ELEMENT ENGINEERING LABORATORY

TRAINING ATTENDANCE RECORD

Training Type	QHSE Training		
Date	10.09.2026	**Time (From – To)**	11.00 – 13.00
Venue / Location	EEL premises	**Duration**	2 hrs
Topic(s) Covered	ISO 9001 process compliance, Emergency response, PPE requirements Spill response		
Conducted By	Ayaz Ahmad	**Designation**	QHSE officer

S.No	Name of Participant	Designation / Department	Signature
1	Sharoof Khalidh	Geotechnical	
2	Sajesh Kumar	Materials	
3	Arshida	Chemical	
4	Srikumar	Materials	
5	M. Umer	Materials	
6	Akhil.R	Materials	
7	Ali Shujath.	Materials	
8			
9			
10			
11			
12			

Trainer Signature :

Reviewed By:

CONTROLLED

ELEMENT ENGINEERING LABORATORY

Training Need Analysis/Evaluation

Name : Mr. Ali Shujat

Position : Lab Technician

Trainer : Mr. Vilas

Training Period : June - 2026

ASSESMENT FROM

I. Assessment

Test Description	Interview	Practical Demo/Trial	*Score	**Rating
Carbon Steel Bars for Reinforcement of Concrete: **Tensile** **Bend**	✓	Practical	4	B
Method of testing Multi-Wire Strand for Prestressed Concrete. **Breaking Load** **Yield Load @ 1% Extension**	✓	〃	〃	〃

Comments: Can Test Independently.

LEGEND : (QAE./Laboratory Manager)

*Score :		**Rating :
1	- Very Poor	A- Can test and teach others
2	- Poor	(Score : > 5.0)
3	- Fair	B- Can test independently
4	- Good	(Score : 4.0 - 5.0)
5	- Very Good	C- Can test under supervision
6	- Excellent	(Score : 3.0 - 4.0)
		D- Can provide assistance, cannot test
		(Score : < 3.0)

ELEMENT ENGINEERING LABORATORY

Staff Competency Record

Staff Name : Ali Shujat

Position : Lab Technician

Qualification : DAE Civil Engineering

Experience:

Position	Area	Organization	Years of Experience
Lab Technician	Soil Section	Al Mawazeen Soil testing	2 Years

Test Name: Carbon Steel Bars for Reinforcement of Concrete: Tensile Bend
Method of testing Multi-Wire Strand for Prestressed Concrete. Breaking Load Yield Load @ 1% Extension

Test Method: BS 4449:2005+A3:2016, BSEN ISO 15630-1:2019,BSEN ISO 6892-1:2019,
ASTM A416/ A416M-2017. ASTM A 1061/ A1061M-20aε1.

Staff Evaluation:

1. Theoretical Knowledge Good
2. Practical Knowledge Good

Competency Level: Excellent/ V. Good / Good / Fair / Poor / V. Poor

Criteria for Technical Staff (Technician): Technician level staff shall have minimum Grade 10 +2 or Diploma in any Engineering Discipline recognized University and shall have minimum of 2 years of experience in the same field. In addition to that formal training required for assigned tests

Approved By: General Manager / Laboratory Manager

Date:

ELEMENT ENGINEERING LABORATORY

REQUEST FOR STEEL REINFORCEMENT REBAR TEST / MULTI-WIRE STRAND TEST

FOR CLIENT/CONSULTANT/CONTRACTOR USE	
PROJECT DETAILS	
Client	Training June 2026
Project	Training June 2026
Contractor	//
Consultant	//
Location	Al Mawazeen
Project No./ Plot No.	//
Sampling Method	
SAMPLE DETAILS	
Sample Description	Steel Rebar
Source of the Sample	M/S Emirates Steel
Sample Grade	B 500 B
Manufacturer Certificate No	
Heat / Charge No.	
Sample By	Contractor
Sampling Date / Time	10/06/2026
Customer Reference No.	
Sample Size	
Batch/Lot Size & No.	
Bar Marking	

FOR LABORATORY USE	
Request No	
Lab Project No.	
Sample No.	
Sample Brought in By	
Sample Receiving Date	10/06/2026
Condition of the Sample on receipt	As Received / ~~Rusty~~ ~~Not straight~~ / ~~Aged~~ / ~~Not Rusty~~ Straight
Sample Received By	AML

Remarks: As Recieved Non Rusty Straight Steel rebar of 8 Emirates from Steel

NOTE: Spare Sample used for training Purpose

REQUIRED TEST DETAILS

Serial No.	REQUIRED TEST	TEST METHOD	OTHER METHOD	Required No. of Tests	SPECIMEN NO.
1	Tensile Strength	BS 4449:2005 +A3:2016 / BSEN ISO 6892-1:2019 / BSEN ISO 15630-1:2019		3	
2	Re-bend Test	BS 4449:2005 +A3:2016 / BS EN ISO 15630-1:2019		1	
3	Bend Test	BS 4449:2005 +A3:2016 / BS EN ISO 15630-1:2019 / ISO 7438:2016		1	
4	*Full Chemical Analysis with CEV	BS 4449:2005 / OES			
5	*Chemical Analysis (Elements: C,S,N P & Cu)	BS 4449:2005 / OES			
6	Multi-Wire Strand- Breaking Strength, Yield Strength, Elongation	ASTM A416/A416M-2017 - ASTM A1061/A1061M-2020a$^{\varepsilon 1}$			
7					

Note:-1. Uncertainty measurement required: Yes/No

2. All the information provided by customer is considered proprietary and shall be regarded as confidential except for information that the customer makes publicly available or when agreed between AML and the customer

3. *are not covered under our accredited scope.

Client / Customer		Signature :	Tel.No.
Consultant/Contractor		Signature :	Tel.No.

mawazeen@emirates.net.ae
P.O. Box 48595, Dubai.
Telephone: 04-2583533,Fax: 04-2583534

WORKSHEET FOR MECHNICAL PROPERTIES OF REINFORCEMENT STEEL

Client	Training June 2026	Lab Project No.	
Consultant	=	Sample No.	
Contractor	=	Request No.	
Project Name/No.	=	Date/Time Sample Received	
Sample Description	Ø20mm Steel rebar	Sampling Certificate	
Sample Source	Emirates Steel	Steel Grade	B500B
Condition of the sample on receipt	As received / Aged / Non-rusty Straight Rebars	Sampling Date	
Sample brought in By	Consultant/ Contractor / Laboratory	Lot No. & Lot size	
		Testing Date:	15/06/2026

TEST RESULTS

Specimen No.		1	2	
Sender's Reference No.				
Bar Marking				
Nominal Bar Diameter,	(mm)	20	20	
Mass of the Specimen, A	(Kg)	1.569	1.571	
Length of the Specimen, B	(m)	0.650	0.652	
Mass per meter run, C = (A/B)	(Kg/m)	2.414	2.410	
Eff. Cross Sectional Area,	(mm²)	307.52	307.01	
Effective Diameter,	(mm)	19.78	19.77	
Nominal Cross Sectional Area,	(mm²)	314	314	
Deviation from mass per meter length,	(%)	-2.3	-2.5	
Initial gauge length, 5d,	(mm)	100	100	
IGL for Extensometer	(mm)	**25 / 50**		
Max. rate of loading at yield	kN/Sec	25	25	
Yield Load	(kN)	176.55		
Yield Strength, R_e	(N/mm²)	562	552	
Tensile Load	(kN)	208.5	204.35	
Tensile Strength, R_m	(N/mm²)	654	651	
Stress Ratio, (R_m/R_e)		1.18	1.18	
Final gauge length after fracture, 5d,	(mm)	117.9	118.6	
Elongation after fracture @ 5d,	(%)	17.9	18.6	
Non Proportional Measuring Zone Gauge Length A_r,	(mm)	**100**	**100**	**100**
Non Proportional Measuring Zone After Fracture, Ar,	(mm)	108.9	108.5	
Total Elongation at Max. Force, (Agt)	(%)	9.2	8.8	

Test Method: BS 4449:2005 +A3:2016 Cl. 7.2.3 / BS EN ISO 15630-1:2019 Cl. 5 / BS EN ISO 6892-1:2019

Remarks:	Nil
Test Method Variation:	

Equipment Used:

Steel Machine	MS-123	Thermometer	MM-224	Tested By:	ALS
Extensometer		Stop watch			
Balance	MI-640	Vernier Caliper	MM-081	Checked By:	
Ruler	MM-194				

WORKSHEET FOR MECHANICAL TESTS ON STEEL REINFORCEMENT BAR (BEND & REBEND TEST)

CLIENT		Training June 2026	REQUEST NO.	
PROJECT		Training June 2026	LAB PROJECT NO.	
CONTRACTOR		Training June 2026	SAMPLE NO.	
CONSULTANT		//	SAMPLE BROUGHT IN BY.	Contractor
PROJECT NO./LOCATION		Al Mawazeen	CUSTOMER REFERENCE	
SAMPLE IDENTIFICATION		Ø 20mm Steel	DATE RECEIVED	
SAMPLE DESCRIPTION		STEEL rebar	DATE TEST STARTED	15/06/2026
GRADE / SOURCE OF STEEL		Emirates Steel	MANUFACTURER CERT.	
TEST SPECIFICATION / METHOD	BEND	BS EN ISO 15630-1:2019, Cl. 6 / ISO 7438	CONDITION OF THE SAMPLE ON RECEIPT	
	REBEND	BS 4449 : 2005 Clause 7.2.5 / BS EN ISO 15630-1:2019 Cl. 7	AMBIENT TEMP.	°C

BEND TEST : BS 4449:2005 +A3:2016 Cl. 7.2.5 / BS EN ISO 15630-1:2019, Cl. 6 / ISO 7438:2016

Sample No.	03	
Diameter (mm)	Ø 20mm	
Bend Angle	90^0	
Dia. of the Former (mm) ≤16mm-4D, >16mm-7D	7D	
Result	No crack or fractured observed on both longitudnal or tranverser ribs - As evidence test Specimen Withstood With Bend Test -	

REBEND TEST : BS 4449: 2005 +A3:2016 Cl. 7.2.5 / BS EN ISO 15630-1:2019, Cl. 7

Sample No.	03	
Diameter (mm)	Ø 20mm	
Rebend Angle	Specimen Bend to 90° & (aged) heat at temp. 100°C for 60 Minutes & cool to room temp.- Rebend 20°	
Dia. of the Former (mm) ≤16mm-4D, >16mm-7D	7D	
Result	No crack or fractured observed on both longitudnal or tranverser ribs - As evidence test Specimen Withstood With Rebend Test	

Remarks Nil **Method Variation**

Equipment Used:

UTM	M3-123	Oven	M1-355
Thermometer	MM-224	Vernier Caliper	MM-081
Former – Bend		90°angle board	
Former- Rebend		20°angle board	
TESTED BY:	ALS	CHECKED BY:	

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ELEMENT ENGINEERING LABORATORY

REQUEST FOR STEEL REINFORCEMENT REBAR TEST / MULTI-WIRE STRAND TEST

FOR CLIENT/CONSULTANT/CONTRACTOR USE	
PROJECT DETAILS	
Client	Training June 2026
Project	
Contractor	Training June 2026
Consultant	Training June 2026
Location	Al Mawazeen
Project No./ Plot No.	
Sampling Method	BS 4449 2005 + A3: 2016
SAMPLE DETAILS	
Sample Description	Strand Wire 15.2mm
Source of the Sample	
Sample Grade	
Manufacturer Certificate No	
Heat / Charge No.	
Sample By	
Sampling Date / Time	
Customer Reference No.	
Sample Size	
Batch/Lot Size & No.	
Bar Marking	

FOR LABORATORY USE				
Request No				
Lab Project No.				
Sample No.				
Sample Brought in By				
Sample Receiving Date				
Condition of the Sample on receipt	As Received	Rustry - Not straight	Aged	Non-Rusty Straight
Sample Received By	AML			
Remarks:	As Recieved Non Rusty Strand Wire			

REQUIRED TEST DETAILS

Serial No.	REQUIRED TEST	TEST METHOD	OTHER METHOD	Required No. of Tests	SPECIMEN NO.
1	Tensile Strength	BS 4449:2005 +A3:2016 / BSEN ISO 6892-1:2019 / BSEN ISO 15630-1:2019			
2	Re-bend Test	BS 4449:2005 +A3:2016 / BS EN ISO 15630-1:2019			
3	Bend Test	BS 4449:2005 +A3:2016 / BS EN ISO 15630-1:2019 / ISO 7438:2016			
4	*Full Chemical Analysis with CEV	BS 4449:2005 / OES			
5	*Chemical Analysis (Elements: C,S,N P & Cu)	BS 4449:2005 / OES			
6	Multi-Wire Strand- Breaking Strength, Yield Strength, Elongation	ASTM A416/A416M-2017 - ASTM A1061/A1061M-2020a$^{\varepsilon 1}$		1	
7					

Note:-1. Uncertainty measurement required: Yes/No

2. All the information provided by customer is considered proprietary and shall be regarded as confidential except for information that the customer makes publicly available or when agreed between AML and the customer

3. *are not covered under our accredited scope.

Client / Customer		Signature	Tel No
Consultant/Contractor		Signature	Tel No

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ELEMENT ENGINEERING LABORATORY

Mechanical Properties of Steel Strand – Work Sheet

Client	: Training June 2026		
Consultant	:		
Contractor	:		
Project Name	:		
Project no.	:		

Sender's No.	:	Manufacturers Certificate	:
Sample Description	: 15.2 mm Strand Wire	Sampling Method.	:
Grade of Strand	:	Sample Condition	:
Sample size	:	Source of sample	:
Sampling date/time	:	Type of Strand	:
Sampled By	: 15/06/2026	Lot No. & Lot size	:

Sample brought in by	: *Contractor / Consultant / Laboratory	**Lab Sample No**	:
Date sample received	:	Lab Project No	:
Date of Test	:	Tested By	:

Test Data

Sample No.	Unit	①		
Nominal Diameter	mm	15.2		
Measured Diameter	mm	15.1		
Mass	g	730		
Length	m	0.999		
Mass per Meter	g/m	729		
Cross Section Area, (g/m) / 7.85	mm^2	92.87		
Difference Between Center Wire Diameter & Outer Wire Diameter (any outer wire)	mm	0.091		

Breaking Strength				
Min. breaking strength → (see ASTM A 416)	kN	240		
Initial Load (10% of →)	kN	24		
Breaking Load	kN	259.80		

Yield Strength				
Gage length ↓	mm	—		
Calculated 1% extension (1% of ↓)	mm	—		
Load at 1% extension	kN	—		

Elongation				
Initial Gauge Length	mm	720		
Final Gauge Length	mm	772		
Elongation at Maximum Load	%	7.22		
Extension at Max. Load	mm	37.5		

Ambient Room Temperature: - 23° °C

Steel Testing Machine Ref: MM-123 Vernier Calliper Ref: MM-079 Balance Ref: -MI-640 Steel Rule Ref: - MM-194

Thermometer Ref: - MM-224 Extensometer Ref:-

Test Specification/ Method: - ASTM A416/A416M-2017 / ASTM A 1061/A1061M-2020a$^{\varepsilon 1}$

Remarks: N.L

Method Variation:

Tested By ALS Checked By

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Section A: MCQs (20 Marks)

1. The primary purpose of testing prestressing strands is: A) Color identification B) Strength verification C) Length measurement D) Surface cleaning	**2. Breaking load refers to:** A) Load at first crack B) Maximum load before failure C) Load at 1% extension D) Minimum load applied
3. Yield load at 1% extension is defined as: A) Load at elastic limit B) Load causing 1% permanent elongation C) Load causing 1% total elongation D) Load at fracture	**4. Standard test method for strand testing is:** A) ASTM C39 B) ASTM D698 C) ASTM A1061 D) ASTM C143
5. Strand used in prestressed concrete is usually: A) Mild steel B) Carbon fiber C) High tensile steel D) Aluminum	**6. The number of wires in a standard strand is typically:** A) 3 B) 5 C) 7 D) 9
7. Gauge length is: A) Total strand length B) Length between grips C) Length used for elongation measurement D) Machine length	**8. Yield strength is determined from:** A) Visual inspection B) Load-extension curve C) Diameter measurement D) Density test
9. Minimum breaking strength is specified in: A) ASTM C31 B) ASTM A416 C) ASTM D1557 D) BS 1377	**10. Extension is measured using:** A) Thermometer B) Extensometer C) Balance D) Vernier
11. If failure occurs at grips: A) Accept result B) Reject test C) Ignore D) Average	**12. Strand diameter affects:** A) Color B) Strength C) Smell D) Shape
13. Yield load at 1% extension is also called: A) Elastic limit B) Proof load C) Breaking load D) Shear load	**14. Elongation is calculated as:** A) Load × area B) Change in length / original length C) Stress × strain D) Force / volume
15. Breaking strength depends on: A) Temperature only B) Material properties C) Color D) Length	**16. Test result is valid if:** A) Proper failure location B) Any failure C) Short length D) No extension

ELEMENT ENGINEERING LABORATORY

Lab Test Authorization Letter

Name	:- Ali Shujat
Designation	:- Lab Technician
Section	:- Steel Section
Test Method	:- BS 4449:2005+A3:2016, BSEN ISO 15630-1:2019, BSEN ISO 6892-1:2019, ASTM A416/ A416M-2017. ASTM A 1061/ A1061M-20aε1
Training Starting Date	:- June - 2026
Training Completion Date	:- June - 2026
Remarks	:- 24/06/26 Can Perform the Test Independently
Trainer	:- Mr. Vilas
Date	:- 24/06/26

Further to the satisfactory completion of training to carry out the above test you are here by authorized to carry out the same independently.

Prepared By:

Approved By: