



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

To,

Project Manager /Team Leader
Barqaab Consulting Services (Private Limited).
Design, Supply and Installation of 500/220 kV Nowsherha HVAC Grid Station

Reference # CED/TFL 2537(Dr. Asad Ali)

Dated: 28-12-2022

Reference of the request letter # WB-05A/BQB/UE/0375

Dated: 27-12-2022

Tension Test Report (Page -1/1)

Date of Test 03-01-2023

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	0.376	3	0.375	0.11	0.111	3790	4890	76000	75580	98000	97600	1.30	16.3	Kamran Steel
2	0.375	3	0.375	0.11	0.110	3720	4940	74600	74400	99000	98800	1.30	16.3	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only two samples for tensile and one sample for bend test														
Bend Test														
#3 Bar Bend Test Through 180° is Satisfactory														

Witness by Tariq Ilyas Cheema (Jr. Engr. Barqaab)

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To,

M/S China Gezhouba Group Company Limited
Pakistan

Construction of Mohmand Dam Hydropower Project – Contract No. ICB MDHP-01, Construction of Civil Works Including Design, Supply and Installation of Electrical and Mechanical Works and Hydraulic Steel Structures.

Reference # CED/TFL **2552** (Dr. Rizwan Azam)

Dated: 02-01-2023

Reference of the request letter # MDSYS-209

Dated: 01-01-2023

Tension Test Report (Page – 1/27)

Date of Test 03-01-2023

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	% Elongation	Remarks / Coil No.
	(mm)	(kg/km)	(kg/km)	(kg)	(kN)	(kg)	(kN)	E, GPa		
1	15.24 (0.6")	1102.0	1139.0	24400	239.36	27400	268.79	199	>3.50	9857.2
2	15.24 (0.6")	1102.0	1135.0	23400	229.55	27400	268.79	199	>3.50	9933-1-1
3	15.24 (0.6")	1102.0	1030.0	24400	239.36	27100	265.85	199	>3.50	
4	15.24 (0.6")	1102.0	1127.0	24100	236.42	27600	270.76	199	>3.50	10151-2-1
5	15.24 (0.6")	1102.0	1128.0	24500	240.35	27300	267.81	199	>3.50	11352-1
6	15.24 (0.6")	1102.0	1128.0	23500	230.54	27500	269.78	199	>3.50	
7	15.24 (0.6")	1102.0	1122.0	25000	245.25	27200	266.8	199	>3.50	11630-1
8	15.24 (0.6")	1102.0	1120.0	24100	236.42	27400	268.8	199	>3.50	

Only Eight 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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Reference of the request letter # MDSYS-209

Dated: 01-01-2023

Tension Test Report (Page – 2/27)

Date of Test 03-01-2023

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	% Elongation	Remarks / Coil No.
	(mm)	(kg/km)	(kg/km)	(kg)	(kN)	(kg)	(kN)	E, GPa		
1	15.24 (0.6")	1102.0	1132.0	23600	231.52	27400	268.8	199	>3.50	11388-1
2	15.24 (0.6")	1102.0	1132.0	22500	220.73	27500	269.8	199	>3.50	
3	15.24 (0.6")	1102.0	1127.0	24600	241.33	27400	268.8	199	>3.50	11392-1
4	15.24 (0.6")	1102.0	1126.0	25000	245.25	27700	271.7	199	>3.50	
5	15.24 (0.6")	1102.0	1129.0	24100	236.42	26800	262.9	199	>3.50	11430-2
6	15.24 (0.6")	1102.0	1130.0	24000	235.44	27300	267.8	199	>3.50	
7	15.24 (0.6")	1102.0	1133.0	24100	236.42	27400	268.8	199	>3.50	11431-2
8	15.24 (0.6")	1102.0	1132.0	25000	245.25	27600	270.8	199	>3.50	

Only Eight Samples for Test

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2. Load versus percentage strain graphs are attached

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Tension Test Report (Page – 3/27)

Date of Test 03-01-2023

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	% Elongation	Remarks / Coil No.
	(mm)	(kg/km)	(kg/km)	(kg)	(kN)	(kg)	(kN)	E, GPa		
1	15.24 (0.6")	1102.0	1129.0	23800	233.48	27200	266.8	199	>3.50	11456.2
2	15.24 (0.6")	1102.0	1137.0	24000	235.44	27600	270.8	199	>3.50	
3	15.24 (0.6")	1102.0	1129.0	24100	236.42	27400	268.8	199	>3.50	11461-1
4	15.24 (0.6")	1102.0	1129.0	24800	243.29	27700	271.7	199	>3.50	
5	15.24 (0.6")	1102.0	1135.0	24700	242.31	27400	268.8	199	>3.50	10837-39-2
6	15.24 (0.6")	1102.0	1134.0	24600	241.33	27600	270.8	199	>3.50	
7	15.24 (0.6")	1102.0	1125.0	23700	232.50	27300	267.8	199	>3.50	20808-39-2
8	15.24 (0.6")	1102.0	1125.0	24600	241.33	27700	271.7	199	>3.50	

Only Eight Samples for Test

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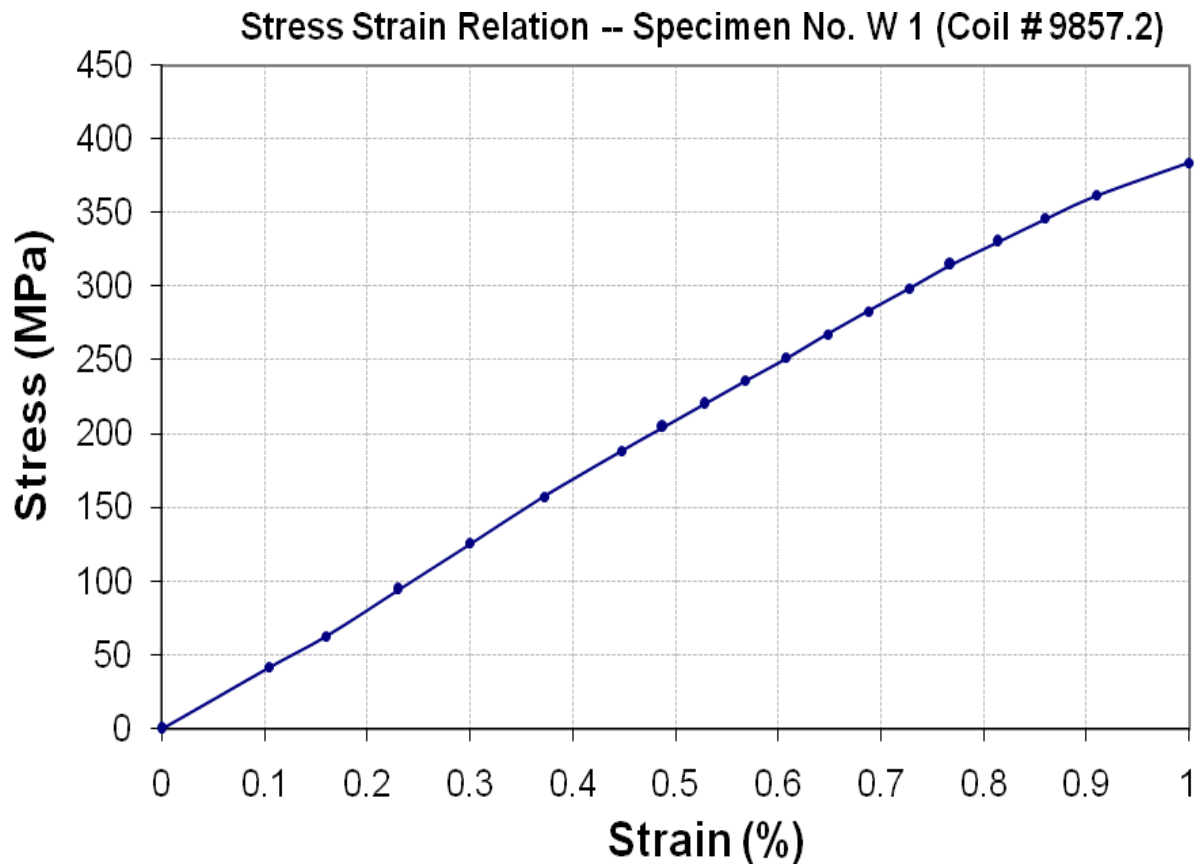
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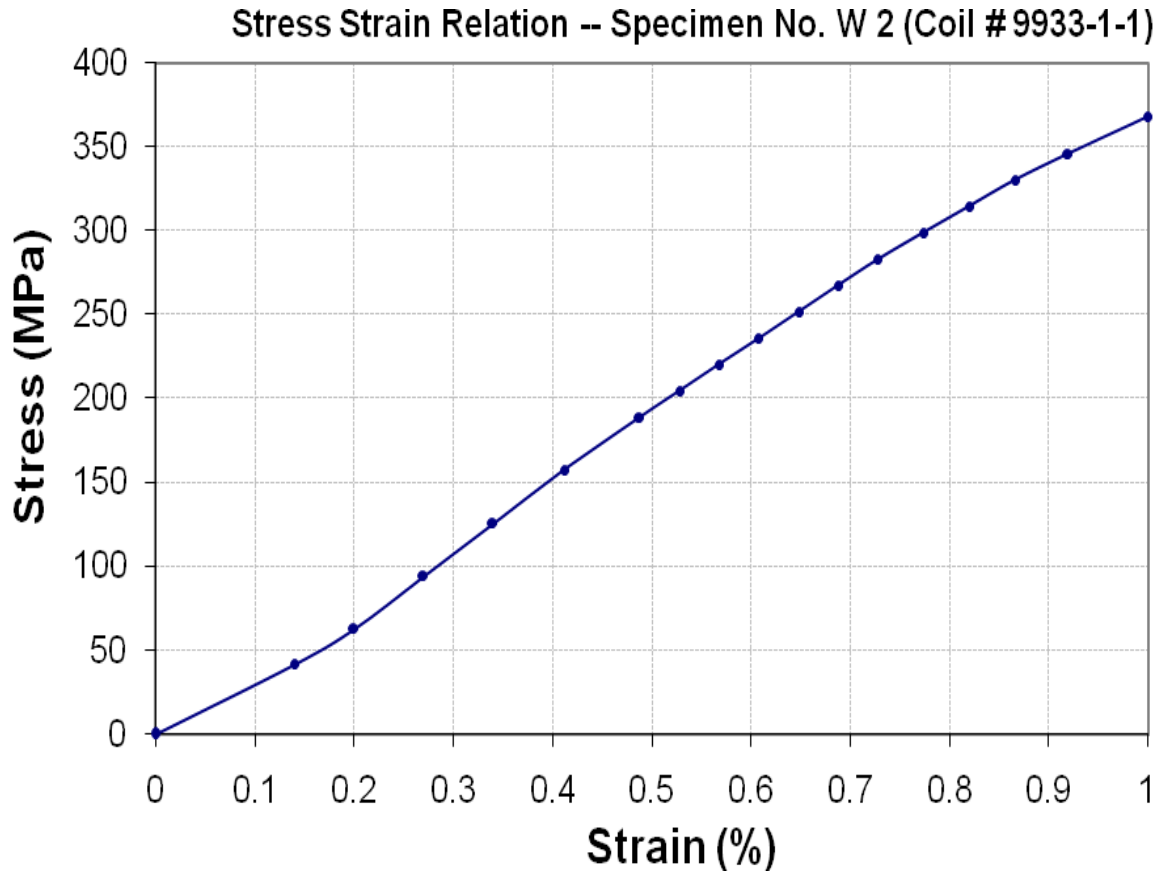
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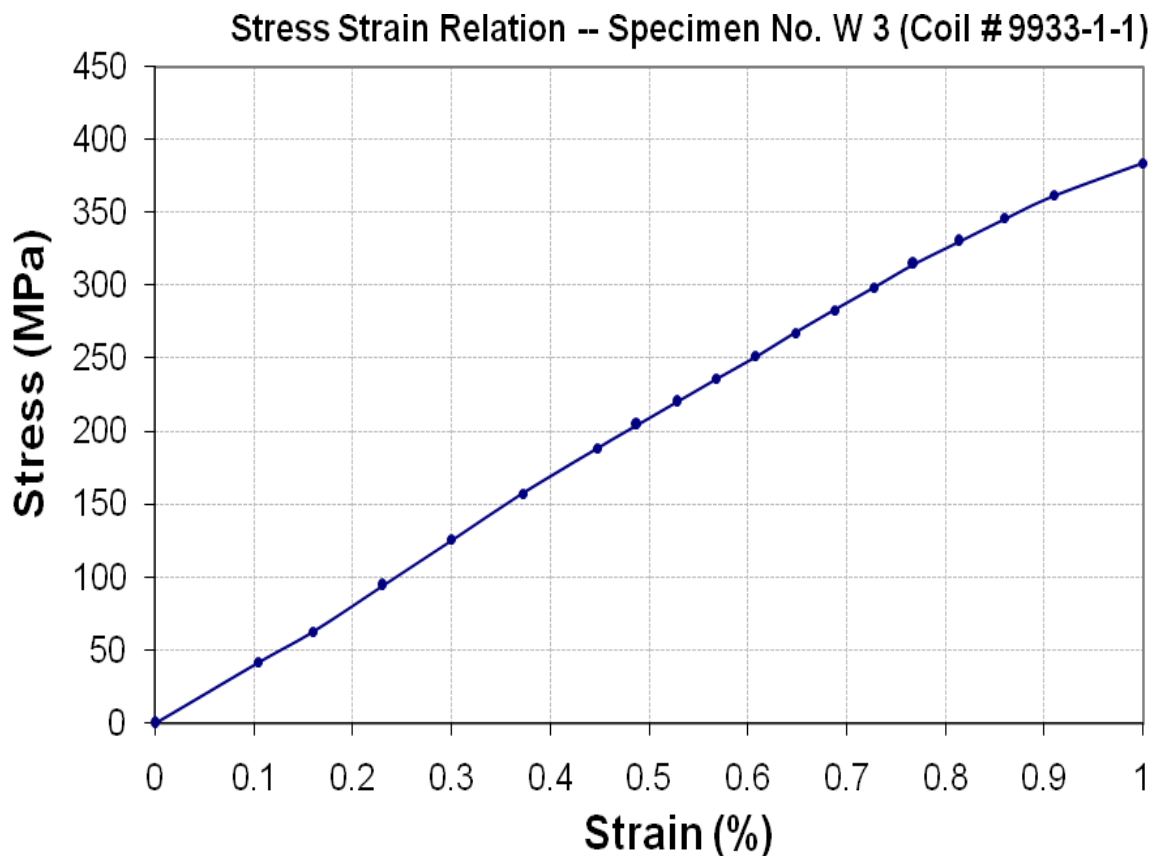
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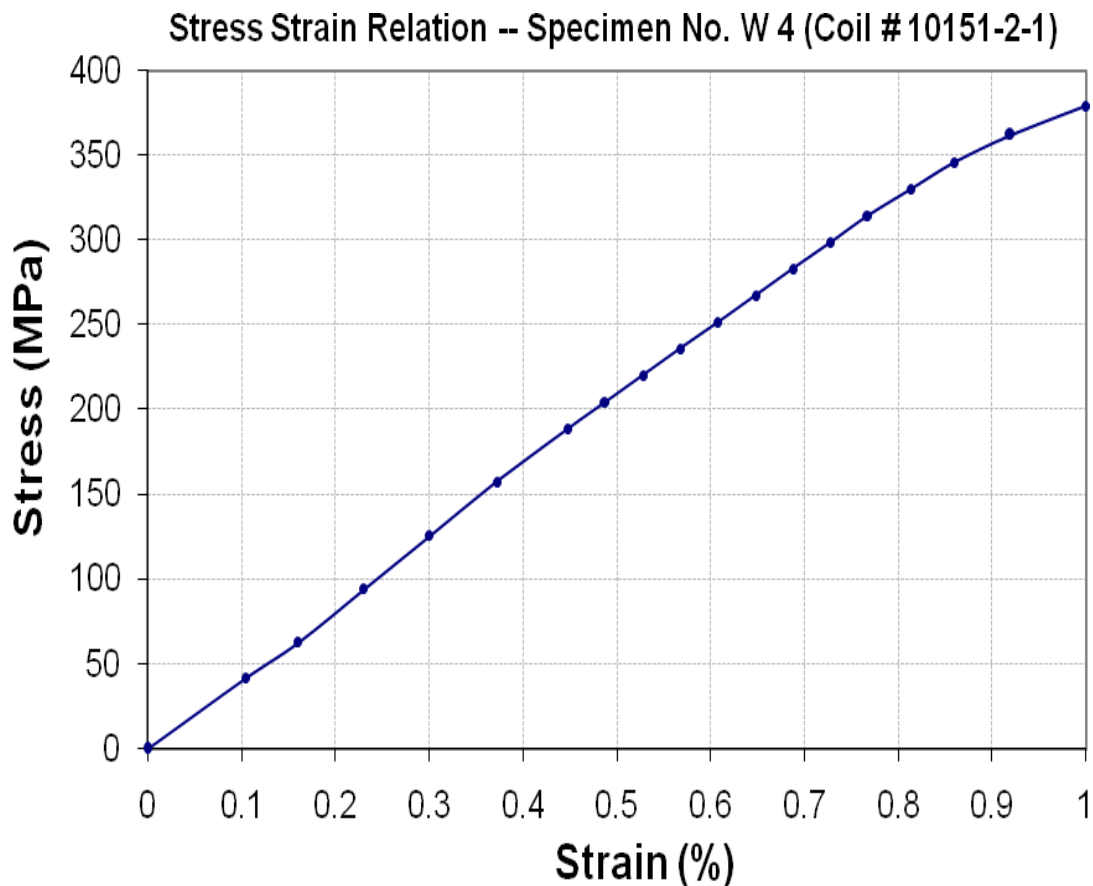
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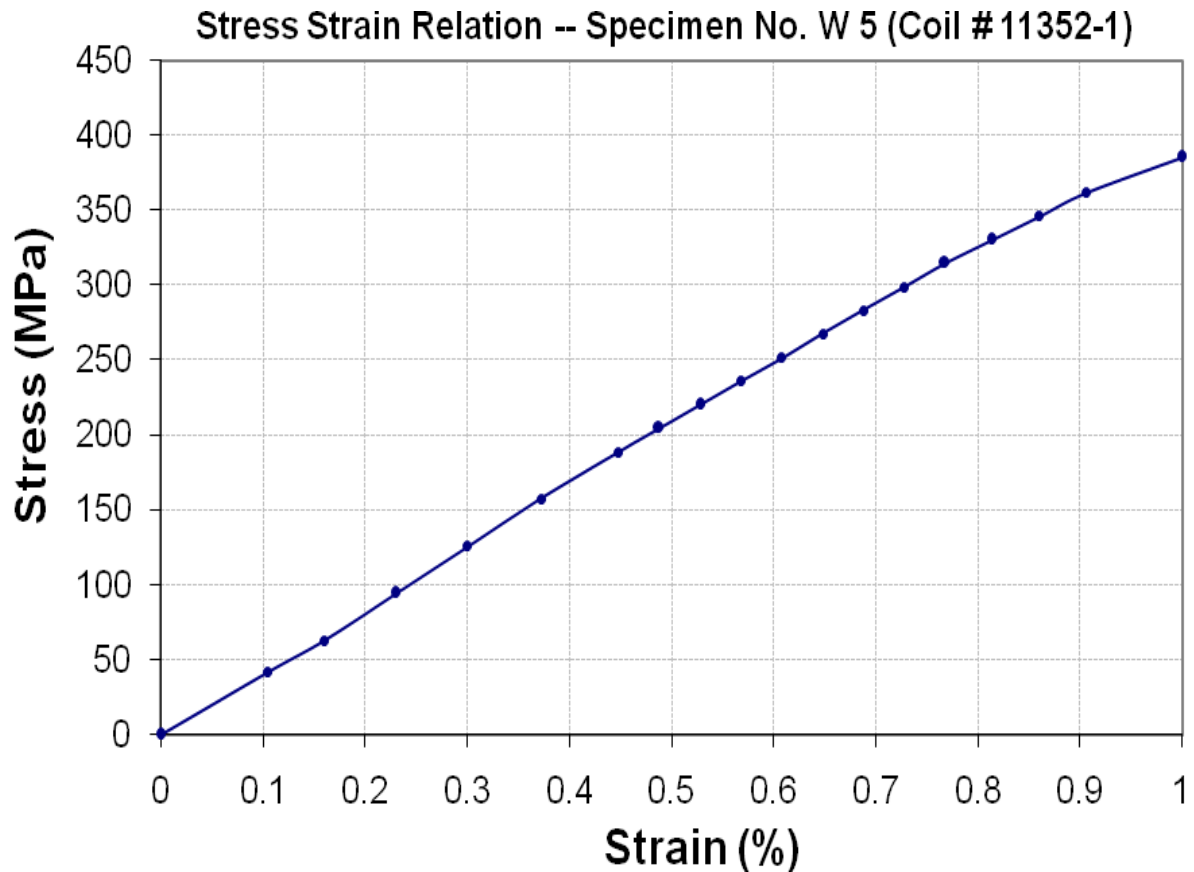
Reference # CED/TFL 2551 (Dr. Rizwan Azam)

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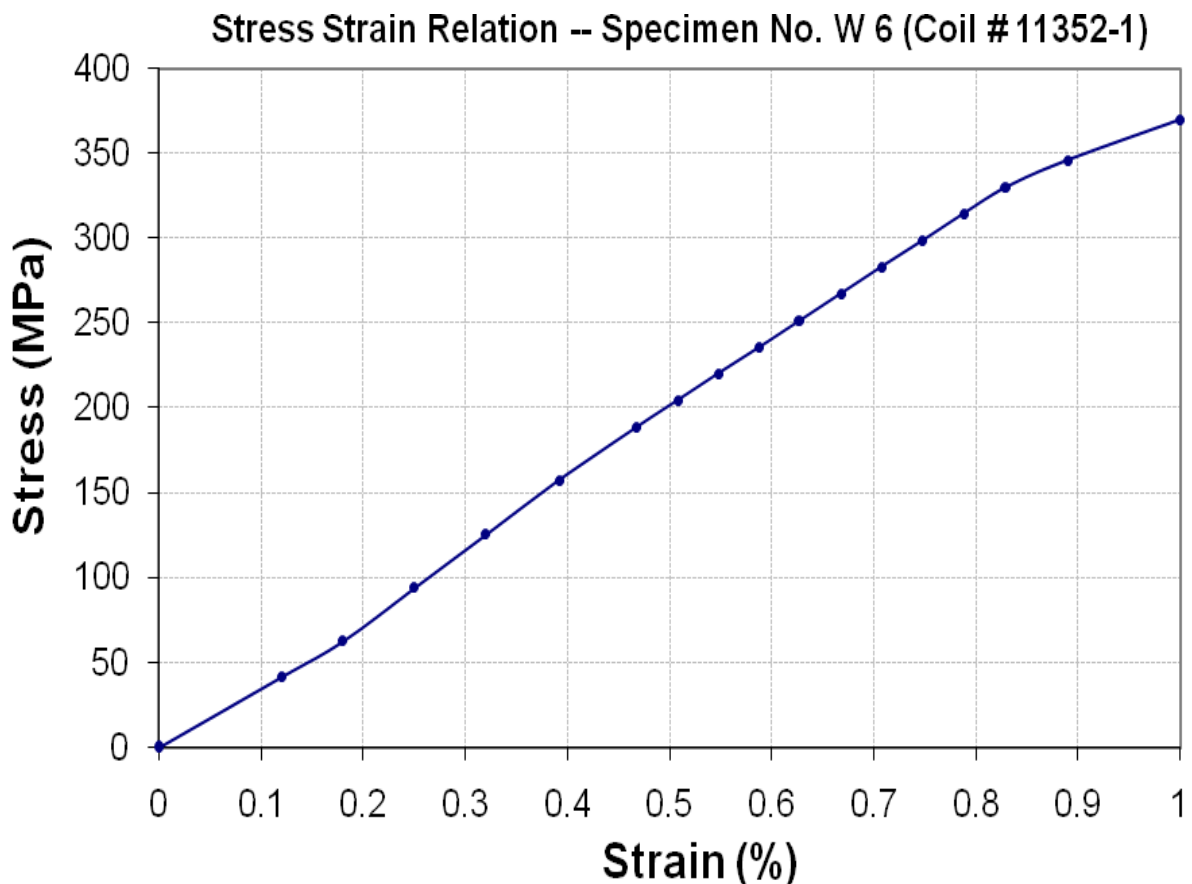
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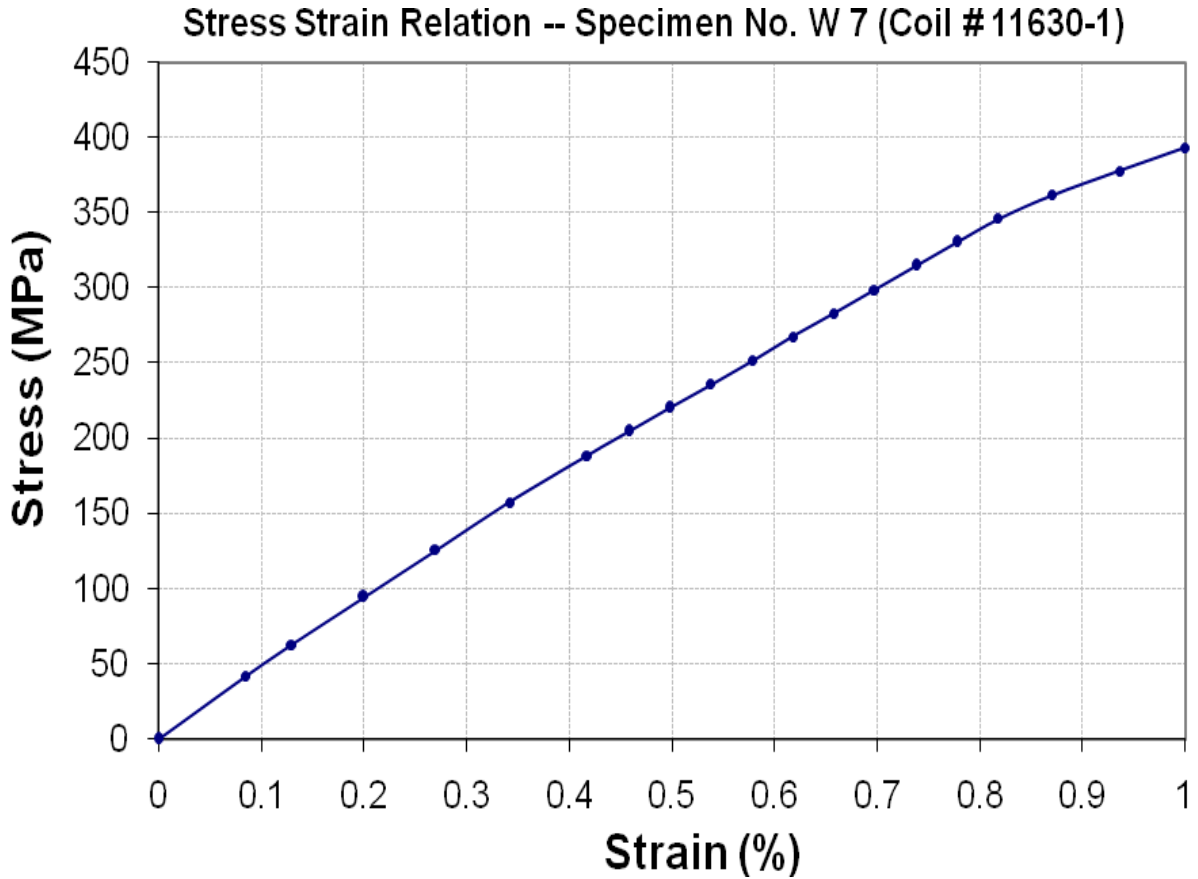
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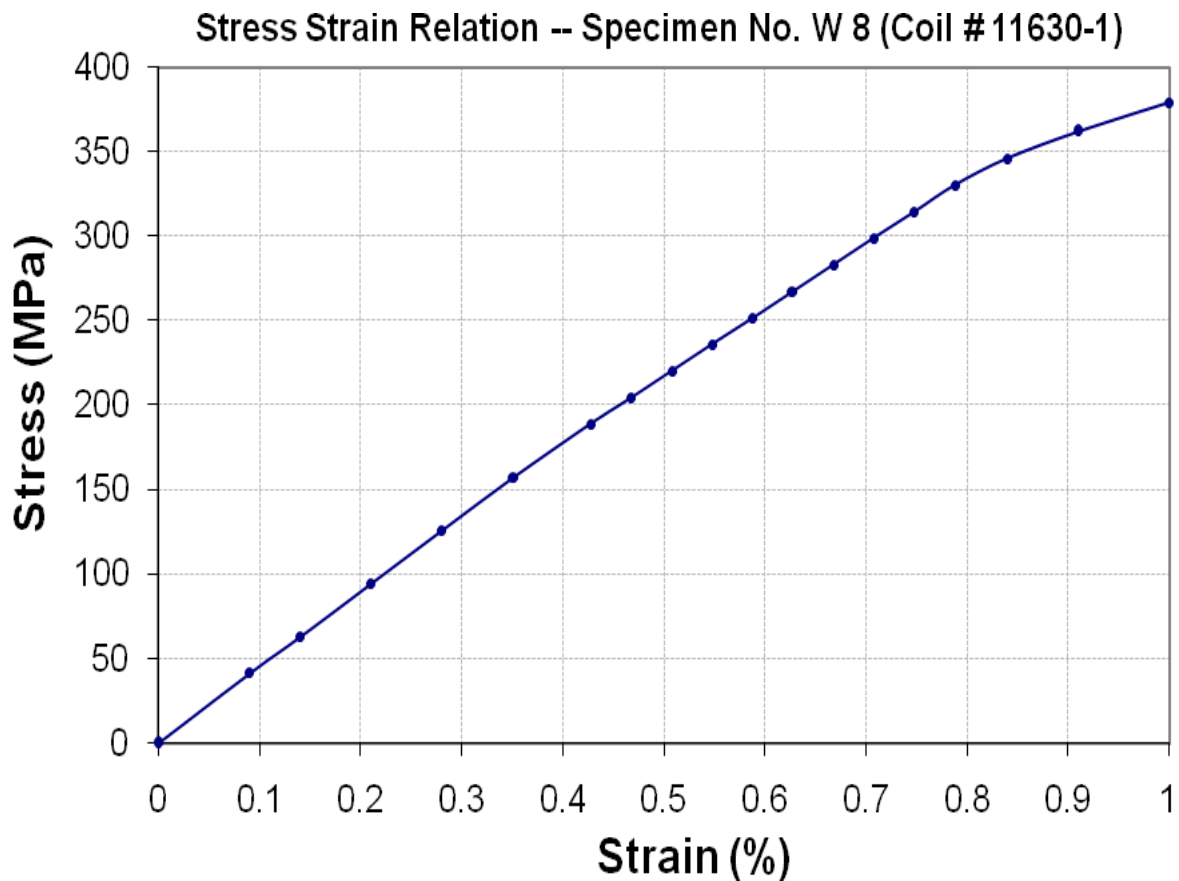
Reference # CED/TFL 2551 (Dr. Rizwan Azam)

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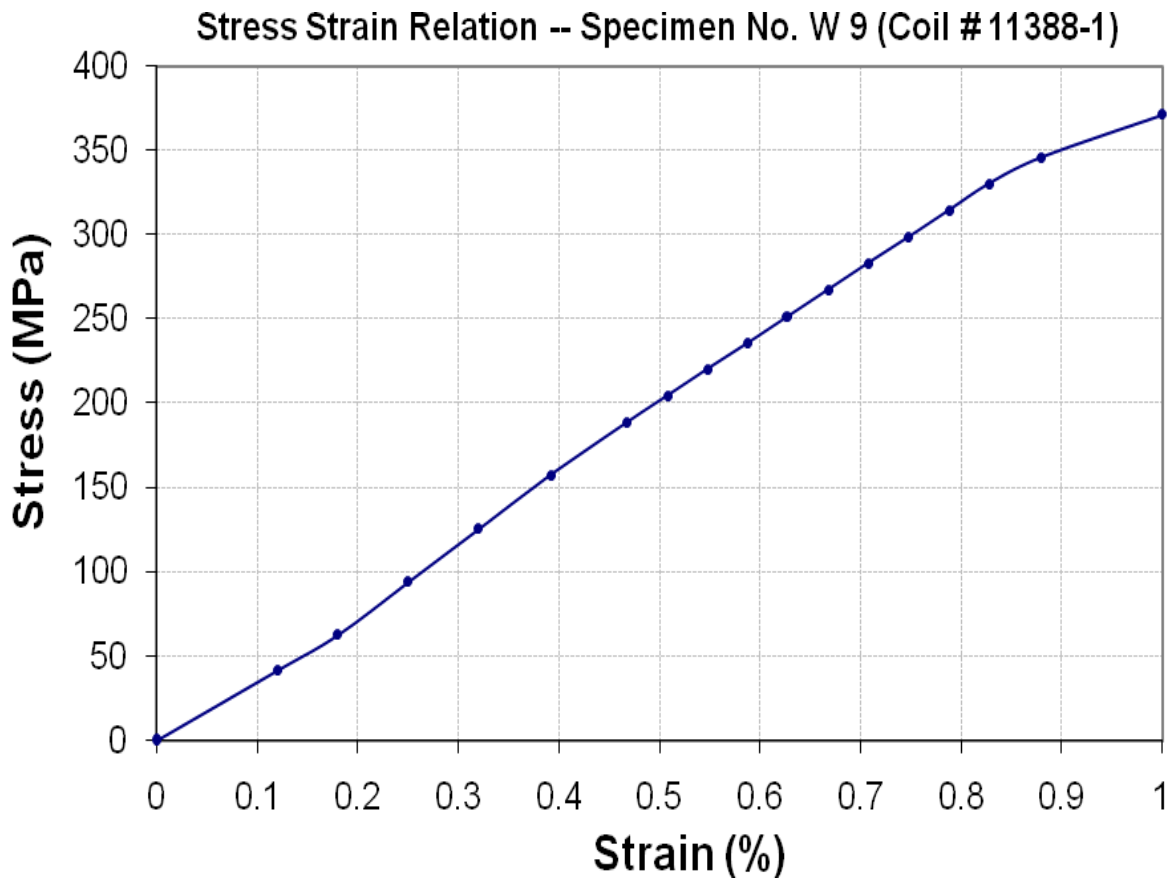
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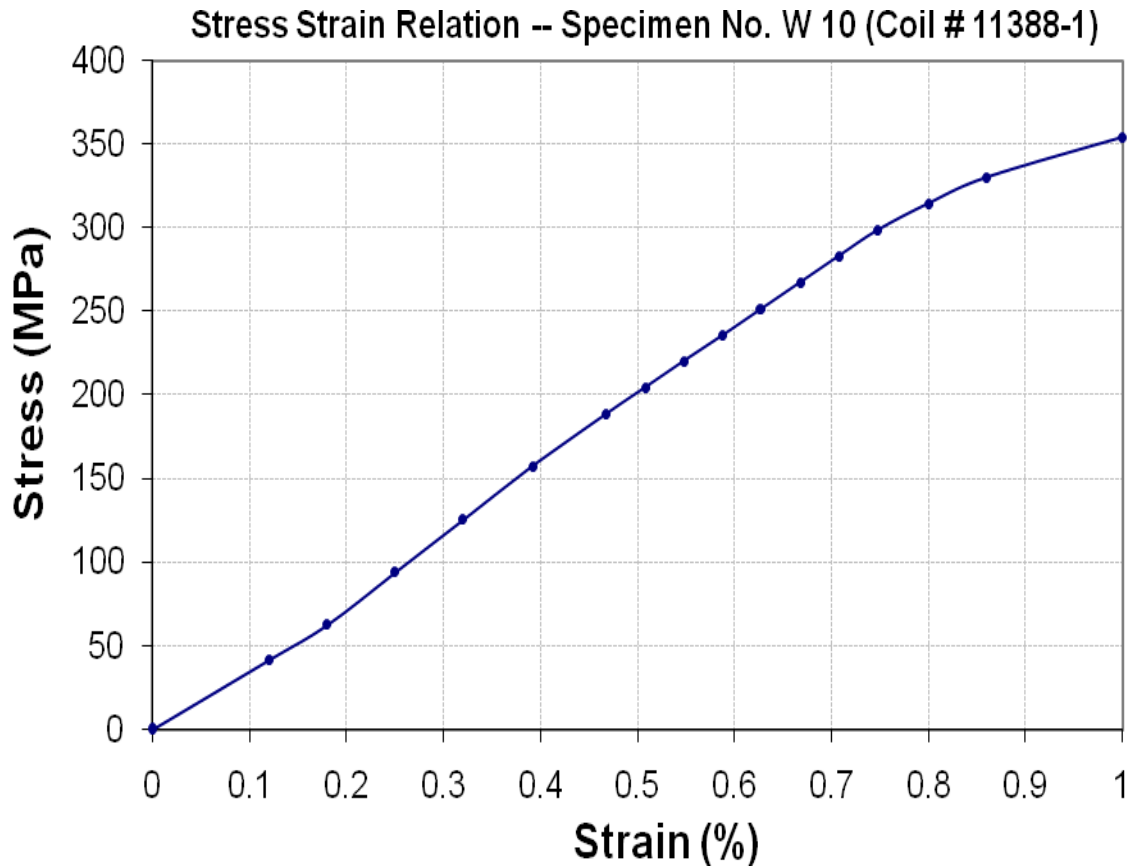
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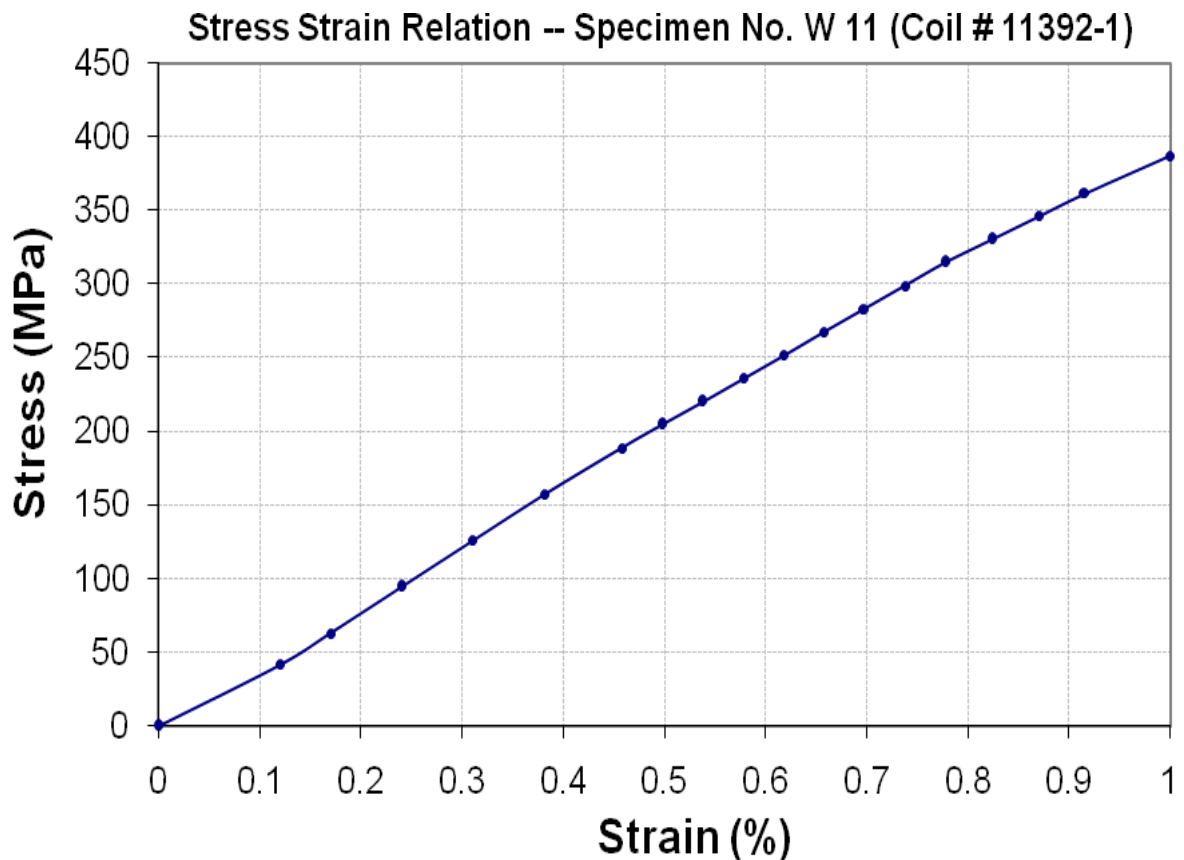
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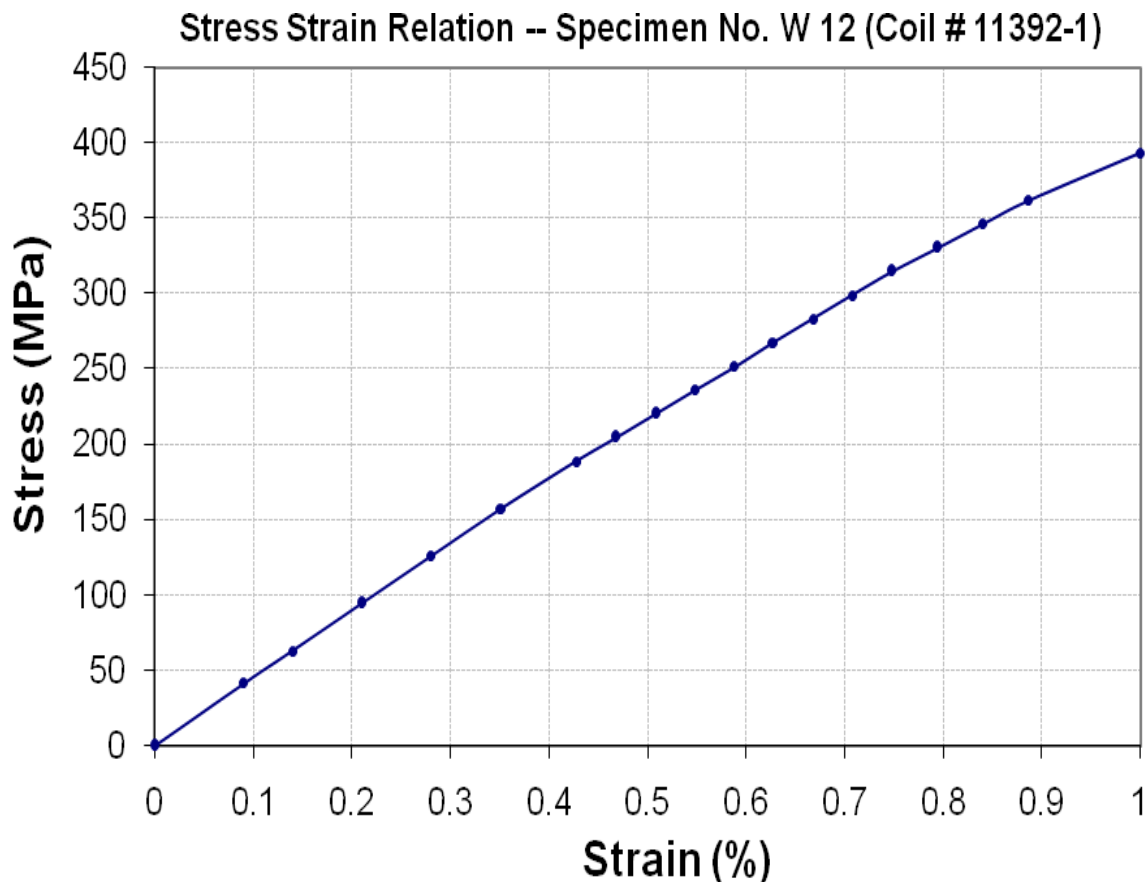
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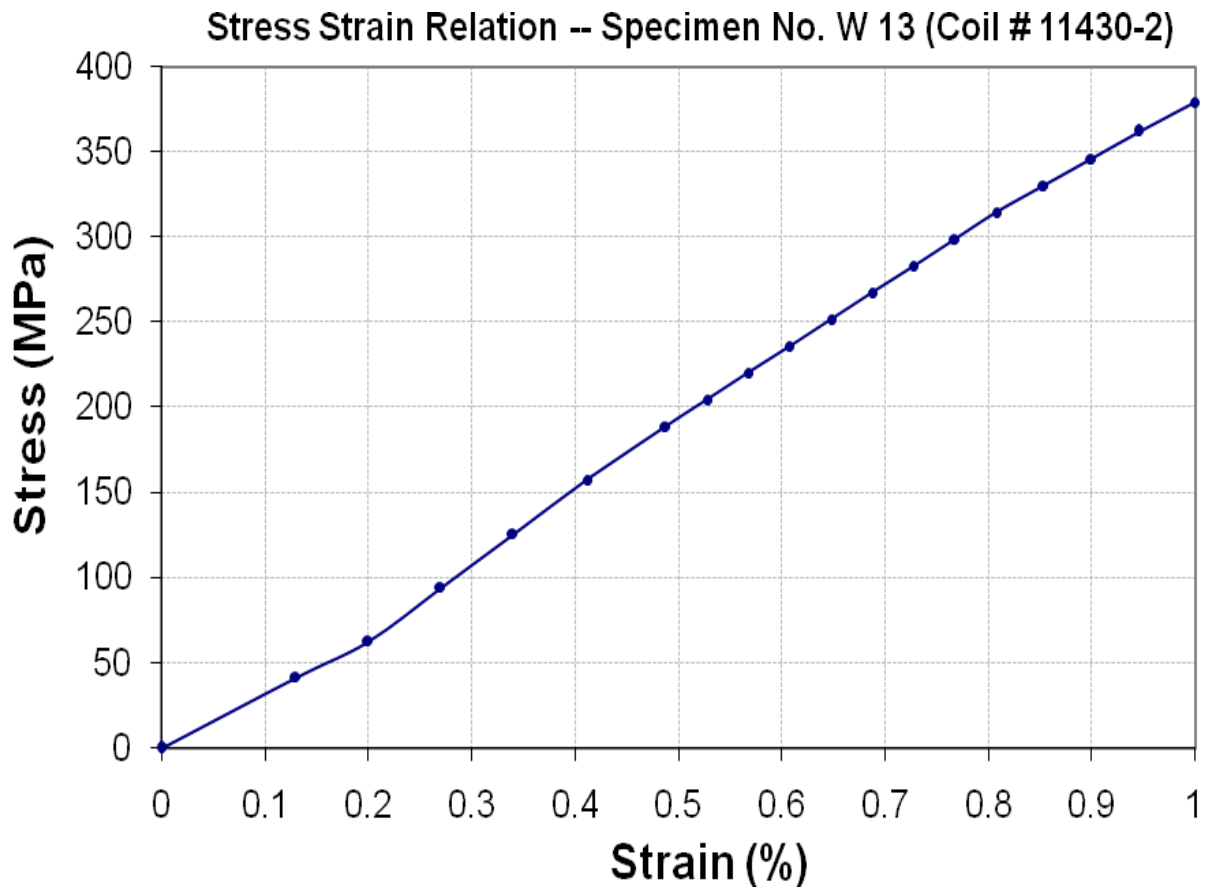
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STRUCTURAL ENGINEERING DIVISION
Test Floor Laboratory
Department of Civil Engineering
University of Engineering and Technology Lahore, 54890
Pakistan. Ph: 92-42-99029202

To,

M/S China Gezhouba Group Company Limited
Pakistan

Construction of Mohmand Dam Hydropower Project – Contract No. ICB MDHP-01, Construction of Civil Works Including Design, Supply and Installation of Electrical and Mechanical Works and Hydraulic Steel Structures.

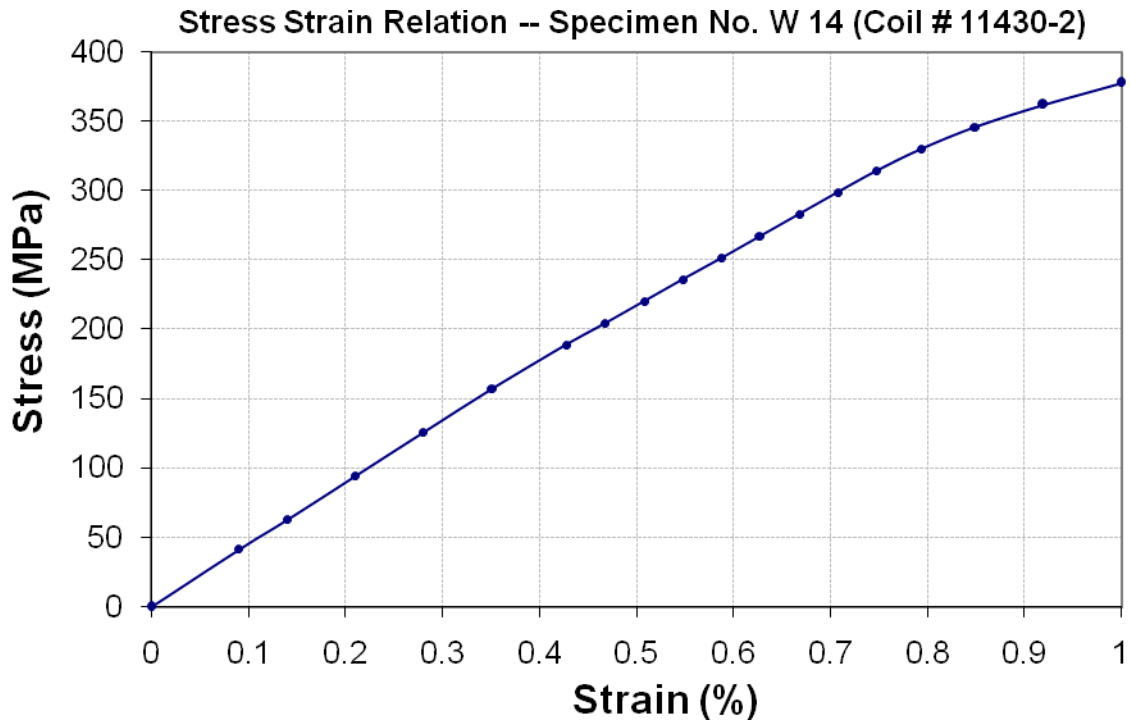
Reference # CED/TFL 2551 (Dr. Rizwan Azam)

Dated: 02-01-2023

Reference of the request letter # MDSYS-209

Dated: 01-01-2023

Graph (Page – 17/27)



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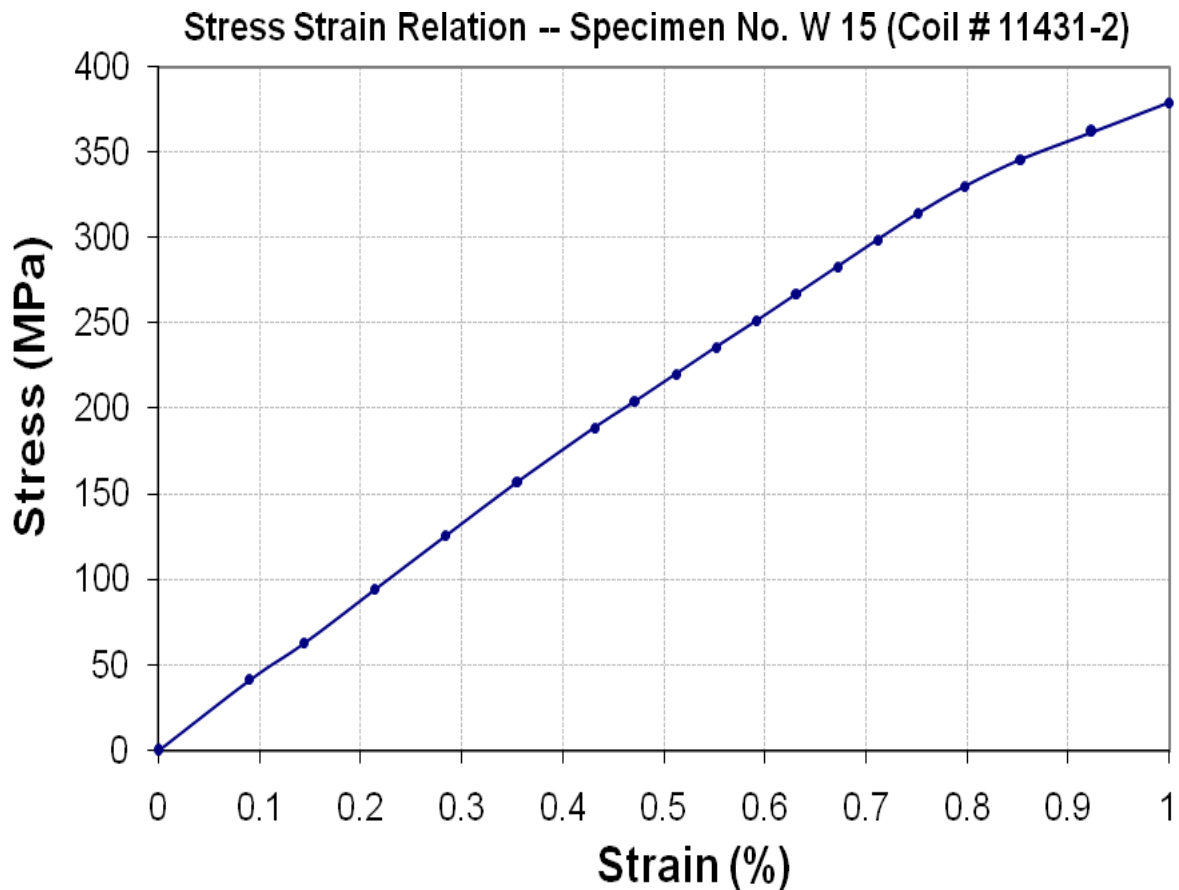
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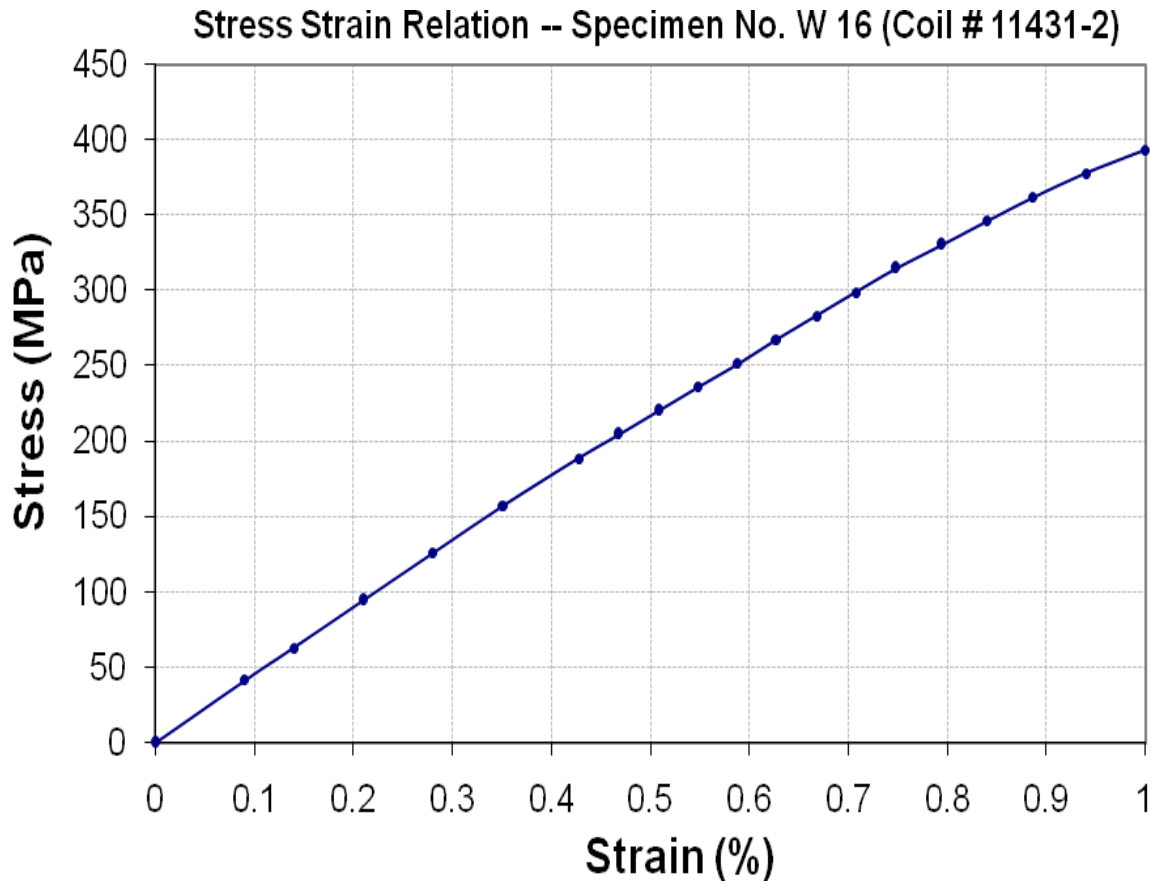
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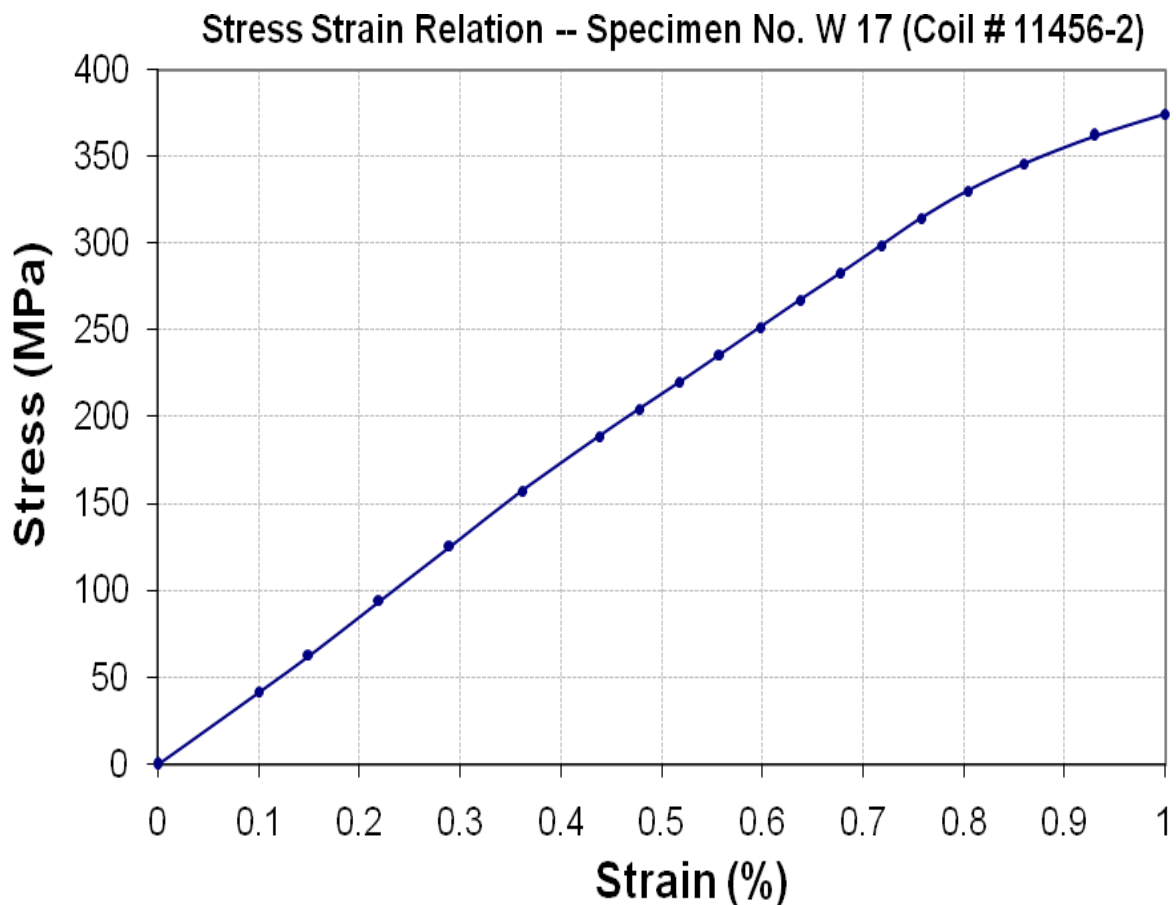
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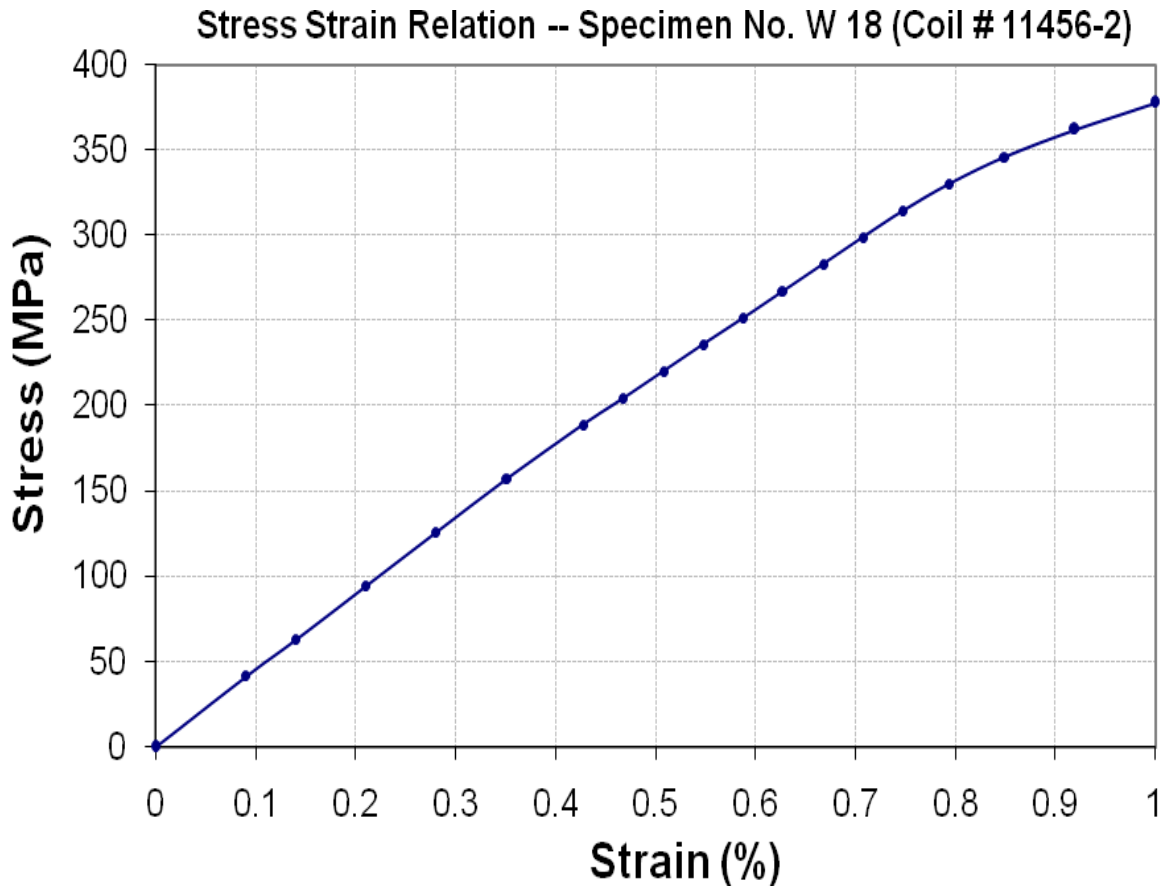
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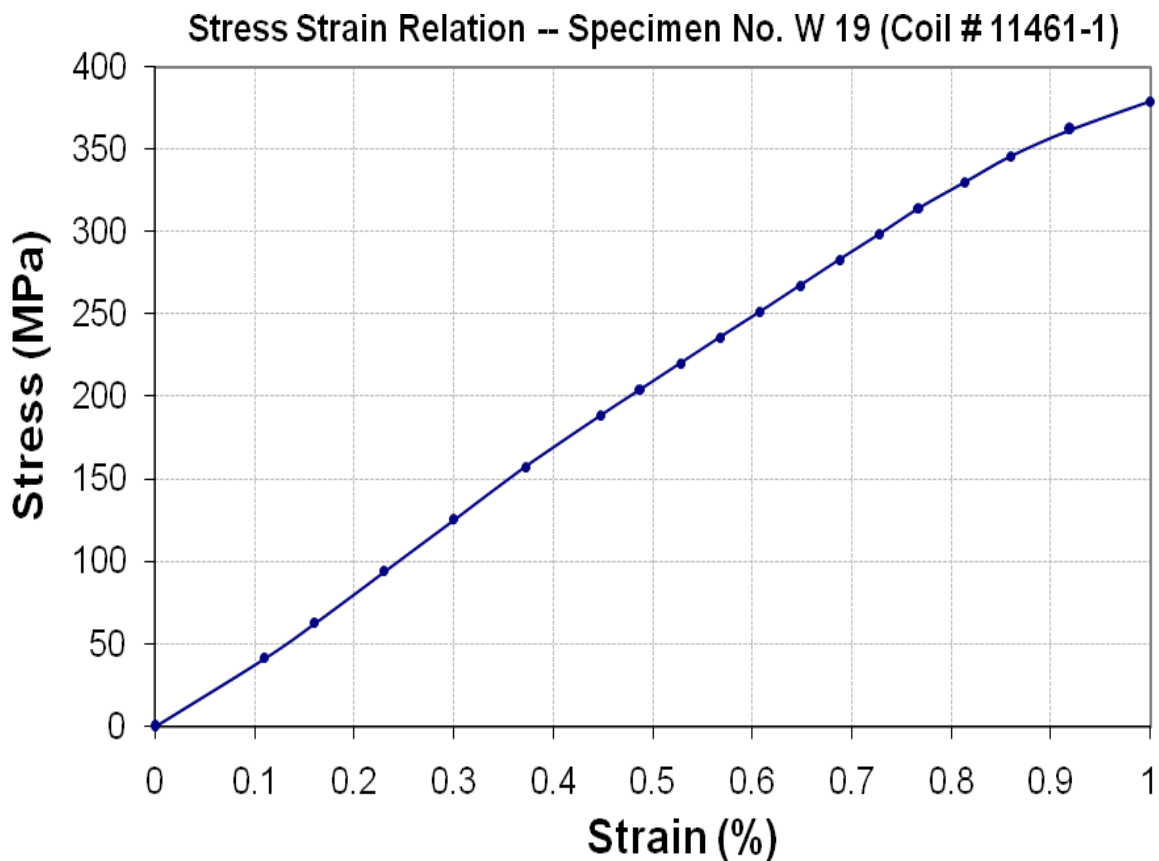
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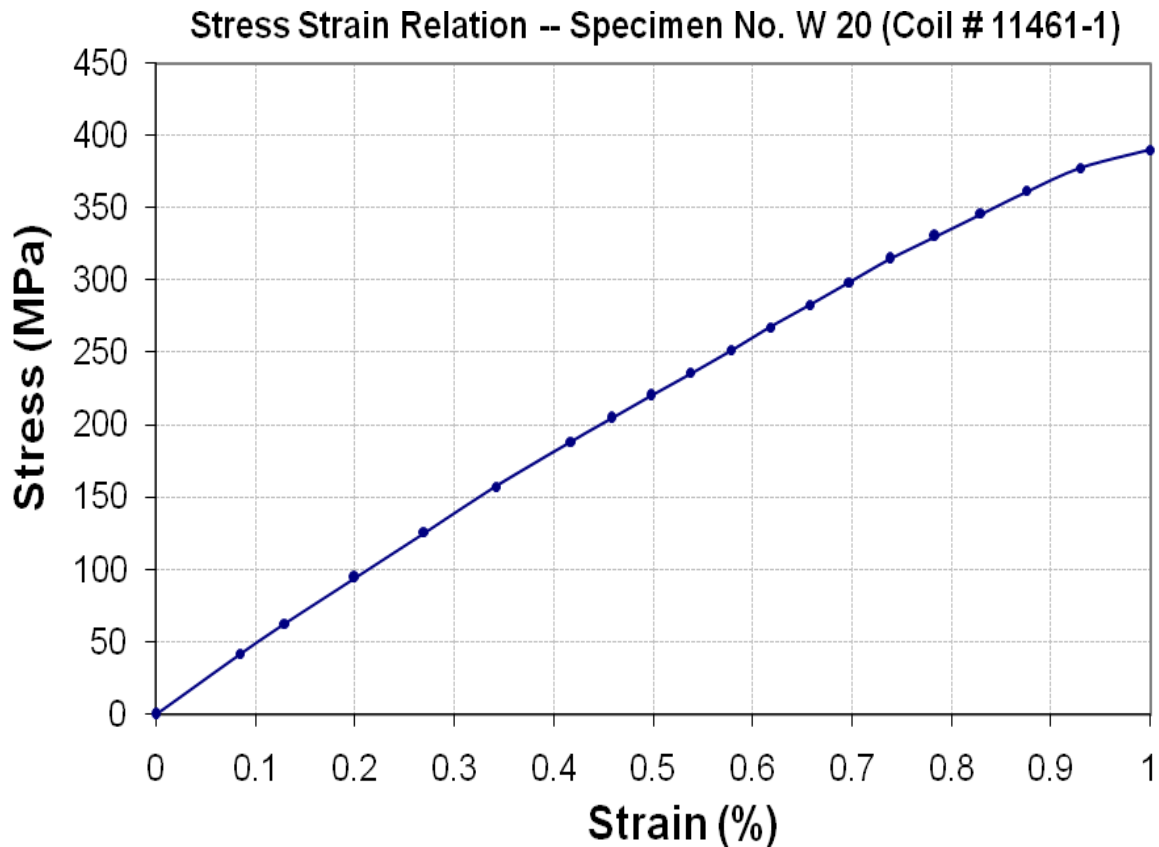
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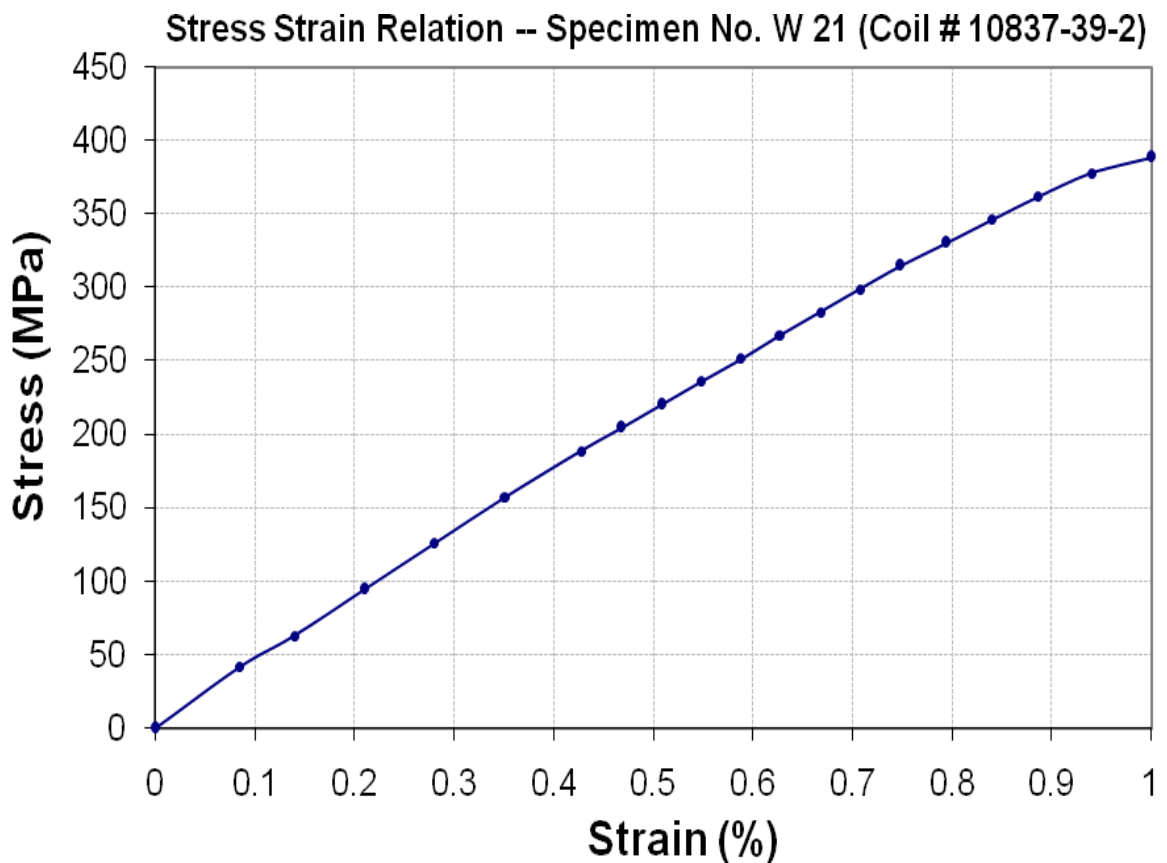
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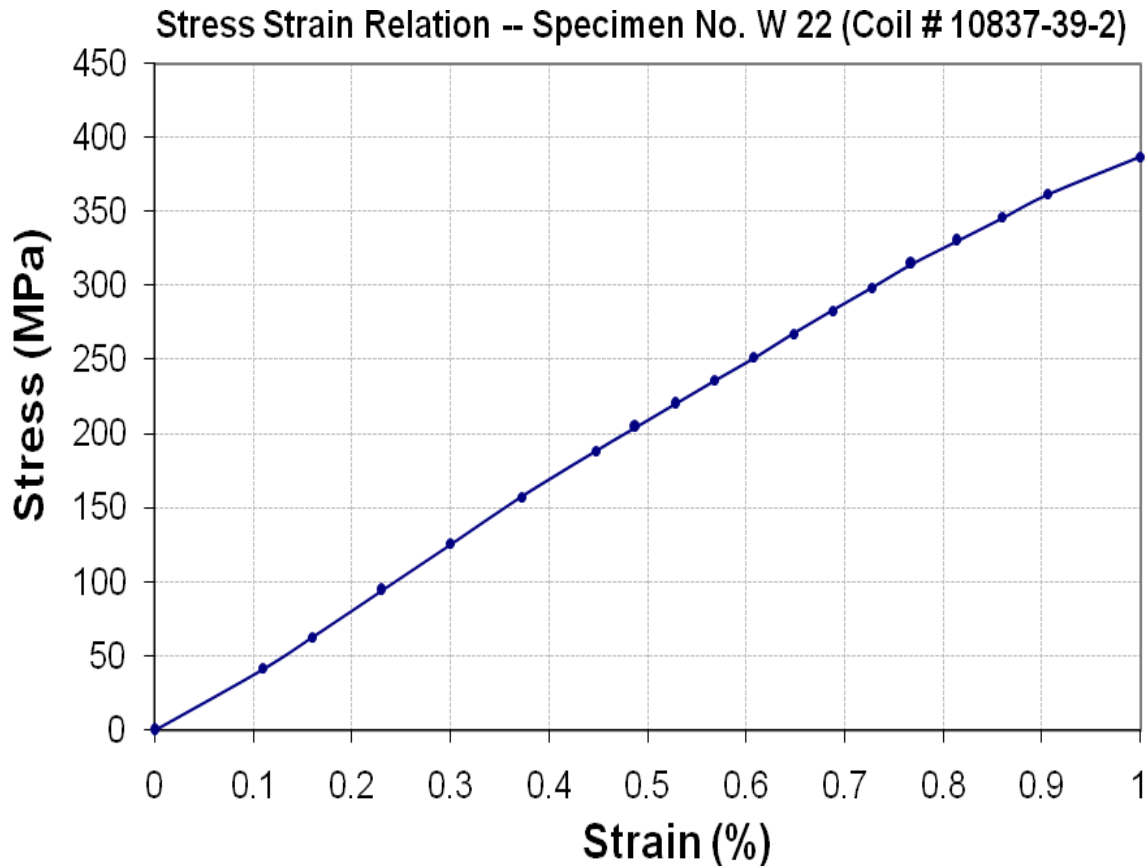
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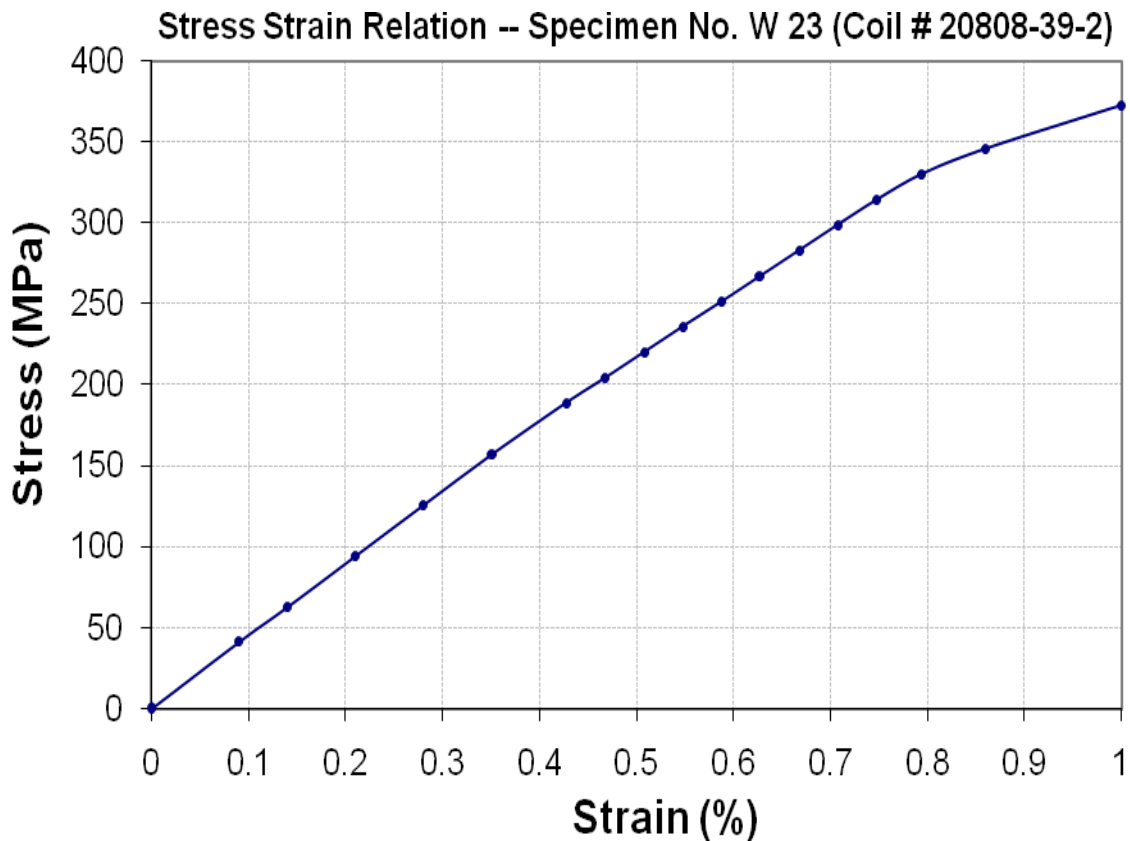
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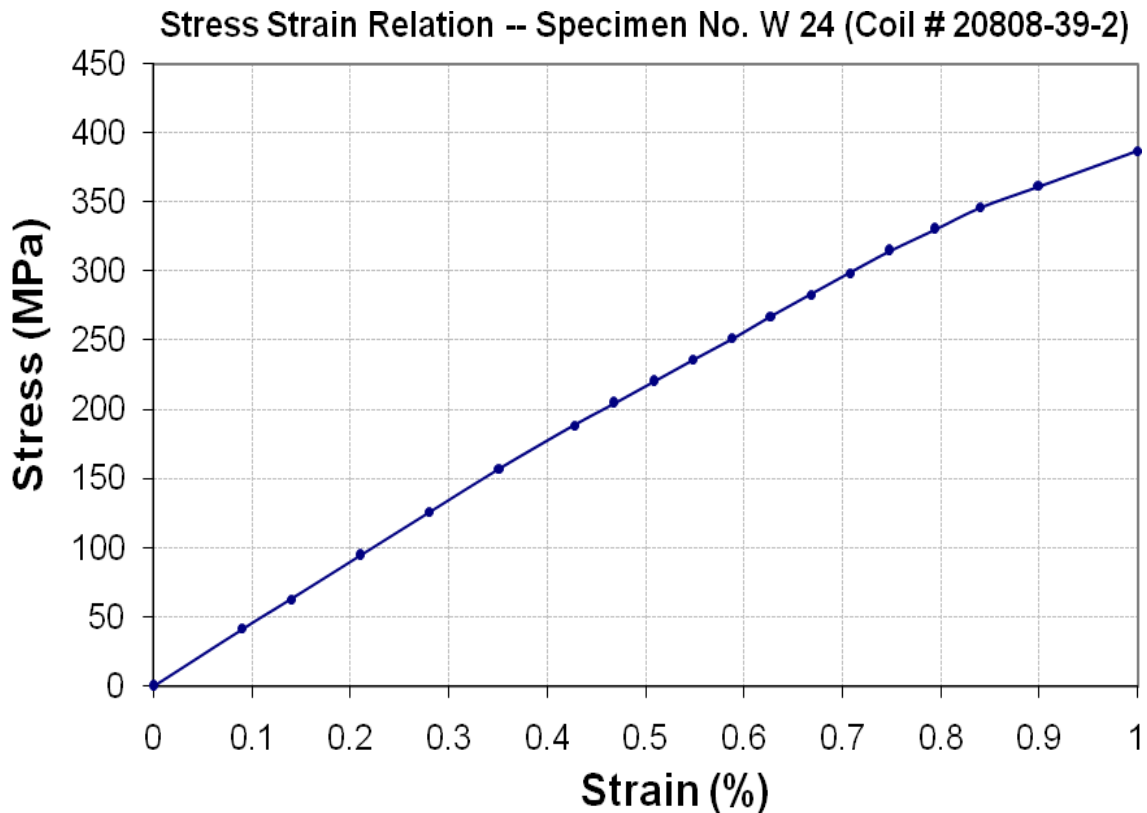
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Pakistan. Ph: 92-42-99029202

To,

Resident Engineer
NESPAK
Construction of Underpass at Ghulab Davi Hospital and Additional Lanes on Lahore
Bridge.
(WMI)

Reference # CED/TFL **2553** (Dr. M Kashif)
Reference of the request letter # 3772/103/GD/RE/05/366

Dated: 02-01-2023
Dated: 27-12-2022

Tension Test Report (Page -1/3)

Date of Test 03-01-2023
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	789.0	17700	173.64	19600	192.28	199	>3.50	xx
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	
Only one sample 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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Test Floor Laboratory
Department of Civil Engineering
University of Engineering and Technology Lahore, 54890
Pakistan. Ph: 92-42-99029202

To,

Resident Engineer

NESPAK

Construction of Underpass at Ghulab Davi Hospital and Additional Lanes on Lahore Bridge.

(WMI)

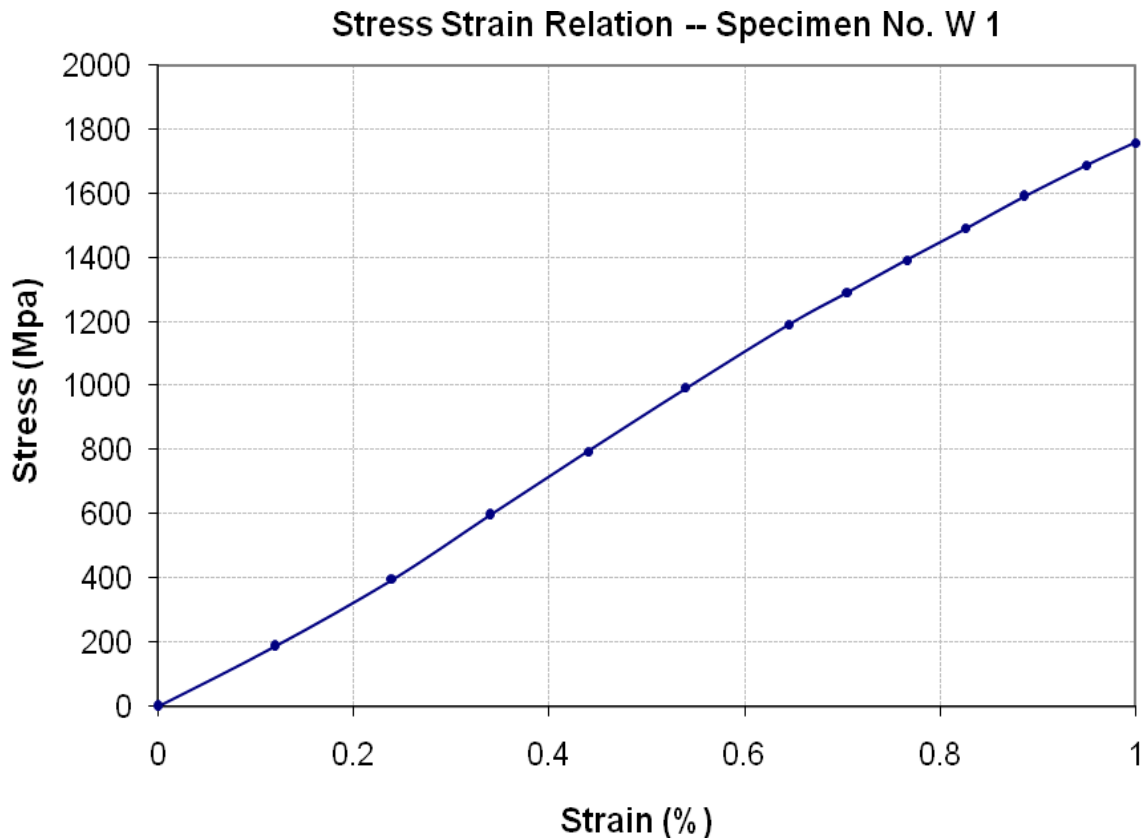
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Dated: 02-01-2023

Reference of the request letter # 3772/103/GD/RE/05/366

Dated: 27-12-2022

Graph (Page – 2/3)



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Pakistan. Ph: 92-42-99029202

To,
 Resident Engineer
 G3 Engineering Consultants (Pvt.) Ltd.
 Construction of DHA Newlife Residency Apartments at 273/1 Q Block Phase-II DHA, Lahore

Reference # CED/TFL **2561** (Dr. Rizwan Riaz)
 Reference of the request letter # G3/DHA-NLD/RE/126

Dated: 03-01-2023
 Dated: 02-01-2023

Tension Test Report (Page -1/1)

Date of Test 03-01-2023
 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	0.379	3	0.377	0.11	0.111	3470	4960	69600	68690	99400	98200	1.40	17.5	AF Steel
2	0.382	3	0.378	0.11	0.112	3470	4910	69600	68100	98400	96400	1.30	16.3	
3	0.383	3	0.379	0.11	0.113	3470	4940	69600	67930	99000	96700	1.40	17.5	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Note: only three samples for tensile and one sample for bend test														
Bend Test														
#3 Bar Bend Test Through 180° is Satisfactory														

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