Client Reference No.: ZEG/IRR/RWCS/GEN/UET/252201 **Dated:** 22-01-2025

SOM Lab Ref: CED/SOM/627 **Dated:** 23-01-2025

Test Type: Flexural Toughness of Steel Fiber Reinforced Shotcrete (RWCS-1)

Test Performed by: Dr. Wasim Abbas

Mr. Ren PengXun,

Project Manager,

Zhongmei Engineering Group-Almehreen Enterprises Joint Venture

Peshawar

This is with reference to your above-mentioned letter and SOM receipt No. 627 dated: 23-01-2025. The beam samples of Steel Fiber Reinforced Shotcrete submitted in the Laboratory were tested to determine their Flexural Toughness as per ASTM C 1018. The values of toughness indices exhibited by each sample are provided in the Table below. It is to be noted that each test was stopped once the drop in the load after peak was 90% of ultimate load carrying capacity.

Sample No.	Sample description with respect to Steel Fiber Dosage	Size of Test Specimen (Dimensions in mm)	Flexural Strength (MPa)	Flexural Toughness Index I_5	Flexural Toughness Index, I_{10}
1	60 kg/m^3	100 × 100 × 350	4.89	4.20	6.01
2			5.77	1.99	-
3			5.31	3.29	-

Test Performed by: S. Asad Ali Gillani

Project Manager
Muhammad Tariq
United Life Style Lahore.
(High-rise Building Skyscapers at Johar Town Lahore)

Client Reference No.: ULS/2021/22-23-24-25/04 Dated: 19-02-2025

SOM Lab Ref: CED/SOM/809 (Page 1/1) Dated: 19-02-2025

Test Type: Tensile Test

Sample Type: Anchor Bolts

Test Specification: ASTM – F-1554

Tensile Test Results

Sample No.	Sample Type	Diameter of Bolt (mm)	Ultimate Load (kN)	Ultimate Tensile Stress (MPa)	% Elongation
1	Anchor Bolt (16mm)	16.0	98.2	488.7	7.5
2	Anchor Bolt (16mm)	16.0	99.5	495.1	7.5

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

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

Lahore Road Sheikhpura.(DFL Sheikhpura Project" Yarn Dyeing Setup")

SOM Lab

Client Reference: Nil **Ref:** 800 (Page-1/1)

Dated: Nil **Dated:** 19-02-2025

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	2.637	8	0.993	0.79	0.775	22.96	38.58	64090	65330	107710	109800	1.40	8.0	17.5	
2	2.644	8	0.995	0.79	0.777	22.85	38.69	63810	64870	108000	109810	1.30	8.0	16.3	
3	0.662	4	0.498	0.20	0.195	5.89	8.94	64970	66640	98580	101110	1.10	8.0	13.8	
4	0.661	4	0.497	0.20	0.194	5.91	8.94	65200	67220	98580	101630	1.20	8.0	15.0	
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BEND TEST:

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

Note:-

Only Six Samples Received and Tested

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

Muhammad Asif Shehzad **Test Performed By:** **Dr. /Engr.** Wasim Abbas

De Orion Group Pakistan.(Const Of De-Orion Mall Project,Multan)

Client Reference: Nil **SOM Lab Ref:** 801 (Page-1/1)

Dated: 17-02-2025 **Dated:** 19-02-2025

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	2.644	8	0.995	0.79	0.777	24.26	33.40	67730	68870	93260	94820	1.40	8.0	17.5	
2	2.646	8	0.995	0.79	0.778	23.87	32.95	66650	67680	91980	93400	1.50	8.0	18.8	
3	1.487	6	0.746	0.44	0.437	15.04	19.67	75370	75880	98610	99290	1.60	8.0	20.0	
4	1.492	6	0.747	0.44	0.438	15.21	19.80	76240	76580	99230	99680	1.50	8.0	18.8	
5	0.664	4	0.498	0.20	0.195	6.65	8.66	73290	75170	95550	98000	1.10	8.0	13.8	
6	0.664	4	0.498	0.20	0.195	6.80	8.69	74980	76900	95770	98230	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

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

Project Head GIBS Builders & Dev Multan.(Const Of Universl Food)

Client Reference: Nil **SOM Lab Ref:** 802 (Page-1/1)

Dated: 18-02-2025 **Dated:** 19-02-2025

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	2.555	8	0.978	0.79	0.751	23.41	31.77	65370	68760	88700	93310	1.50	8.0	18.8	
2	2.557	8	0.978	0.79	0.751	24.67	32.84	68870	72450	91690	96450	1.50	8.0	18.8	
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BEND TEST:

# 8	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

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

QAQC Manager Zameen Development.(Const. Of Zameen Neo at Plot #13,Gulberg III Lhr)

Client Reference: ZD/QAQC/NEO/DC-2502-000196/05 **SOM Lab Ref:** 804 (Page-1/1)

Dated: 19-02-2025 **Dated:** 19-02-2025

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	2.715	8	1.008	0.79	0.798	21.25	34.53	59340	58740	96390	95420	1.60	8.0	20.0	
2	2.706	8	1.006	0.79	0.795	21.27	34.63	59390	59020	96670	96060	1.50	8.0	18.8	
3	1.516	6	0.754	0.44	0.446	12.69	20.25	63620	62760	101530	100160	1.50	8.0	18.8	
4	1.517	6	0.754	0.44	0.446	12.74	20.25	63870	63010	101530	100160	1.50	8.0	18.8	
5	0.672	4	0.501	0.20	0.197	5.58	8.46	61490	62430	93300	94720	1.30	8.0	16.3	
6	0.672	4	0.501	0.20	0.197	5.50	8.38	60700	61630	92400	93810	1.40	8.0	17.5	
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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

Engineer Muhammad Irfan
Dy Dir Infra. DHA Gujranwala.(Sector D & K)

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

Client Reference: 111/DD/Lab/D/258
Dated: 18-02-2025

SOM Lab Ref: 805 (Page-1/1)
Dated: 19-02-2025

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	0.658	4	0.496	0.20	0.193	6.42	8.72	70820	73390	96110	99600	1.20	8.0	15.0	
2	0.655	4	0.494	0.20	0.192	6.27	8.61	69130	72010	94990	98940	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

Engr. M. Saleem Zafar **Test Performed By:** **Dr. /Engr.** Asad Ali Gillani
Snr RE Nespak Sialkot.(WWTP Sialkot)(ICB-Work/PICIIP-12)

Client Reference: Nespak/MSZ/UET/WWTP/053 **SOM Lab Ref:** 807 (Page-1/1)
Dated: 10-02-2025 **Dated:** 19-02-2025

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^2	in^2	Tons	Tons	psi	psi	psi	psi	in	in	%	
1	0.665	4	0.498	0.20	0.195	6.85	8.87	75540	77480	97800	100300	1.30	8.0	16.3	
2	0.668	4	0.500	0.20	0.196	6.70	8.79	73850	75360	96900	98880	1.30	8.0	16.3	
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Witnessed By: Wafa Dogar,ARE(NESPAK), Irshad Ali (Admin Deptt,SWEG)

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

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

Metroplan-Asian JV Site Office.(Estb Of NSICTR Lahore Phase-1,Pkg-B)

Client Reference: Metroplan-Asian-NSICTR(PKG-B)-RE-118 **SOM Lab Ref:** 808 (Page-1/1)

Dated: 15-02-2025 **Dated:** 19-02-2025

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

Gauge Length: 8 inch **Sample Type:** Deformed Bar (Sheikhoo 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	2.624	8	0.991	0.79	0.771	25.69	35.34	71720	73480	98660	101100	1.30	8.0	16.3	
2	2.632	8	0.992	0.79	0.773	25.50	35.32	71200	72770	98610	100780	1.40	8.0	17.5	
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BEND TEST:

# 8	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