

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

Rajab Ali

Resident Engineer.

NESPAK PRSWSSP, Taunsa

(Punjab Rural Sustainable Water Supply & Sanitation Project Tehsil Taunsa, Pkg-II &V)

**Client Reference:** NESPAK/PRSWSSP/TAUNSA/RE/60

Dated:30-12-2023

**SOM Laboratory Reference:** CED/SOM/3489(Page-1/2)

Dated:11-01-2024

**Test:** Stiffness Test & Tensile Test

**Sample Type:** FRP Blank Pipe (Dia 8")

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

Total Length = 306 mm, External Diameter = 213 mm, Wall Thickness = 7.0 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%	8.5	2823	460	58330	No Crack Observed
10%	11.5	2063	336	42625	No Crack Observed
12%	18.0	2774	452	57309	No Crack Observed
15%	23.7	3652	595	75457	Delamination occur at this load

**Tensile Test**

Sample Type	Size of Sample (mm)	Ultimate Load (kN)	Ultimate Stress (MPa)
FRP Blank Pipe (Dia 8")	29.7 x 6.40	47.5	249.89
FRP Blank Pipe (Dia 8")	29.2 x 6.25	29.7	162.74

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

**Client Reference No.:** CEO/24/029

**SOM Lab Ref:** CED/SOM/3492 (Page 1/1)

**Test Type:** Pull-Out Testing of HORSE HM-500 For Advance Construction Chemical

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

**Dated:** 10-01-2024

**Dated:** 11-01-2024

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**Naeem Ahmad,**  
**C.E.O., Advance Engineering & Chemical Services,**  
**WAPDA Town Lahore**

This is with reference to your above-mentioned letter and SOM receipt No. 3492 dated: 11-01-2024. The samples for pull-out test submitted in the Laboratory have been tested and the results are provided below.

### **Pull-Out Test Results**

<b>Sample No.</b>	<b>Concrete Size (Cylinder)</b>	<b>Size of Embedded Steel Bar</b>	<b>Maximum Load Attained</b>	<b>Mode of Failure</b>
1	Diameter = 6 inches Height = 12 inches	#6	106.5 kN	Concrete Splitting Failure
2		#4	64.0 kN	Steel Bar Pull-Out (Slippage) Failure
3		#3	39.5 kN	Steel Bar Pull-Out (Slippage) Failure

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

Engr. Naveed Sadiq  
RE Orbit Developers.Lahore.(The Springs Atrium,Gulberg Lahore)

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

**Client Reference:** Nil

**SOM Lab**

**Ref:** 3486 (Page-1/1)

**Dated:** 11-01-2024

**Dated:** 11-01-2024

**Test:** Tension Test & Bend Test

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

**Gauge Length:** 8 inch

**Sample Type:** Deformed Bar

ASTM-A-615

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	2.658	8	0.997	0.79	0.781	25.18	38.45	70290	71100	107340	108580	1.30	8.0	16.3	
2	2.651	8	0.996	0.79	0.779	24.99	37.99	69780	70770	106060	107560	1.20	8.0	15.0	
3	1.500	6	0.749	0.44	0.441	14.75	21.00	73940	73770	105260	105020	1.20	8.0	15.0	
4	1.494	6	0.748	0.44	0.439	14.88	20.97	74600	74770	105100	105340	1.00	8.0	12.5	
5	0.673	4	0.502	0.20	0.198	8.05	9.79	88800	89700	107910	109000	0.90	8.0	11.3	
6	0.672	4	0.501	0.20	0.197	7.14	9.14	78690	79890	100830	102370	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)

Engineer Muhammad Irfan  
Asst Dir Infra. DHA Gujranwala.(Main Boulevard Extension)

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

Client Reference: 111/15/AD/RS/Lab/MBE/282

SOM Lab

Ref: 3488 (Page-1/1)

Dated: 06-12-2023

Dated: 11-01-2024

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	0.673	4	0.502	0.20	0.198	7.10	8.97	78350	79140	98920	99920	1.30	8.0	16.3	
2	0.666	4	0.500	0.20	0.196	7.05	8.97	77790	79380	98920	100940	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)

Muhammad Imran Khan,ME  
ECSP Lahore.(Const Of MPA`S Hostel Lahore,Phase -II)

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

Client Reference: 340/ECSP/MPA/ME/78

SOM Lab

Ref: 3490 (Page-1/1)

Dated: 01-01-2024

Dated: 11-01-2024

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (Kamran 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	2.670	8	1.000	0.79	0.785	26.81	35.02	74850	75320	97750	98380	1.50	8.0	18.8	
2	2.669	8	0.999	0.79	0.784	26.57	34.81	74190	74760	97190	97930	1.40	8.0	17.5	
3	1.502	6	0.749	0.44	0.441	14.93	21.10	74860	74690	105770	105530	1.30	8.0	16.3	
4	1.499	6	0.749	0.44	0.441	15.11	21.20	75720	75550	106280	106040	1.30	8.0	16.3	
5	0.666	4	0.500	0.20	0.196	6.29	8.26	69360	70770	91050	92910	1.30	8.0	16.3	
6	0.671	4	0.501	0.20	0.197	6.42	8.28	70820	71900	91280	92670	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)

Asif Pervaiz Butt  
RE Ritz Developers Pvt. Ltd.Lahore

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

Client Reference: Nil

SOM Lab

Ref: 3493 (Page-1/1)

Dated: 08-01-2024

Dated: 11-01-2024

Test: Tension Test & Bend Test

Test Specification:

ASTM-A-615

Gauge Length: 8 inch

Sample Type:

Deformed Bar (SJ 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	2.709	8	1.007	0.79	0.796	25.91	34.32	72340	71800	95820	95100	1.60	8.0	20.0	
2	2.637	8	0.993	0.79	0.775	29.77	40.72	83100	84710	113690	115890	1.40	8.0	17.5	
3	2.601	8	0.986	0.79	0.764	26.61	35.70	74280	76800	99660	103050	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 Four 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)