

**Test Performed By:** Dr. Syed Asad Ali Gillani

Manager Technical  
Malik Muhammad Riaz  
Bin Tariq Pvt. Ltd.

(Project: -RFQ-6000068042 New Effluent Pipeline Laying Project 2024-25 at PRL Korangi)

**Client Reference:** BTPL/Sales/GRP-ACC-PRL/25-103

Dated: 18-07-2025

**SOM Laboratory Reference:** CED/SOM/1537(Page-1/1)

Dated: 21-07-2025

**Test:** Tensile Test, Flexure Test & Stiffness Test

**Sample Type:** Fiber Glass GRP Pipe Dia 600mm (24")

**Tensile Test (ASTM-D-638)**

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
Fiber Glass GRP Pipe	27.1 x 10.5	15.7	55.17

**Flexural Strength Test (ASTM-D-790)**

Sample Type	Size of Sample (mm)			Flexural Load (kN)	Flexural Stress (MPa)
	unsupported Length	Breadth	Height		
Fiber Glass GRP Pipe	250mm	28.6mm	10.7mm	2.0	229.04

**Stiffness Test (Parallel Plate Loading Test as per ASTM-D-2412)**

(Fiber Glass 24" Dia)

Total Length = 307 mm, External Diameter = 617 mm, Wall Thickness = 10.50 mm

Percentage Reduction in Diameter of Sample	Compression Load, P (kN)	Stiffness (Corrected)			Remarks
		Pipe Stiffness (kN/m <sup>2</sup> )	Stiffness Factor (N-m)	Specific Tangential Initial Stiffness (N/m <sup>2</sup> )	
5%	13.4	1528	6347	29981	No Crack Observed

**Note:** Please always confirm the results of above report on web: [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Test Performed By: Dr. Syed Asad Ali Gillani

Manager Technical  
Malik Muhammad Riaz  
Bin Tariq Pvt. Ltd.

Client Reference: BTPL/Sales/GRP-Pole/25-101

Dated: 16-07-2025

SOM Laboratory Reference: CED/SOM/1538(Page-1/1)

Dated: 21-07-2025

Test: Stiffness Test, Flexure Test & Compression Test

Sample Type: Fiber Glass GRP Pole 300mm (12")

**Stiffness Test (Parallel Plate Loading Test as per ASTM-D-2412)**

(Fiber Glass 12" Dia)

Total Length = 303 mm, External Diameter = 304 mm, Wall Thickness = 10.7 mm

Percentage Reduction in Diameter of Sample	Compression Load, P (kN)	Stiffness (Corrected)			Remarks
		Pipe Stiffness (kN/m <sup>2</sup> )	Stiffness Factor (N-m)	Specific Tangential Initial Stiffness (N/m <sup>2</sup> )	
5%	21.2	4985	2342	103787	No Crack Observed
10%	48.7	6187	2907	128821	No Crack Observed
15%	58.0	6336	2975	131806	No Crack Observed

**Flexural Strength Test (ASTM-D-790)**

Sample Type	Size of Sample (mm)			Flexural Load (kN)	Flexural Stress (MPa)
	unsupported Length	Breadth	Height		
Fiber Glass GRP Pole	250mm	28.4mm	10.5mm	1.50	179.64

**Compression Strength Test (ASTM-D-695)**

Sample Type	Size of Sample (mm)	Compression Load (kN)	Compressive Stress (MPa)
Fiber Glass GRP Pole	30.5 x 28.0	190.0	222.48

Note: Please always confirm the results of above report on web: [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

**Test Performed by:** Dr. Syed Asad Ali Gilani

Muhammad Jamil Alam  
Head quality Assurance  
FF STEEL LTD.  
(Z & T Clamps for Solar Project at Lahore Plant)

**Client Reference No.:** Nil

Dated: 21-07-2025

**SOM Lab Ref:** CED/SOM/1541 (Page-1/1)

Dated: 21-07-2025

**Sample Type:** Aluminum Bar

**Hardness Test Details:**

**Machine used:** Avery Rockwell Hardness Testing Machine  
(Minor Load: 10 Kgf Major Load: 50 kgf Scale: A)

**Hardness Test Results**

<b>Sample No.</b>	<b>Sample Type</b>	<b>Hardness AVG</b>
1	Aluminum Bar	HR – 27.0– A

**Note:** Please always confirm the results on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Muhammad Rashid  
PM Swiss Mall MM Alam Road Gulberg III Lahore

**Test Performed By:** Dr. /Engr. Asad Ali Gillani

**Client Reference:** Nil  
**SOM Lab Ref:** CED/SOM/1535(Page-1/1)  
**Test:** Tension Test & Bend Test  
**Sample Type:** Deformed Bar

**Dated:** 16-07-2025  
**Dated:** 21-07-2025  
**Test Specification:** ASTM-A 615  
**Gauge Length:** 200 mm

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)				
	kg/m	mm	mm	mm <sup>2</sup>	mm <sup>2</sup>	kN	kN	MPa	MPa	MPa	MPa	mm	mm	%	
1	3.948	25	25.31	491	503	270.00	347.20	550	537	707	691	35.0	200	17.5	
2	3.943	25	25.29	491	502	270.50	345.70	551	539	704	689	37.5	200	18.8	
3	2.245	20	19.08	314	286	159.00	205.00	506	556	653	717	32.5	200	16.3	
4	2.204	20	18.91	314	281	153.50	198.00	489	547	630	706	27.5	200	13.8	
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**BEND TEST:**

25mm	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Six Samples Received and Tested
20mm	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Engr. M Asif Javed  
PM, ESAC DHA Lahore.(Grand Central Mall Project Faisalabad)

**Test Performed By:** Dr. /Engr. Asad Ali Gillani

**Client Reference:** ESAC/TGC/GCMF/259

**SOM Lab**

**Ref:** 1531 (Page-1/2)

**Dated:** 07-07-2025

**Dated:** 21-07-2025

**Test:** Tension Test & Bend Test

**Test Specification:** ASTM-A-615

**Gauge Length:** 8 inch

**Sample Type:** Deformed Bar (FF 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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	2.696	8	1.004	0.79	0.792	25.05	34.45	69920	69750	96190	95950	1.40	8.0	17.5	
2	2.655	8	0.997	0.79	0.780	24.94	34.07	69640	70530	95110	96330	1.40	8.0	17.5	
3	0.690	4	0.508	0.20	0.203	6.70	8.82	73850	72760	97230	95800	1.30	8.0	16.3	
4	0.722	4	0.520	0.20	0.212	6.93	9.23	76440	72110	101730	95970	1.30	8.0	16.3	
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**BEND TEST:**

# 8	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Six Samples Received and Tested
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Engr. M Asif Javed  
PM, ESAC DHA Lahore.(Grand Central Mall Project Faisalabad)

**Test Performed By:** Dr. /Engr. Asad Ali Gillani

**Client Reference:** ESAC/TGC/GCMF/258

**SOM Lab**

**Ref:** 1531 (Page-2/2)

**Dated:** 07-07-2025

**Dated:** 21-07-2025

**Test:** Tension Test & Bend Test

**Test Specification:** ASTM-A-615

**Gauge Length:** 8 inch

**Sample Type:** Deformed Bar (Aziz 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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	0.661	4	0.497	0.20	0.194	5.88	9.09	64860	66870	100270	103370	0.90	8.0	11.3	
2	0.661	4	0.497	0.20	0.194	5.98	8.74	65990	68030	96340	99310	0.90	8.0	11.3	
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**BEND TEST:**

# 4	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Three Samples Received and Tested

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Batala Steel Industries  
Lahore.

Test Performed By: Dr. /Engr. Irfan Ul Hassan

Client Reference: 2238

SOM Lab

Ref: 1533 (Page-1/1)

Dated: 21-07-2025

Dated: 21-07-2025

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-706

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Batala 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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	0.663	4	0.498	0.20	0.195	6.01	9.33	66320	68020	102860	105490	1.20	8.0	15.0	
2	0.649	4	0.493	0.20	0.191	6.07	8.92	66890	70040	98360	102990	1.40	8.0	17.5	
3	0.661	4	0.497	0.20	0.194	5.86	9.12	64640	66640	100610	103720	1.40	8.0	17.5	
4	0.658	4	0.496	0.20	0.193	5.91	9.09	65200	67560	100270	103910	1.50	8.0	18.8	
5	0.668	4	0.500	0.20	0.196	5.98	9.25	65990	67330	101960	104040	1.20	8.0	15.0	
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**BEND TEST:**

--	No Bend test performed	<b>Note:-</b>  Only Five Samples Received and Tested

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

SUNSHINE HEALTH CARE  
Lahore.(Project Sunshine Medical Tower Shahdra)

Test Performed By: Dr. /Engr. Asad Ali Gillani

Client Reference: Nil

Dated: 21-07-2025

Test: Tension Test

Gauge Length: 8 inch

SOM Lab

Ref: 1534 (Page-1/1)

Dated: 21-07-2025

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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	2.611	8	0.988	0.79	0.767	23.70	32.87	66170	68150	91780	94530	1.80	8.0	22.5	
2	2.653	8	0.997	0.79	0.780	23.80	33.13	66450	67300	92490	93680	1.80	8.0	22.5	
3	1.476	6	0.743	0.44	0.434	13.99	19.16	70100	71070	96060	97390	1.30	8.0	16.3	
4	1.482	6	0.745	0.44	0.436	13.88	19.18	69590	70230	96160	97040	1.50	8.0	18.8	
5	0.667	4	0.500	0.20	0.196	6.70	8.87	73850	75360	97800	99790	1.50	8.0	18.8	
6	0.670	4	0.501	0.20	0.197	6.75	8.89	74420	75550	98020	99510	1.40	8.0	17.5	
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**BEND TEST:**

# 8	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Nine Samples Received and Tested
# 6	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

ZEEZAK

Lahore.(Project JS House Lahore)

Test Performed By:

Dr. /Engr. Asad Ali Gillani

Client Reference: Nil

Dated: 21-07-2025

Test: Tension Test & Bend Test

Gauge Length: 8 inch

Test Specification:

Sample Type:

SOM Lab

Ref: 1536 (Page-1/1)

Dated: 21-07-2025

ASTM-A-706

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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	0.651	4	0.493	0.20	0.191	6.65	8.41	73290	76750	92740	97110	0.90	8.0	11.3	
2	0.648	4	0.492	0.20	0.190	6.85	8.72	75540	79520	96110	101170	1.20	8.0	15.0	
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**BEND TEST:**

# 4	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Three Samples Received and Tested

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Project Director

Test Performed By: Dr. /Engr. Asad Ali Gillani

GC Uni Fsd.(Const.Of Gate No.02&04, Impro Of Road,Integrated Solar Steet Lights,Box Culvert,R.C.C Water Course Along Road at Main Campus)

Client Reference: GCUF/EC/9570

SOM Lab

Ref: 1539 (Page-1/1)

Dated: 03-07-2025

Dated: 21-07-2025

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Aziz 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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	2.654	8	0.997	0.79	0.780	22.65	37.00	63240	64050	103300	104630	1.40	8.0	17.5	
2	2.652	8	0.996	0.79	0.779	22.45	36.87	62670	63550	102930	104390	1.40	8.0	17.5	
3	1.502	6	0.749	0.44	0.441	13.30	20.59	66680	66530	103210	102980	1.20	8.0	15.0	
4	1.498	6	0.748	0.44	0.440	13.63	21.22	68320	68320	106380	106380	1.20	8.0	15.0	
5	0.673	4	0.502	0.20	0.198	6.27	9.58	69130	69830	105670	106730	0.90	8.0	11.3	
6	0.675	4	0.502	0.20	0.198	6.27	9.57	69130	69830	105550	106620	1.10	8.0	13.8	
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**BEND TEST:**

# 8	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Nine Samples Received and Tested
# 6	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	

Note: Please always confirm the results of above report on web [www.uet-civil.edu.pk](http://www.uet-civil.edu.pk)

Nine Arches  
Lahore.(103-B, I MM Alam Road Gulberg Lahore)

Test Performed By: Dr. /Engr. Asad Ali Gillani

Client Reference: Nil  
Dated: 21-07-2025

SOM Lab  
Ref: 1540 (Page-1/1)  
Dated: 21-07-2025

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

Test Specification: ASTM-A-706  
Sample Type: Deformed Bar (Markhor 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 <sup>2</sup>	in <sup>2</sup>	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	2.651	8	0.996	0.79	0.779	23.90	34.27	66740	67680	95680	97030	1.30	8.0	16.3	
2	2.650	8	0.996	0.79	0.779	23.80	34.32	66450	67390	95820	97170	1.40	8.0	17.5	
3	1.474	6	0.743	0.44	0.433	14.27	19.98	71540	72690	100150	101770	1.40	8.0	17.5	
4	1.473	6	0.743	0.44	0.433	14.33	19.95	71840	73000	99990	101610	1.20	8.0	15.0	
5	0.647	4	0.492	0.20	0.190	6.80	8.66	74980	78920	95550	100580	1.30	8.0	16.3	
6	0.650	4	0.493	0.20	0.191	6.75	8.69	74420	77920	95770	100290	1.10	8.0	13.8	
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**BEND TEST:**

# 8	Sample bend through 180 degrees Satisfactorily without any crack	<b>Note:-</b>  Only Nine Samples Received and Tested
# 6	Sample bend through 180 degrees Satisfactorily without any crack	
# 4	Sample bend through 180 degrees Satisfactorily without any crack	
Note: Please always confirm the results of above report on web <a href="http://www.uet-civil.edu.pk">www.uet-civil.edu.pk</a>		