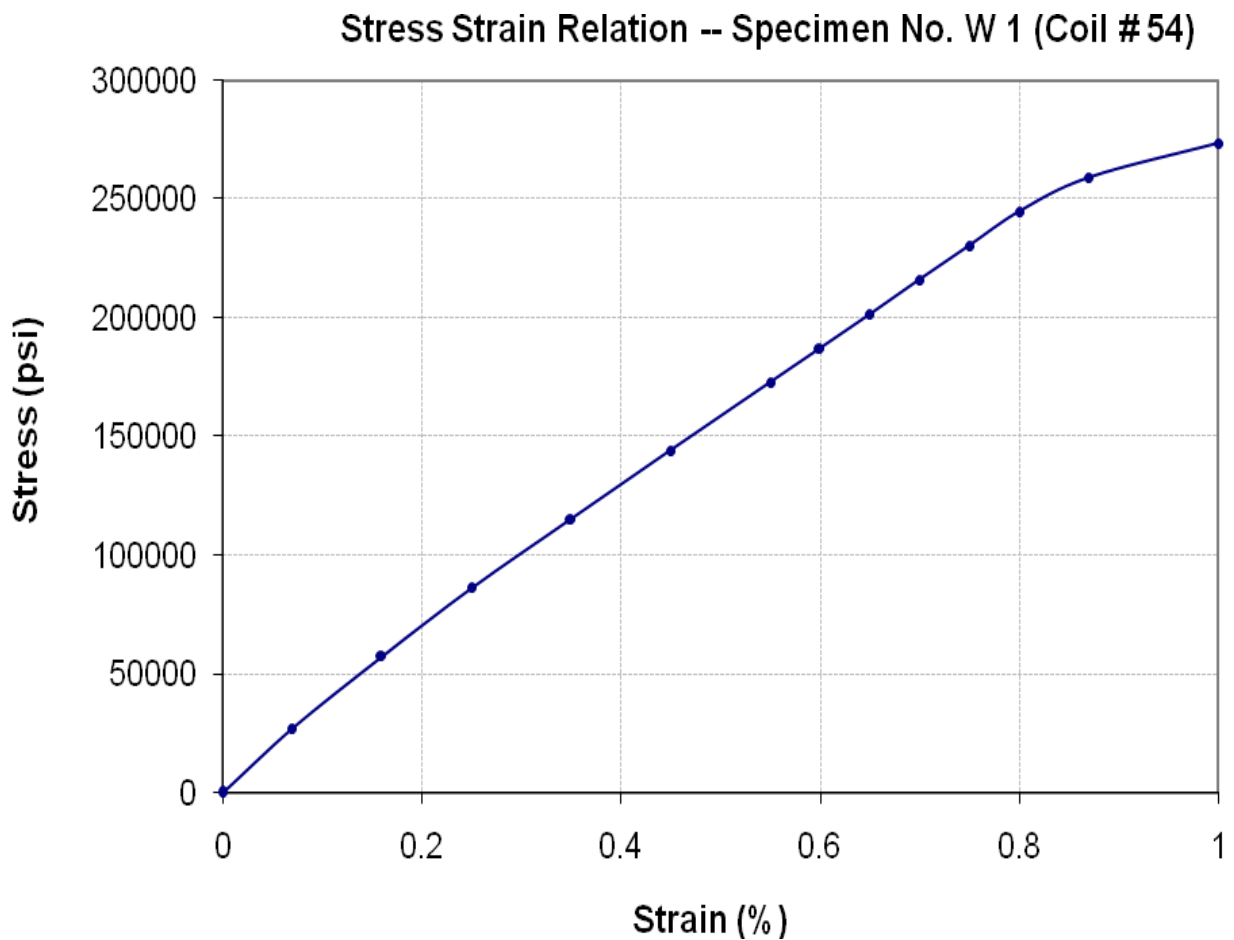
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Dated: 27-02-2020
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Graph (Page – 5/6)



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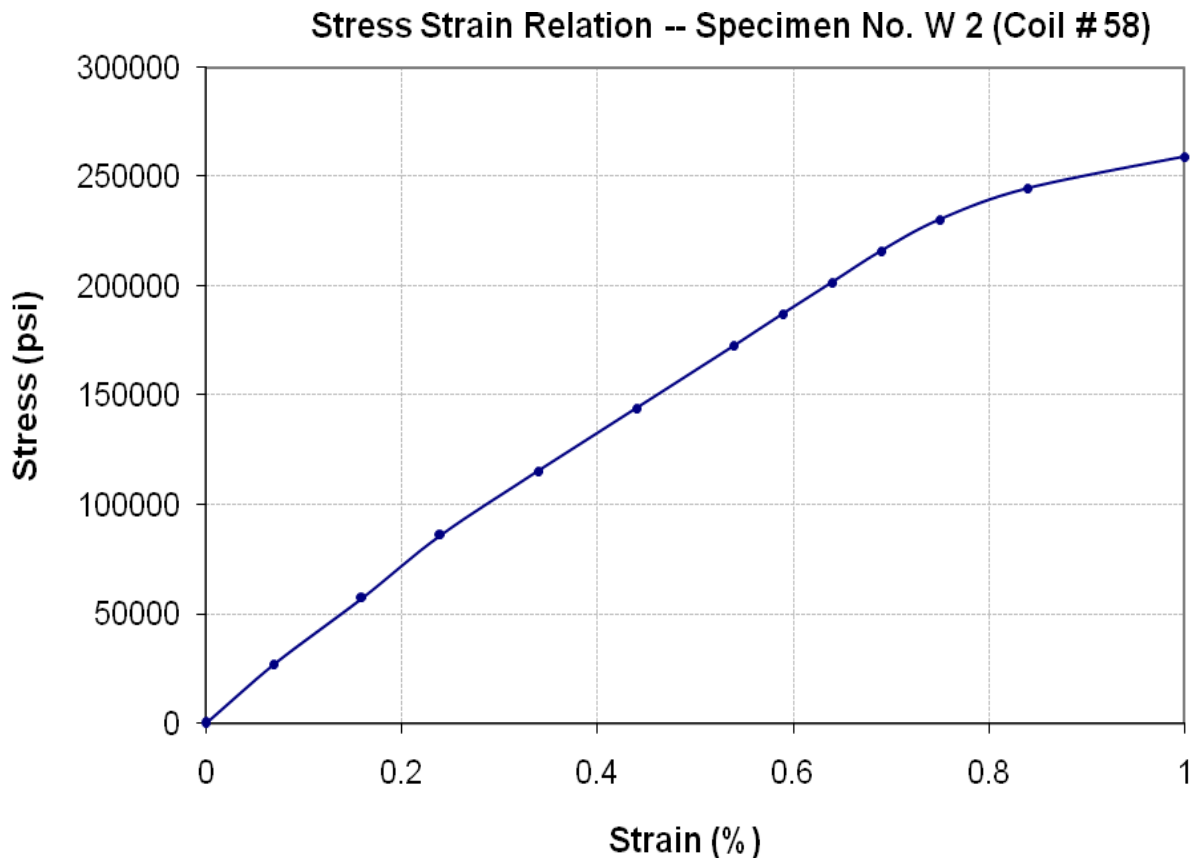
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Graph (Page – 6/6)



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To,
 Sun Divisional Officer
 Highway Sub Division
 Isa Khel

(Constn: of Road from Shakardara Road km No. 10 to Lunda Banghi Lhel Length 2.50 km Tehsil Isa Khel
 (Constn: of Road from Sultan Khel to Wandha Bheki Khel via Heearan wala Length 3.00 km Tehsil Isa Khel
 (Constn: of Road from Alif Khel to Chapri via Moghabbat Lhel Length 3.98 km Tehsil Isa Khel)

Reference # CED/TFL **34756** (Dr. Usman Akmal)
 Reference of the request letter # 52

Dated: 27-02-2020

Dated: 16-01-2020

Tension Test Report (Page -1/2)

Date of Test 28-02-2020

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	0.381	3/8	0.378	0.11	0.112	3000	4400	60200	59040	88200	86600	1.20	15.0	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only one sample for tensile and one sample for bend test														
Bend Test														
3/8" Dia Bar Bend Test Through 180° is Satisfactory														

I/C Testing Laboratoires
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To,
 Sun Divisional Officer
 Highway Sub Division
 Isa Khel
 (W/I of Road from Isa Khel to Khaglan wala Road Length 1.00 km Tehsil Isa Khel, District Mianwali
 (W/I of Road from Isa Khel to Khaglan wala Road to Nang Shah Length 1.50 km Tehsil Isa Khel, District Mianwali
 Reference # CED/TFL **34756** (Dr. Usman Akmal) Dated: 27-02-2020
 Reference of the request letter # 69 Dated: 16-01-2020

Tension Test Report (Page -2/2)

Date of Test 28-02-2020
 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	0.381	3/8	0.377	0.11	0.112	2800	4300	56200	55170	86200	84800	1.10	13.8	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only one sample for tensile and one sample for bend test														
Bend Test														
3/8" Dia Bar Bend Test Through 180° is Satisfactory														

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