Test Performed by: Dr. Nauman Khurram

M. Siddique Sons
Engineering Concern (Pvt) Ltd. Lahore.
(Engro Enfrashare Material Inspection)

Client Reference No.: SS/Letter# 21187 Dated: 24-07-2024

SOM Lab Ref: CED/SOM/4544 (Page 1/4) Dated: 01-08-2024

Test Type: Tensile Test

Sample Type: Nut Bolts **Test Specification**: ASTM – F-606

Tensile Test Results

Sample No.	Sample Type	Tested Diameter of Bolt (mm)	Ultimate Load (kN)	Ultimate Tensile Stress (MPa)	% Elongation	Remarks
1	Nut Bolts (M12x40)	8.3	52.5	970.8	20.0	Sample breaks at this Load
2	Nut Bolts (M12x40)	8.3	51.0	943.1	40.0	Sample breaks at this Load
3	Nut Bolts (M12x40)	8.3	53.0	980.1	20.0	Sample breaks at this Load

Hardness Test Details:

Machine used: Avery Rockwell Hardness Testing Machines
(Minor Load: 10 Kgf Major Load: 140.0 kgf Scale: C)

Hardness Test Results

Sample No.	Sample Type	Hardness avg
1	Nut Bolts (M12x40)	HR – 16.83– C
2	Nut (M12)	HR – 23.16– C

Note: Please always confirm the results on web www.uet-civil.edu.pk

Test Performed by: Dr. Nauman Khurram

M. Siddique Sons
Engineering Concern (Pvt) Ltd. Lahore.
(Engro Enfrashare material Inspection)

Client Reference No.: SS/Letter# 21186 Dated: 24-07-2024

SOM Lab Ref: CED/SOM/4544 (Page 2/4) Dated: 01-08-2024

Test Type: Tensile Test

Sample Type: Nut Bolts **Test Specification**: ASTM – F-606

Tensile Test Results

Sample No.	Sample Type	Tested Diameter of Bolt (mm)	Ultimate Load (kN)	Ultimate Tensile Stress (MPa)	% Elongation	Remarks
1	Nut Bolts (M16x55)	10.3	71.5	858.5	30.0	Sample breaks at this Load
2	Nut Bolts (M16x55)	10.3	71.5	858.5	30.0	Sample breaks at this Load
3	Nut Bolts (M16x55)	10.3	73.2	879.0	30.0	Sample breaks at this Load

Hardness Test Details:

Machine used: Avery Rockwell Hardness Testing Machine
(Minor Load: 10 Kgf Major Load: 140.0 kgf Scale: C)

Hardness Test Results

Sample No.	Sample Type	Hardness avg
1	Nut Bolts (M16x55)	HR – 23.66– C
2	Nut (M16)	HR – 25.83– C

Note: Please always confirm the results on web www.uet-civil.edu.pk

Test Performed by: Dr. Nauman Khurram

M. Siddique Sons
Engineering Concern (Pvt) Ltd. Lahore.
(Engro Enfrashare material Inspection)

Client Reference No.: SS/Letter# 21185 Dated: 24-07-2024

SOM Lab Ref: CED/SOM/4544 (Page 3/4) Dated: 01-08-2024

Test Type: Tensile Test

Sample Type: Nut Bolts **Test Specification**: ASTM – F-606

Tensile Test Results

Sample No.	Sample Type	Tested Diameter of Bolt (mm)	Ultimate Load (kN)	Ultimate Tensile Stress (MPa)	% Elongation	Remarks
1	Nut Bolts (M20x70)	14.0	150.2	976.2	30.0	Sample breaks at this Load
2	Nut Bolts (M20x70)	14.0	125.7	817.0	30.0	Sample breaks at this Load
3	Nut Bolts (M20x70)	14.0	123.0	799.4	30.0	Sample breaks at this Load

Hardness Test Details:

Machine used: Avery Rockwell Hardness Testing Machine
(Minor Load: 10 Kgf Major Load: 140.0 kgf Scale: C)

Hardness Test Results

Sample No.	Sample Type	Hardness avg
1	Nut Bolts (M20x70)	HR – 17.33– C
2	Nut (M20)	HR – 24.33– C

Note: Please always confirm the results on web www.uet-civil.edu.pk

Test Performed by: Dr. Nauman Khurram

M. Siddique Sons
Engineering Concern (Pvt) Ltd. Lahore.
(Engro Enfrashare material Inspection)

Client Reference No.: SS/Letter# 21188 Dated: 24-07-2024

SOM Lab Ref: CED/SOM/4544 (Page 4a/4) Dated: 01-08-2024

Hardness Test Details:

Machine used: Avery Rockwell Hardness Testing Machine
(Minor Load: 10 Kgf Major Load: 90.0 kgf Scale: B)

Hardness Test Results

Sample No.	Sample Type	Hardness avg
8	Nut (6 Sooter)	HR – 91.50– B

Machine used: Avery Rockwell Hardness Testing Machine
(Minor Load: 10 Kgf Major Load: 140.0 kgf Scale: C)

Hardness Test Results

Sample No.	Sample Type	Hardness avg
7	Anchor Bolts (6 Sooter)	HR – 75.17– C

Test Performed by: Dr. S. Asad Ali Gillani

Syed Zafar Haider Zaidi
Resident Engineer AZ Engineering Associates
Gujrat & Kharian Residency.

(Construction Of Bridge & Approches Roads Over Rainy Nullahs Near Village Ghayyian & Bhojpur On Chohan Barilla Road in Distt Gujrat)

Reference No.: RE AZEA/GT-1072 Dated: 24-07-2024
SOM Lab Ref: CED/SOM/4545(Page-1/1) Dated: 01-08-2024

Test: Tensile Test, Elongation at Break, Tear Test, Hardness Test & Comp. Set Test

Sample Type: Elastomeric Bearing Pad (16 x 10 x $1^{3/4}$ Inches)

TENSILE STRENGTH AND ELONGATION TEST. (AS PER ASTM-D-412)

S. No	**Sample Size (mm)**	**Ultimate Load (kN)**	**Tensile Strength (Mpa)**	**Tensile Strength (kg/cm^2)**	**Elongation at Break**(%)
1	6.4 x 2.0	0.52	40.62	414.25	520.0
2	6.4 x 2.0	0.47	36.71	374.42	500.0

TEAR STRENGTH (AS PER ASTM-D-624)

S. No	**Sample Size (mm)**	**Ultimate Load (kN)**	**Tear Strength (N/mm)**
1	7.2 x 2.0	0.37	185.0
2	7.2 x 2.0	0.32	160.0

- COMPRESSION SET TEST (AS PER ASTM-D-395)

S. No.	**Thickness of Sample (mm)**	**Final Thickness (mm)**	**Compression set (%)**
1	3.00	2.86	4.48

- HARDNESS TEST (AS PER ASTM-D-2240)

S. No	**Sample Type**	**Hardness $_{avg}$ (Shore A)**
1	Elastomeric Bearing Pad	62.33

Sub Divisional officer, **Test Performed By:** **Dr. /Engr.** Nauman Khurram

BSD Kotmomin (Revamping Of Civil Veterinary Dispensary Ghuranan Tehsil Kotmomin)

Client Reference: 211/Kotmomin **SOM Lab Ref:** 4543 (Page-1/1)

Dated: 25-04-2024 **Dated:** 01-08-2024

Test: Tension Test & Bend Test **Test Specification:** ASTM-A-615

Gauge Length: 8 inch **Sample Type:** Deformed Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	0.664	4	0.498	0.20	0.195	5.83	8.97	64300	65950	98920	101460	1.20	8.0	15.0	
2	0.656	4	0.496	0.20	0.193	5.76	8.94	63510	65820	98580	102160	1.30	8.0	16.3	
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BEND TEST:

# 4	Sample bend through 180 degrees Satisfactorily without any crack

Note:-

Only Three Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

M.Siddique Sons **Test Performed By:** **Dr. /Engr.** Nauman Khurram

Engineerg Concern (Pvt) Ltd.(Engro Enfrashare Material Inspection)

Client Reference: SS/Letter # 21188 **SOM Lab Ref:** 4544 (Page-4b/4)

Dated: 24-07-2024 **Dated:** 01-08-2024

Test: Tension Test & Bend Test **Test Specification:** ASTM-A-615

Gauge Length: 8 inch **Sample Type:** Def Bar (Anchor Bolts)

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.499	6	0.749	0.44	0.441	13.20	18.37	66170	66020	92070	91870	1.10	8.0	13.8	
2	1.571	6	0.767	0.44	0.462	12.86	17.99	64480	61410	90180	85890	0.90	8.0	11.3	
3	1.478	6	0.743	0.44	0.434	12.41	17.40	62190	63040	87220	88430	1.10	8.0	13.8	
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BEND TEST:

--	No Bend test performed

Note:-

Only Three Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Syed Zafar Haider Zaidi **Test Performed By:** **Dr. /Engr.** Nauman Khurram

RE AZEA Gujrat Residency.(Const Of Road From Kharianwala Tanda Rd to Bhagowal Tanda Rd)

Client Reference: AZ AZEA/GT-1067 **SOM Lab Ref:** 4546 (Page-1/2)

Dated: 22-07-2024 **Dated:** 01-08-2024

Test: Tension Test & Bend Test **Test Specification:** ASTM-A-615

Gauge Length: 8 inch **Sample Type:** Deformed Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	0.671	4	0.501	0.20	0.197	6.32	8.15	69700	70760	89930	91300	1.10	8.0	13.8	
2	0.672	4	0.501	0.20	0.197	5.68	7.54	62610	63570	83180	84450	1.20	8.0	15.0	
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BEND TEST:

# 4	Sample bend through 180 degrees Satisfactorily without any crack

Note:-

Only Three Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Syed Zafar Haider Zaidi **Test Performed By:** **Dr. /Engr.** Nauman Khurram

RE AZEA Gujrat Residency.(Rehb of Rd From Jalalpur Jattan Shahbazpur Rd to H/Marala Rd)

Client Reference: RE AZEA/GT-1065 **SOM Lab Ref:** 4546 (Page-2/2)

Dated: 22-07-2024 **Dated:** 02-08-2024

Test: Tension Test & Bend Test **Test Specification:** ASTM-A-615

Gauge Length: 8 inch **Sample Type:** Deformed Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	2.649	8	0.995	0.79	0.778	25.59	34.91	71430	72530	97470	98970	1.40	8.0	17.5	
2	2.644	8	0.995	0.79	0.777	27.08	37.58	75610	76880	104930	106680	1.30	8.0	16.3	
3	1.518	6	0.754	0.44	0.446	15.16	19.57	75980	74960	98100	96780	1.20	8.0	15.0	
4	1.521	6	0.754	0.44	0.447	14.24	18.14	71380	70260	90950	89530	1.10	8.0	13.8	
5	0.672	4	0.501	0.20	0.197	6.24	8.12	68800	69840	89590	90960	1.10	8.0	13.8	
6	0.675	4	0.502	0.20	0.198	5.88	7.70	64860	65520	84870	85730	1.20	8.0	15.0	
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BEND TEST:

# 8	Sample bend through 180 degrees Satisfactorily without any crack
# 6	Sample bend through 180 degrees Satisfactorily without any crack
# 4	Sample bend through 180 degrees Satisfactorily without any crack

Note:-

Only Nine Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Prime Steel Re-Rolling Mills
Sheikhupura.

Test Performed By: **Dr. /Engr.** Nauman Khurram

Client Reference: Nil
Dated: 01-08-2024

SOM Lab Ref: 4547 (Page-1/2)
Dated: 01-08-2024

Test: Tension Test & Bend Test
Gauge Length: 8 inch

Test Specification: ASTM-A-615
Sample Type: Deformed Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.497	6	0.748	0.44	0.440	13.88	21.07	69590	69590	105610	105610	1.30	8.0	16.3	H # 1
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BEND TEST:

# 6	Sample bend through 180 degrees Satisfactorily without any crack

Note:-

Only Two Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Prime Steel Re-Rolling Mills
Sheikhupura.

Test Performed By: **Dr. /Engr.** Nauman Khurram

Client Reference: Nil
Dated: 01-08-2024

SOM Lab Ref: 4547 (Page-2/2)
Dated: 01-08-2024

Test: Tension Test & Bend Test
Gauge Length: 8 inch

Test Specification: ASTM-A-615
Sample Type: Deformed Bar

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.459	6	0.739	0.44	0.429	12.97	20.87	65000	66660	104590	107270	1.20	8.0	15.0	H # 2
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BEND TEST:

# 6	Sample bend through 180 degrees Satisfactorily without any crack

Note:-

Only Two Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk

Chief Resident Engineer **Test Performed By:** **Dr. /Engr.** Nauman Khurram

UMDS Consultant Sahiwal.(NCB Works/PICIIP-04 Road Upgradation Lot-1 Sahiwal)

Client Reference: UMDS-JV/SOS/CRE/394 **SOM Lab Ref:** 4548 (Page-1/1)

Dated: 25-07-2024 **Dated:** 01-08-2024

Test: Tension Test & Bend Test **Test Specification:** ASTM-A-615

Gauge Length: 8 inch **Sample Type:** Deformed Bar (Hunza Steel)

S.No.	Weight	Dia.		Area		Yield Load	Ultimate Load	Yield Stress		Ult. Stress		Elongation	Gauge Length	%age Elongation	Remarks
		Nominal	Calculated	Nominal	Calculated			(according to nominal area)	(according to measured area)	(according to nominal area)	(according to measured area)				
	lb/ft	#	in	in^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	1.057	5	0.629	0.31	0.311	10.60	13.53	75420	75180	96240	95930	1.50	8.0	18.8	
2	1.061	5	0.630	0.31	0.312	10.83	13.63	77020	76530	96960	96340	1.60	8.0	20.0	
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BEND TEST:

# 5	Sample bend through 180 degrees Satisfactorily without any crack

Note:-

Only Three Samples Received and Tested

Note: Please always confirm the results of above report on web www.uet-civil.edu.pk