Transportation Engineering Laboratory (TEL)

Department of Civil Engineering (CED)

UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Sand** (Fine Aggregate)
Project: Specific Pipe Factory for Manufacturing of RCC Pipes
M/s EDDCO Construction (Pvt.) Ltd. & ANEM Construction Services

Dear Sir,

It is with reference to your letter No. QCD/2385 dated 26-05-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	100	99.00	97.01	73.01	40.02	2.03	0.20

2. **Percentage of Silt and Clay (ASTM D-1140)** *Wet Sieving*

Silt and Clay (%)	0.30

3. **Fineness Modulus (ASTM C-142)**

Fineness Modulus (%)	1.89

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.53
Rodded Unit Weight (g/cm^3)	1.64

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Harrow Sand**
Project: Specific Pipe Factory for Manufacturing of RCC Pipes
M/s EDDCO Construction (Pvt.) Ltd. & ANEM Construction Services

Dear Sir,

It is with reference to your letter No. QCD/2384 dated 26-05-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	½"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	99.04	94.05	91.06	84.01	63.03	7.58	1.58	0.30

2. **Percentage of Silt and Clay (ASTM D-1140)** *Wet Sieving*

Silt and Clay (%)	0.30

3. **Fineness Modulus (ASTM C-142)**

Fineness Modulus (%)	2.59

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.66
Rodded Unit Weight (g/cm^3)	1.74

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Crush**
Project: Specific Pipe Factory for Manufacturing of RCC Pipes
M/s EDDCO Construction (Pvt.) Ltd. & ANEM Construction Services

Dear Sir,

It is with reference to your letter No. QCD/2387 dated 26-05-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.79
Specific Gravity (saturated surface dry condition)	2.81
Apparent Specific Gravity	2.84
Water Absorption (%)	0.59

2. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
$1/2" + 3/8"$	1003.9	993.4	1.05	0.83
	Total = 0.83%			

3. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
B	16.84

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Crush**
Project: Specific Pipe Factory for Manufacturing of RCC Pipes
M/s EDDCO Construction (Pvt.) Ltd. & ANEM Construction Services

Dear Sir,

It is with reference to your letter No. QCD/2388 dated 26-05-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.78
Specific Gravity (saturated surface dry condition)	2.80
Apparent Specific Gravity	2.83
Water Absorption (%)	0.63

2. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
#4	301.2	293.4	2.59	1.68
	Total = 1.68%			

3. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
C	18.50

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Coarse Aggregate**
Tender No. XEN (O&M-I) N.T/2024-2025/102 – Provision of Water Supply and Sewerage in Millat Tractors Employees Housing Society to Gujjar Colony Road, UC-241, Nishter Zone, Lahore
(M/s Zafar Ali Toor Construction Company)

Dear Sir,

It is with reference to your letter No. QCD/2763 dated 18-06-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 23-06-2025 through your representative.

1. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.80
Specific Gravity (saturated surface dry condition)	2.81
Apparent Specific Gravity	2.84
Water Absorption (%)	0.48

2. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
$1/2" + 3/8"$	1004.3	992.6	1.16	0.84
	Total = 0.84%			

3. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
B	16.45

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Adnan Yasir
Assistant Resident Engineer,
Package-III (PCP),
Jaranwala.

Subject: **Testing of Coarse Aggregate**
Upgradation of Sewerage System and Construction of Waste Water Treatment Plant (WWTP) Jaranwala City, Package 02 – Disposal Station

Dear Sir,

It is with reference to your letter No. MMP/1095/Jaranwala/DS/103/2025 dated 21-06-2025. Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.80
Specific Gravity (saturated surface dry condition)	2.81
Apparent Specific Gravity	2.85
Water Absorption (%)	0.65

2. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test. (gm)	Weight of Fraction After Test. (gm)	Percentage Passing Designated Sieve After Test.	Weighted Percentage Loss.
$^1/_2$" + $^3/_8$"	1003.2	990.9	1.23	1.00
	Total = 1.00%			

3. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
B	17.64

4. Flakiness & Elongation Index (BS 812: Part 105)

Sieve Size		Individual Flakiness Index (%)	Weighted Flakiness Index (%)	Individual Elongation Index (%)	Weighted Elongation Index (%)
Passing (in.)	Retained (in.)				
1	$^3/_4$	0	0	27.16	1.26
$^3/_4$	$^1/_2$	4.91	2.55	11.35	5.90
$^1/_2$	$^3/_8$	6.12	1.82	10.67	3.17
$^3/_8$	$^1/_4$	7.66	1.00	11.60	1.51
		Flakiness Index = 5.37%		**Elongation Index = 11.84%**	

5. Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)

Loose Unit Weight (g/cm^3)	1.57
Rodded Unit Weight (g/cm^3)	1.66

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Ghulam Rasool Domki
Resident Engineer,
NESPAK, Gujrat.

Subject: **Testing of Coarse Aggregate** (Source: Sargodha)
Project: Construction of Service More Flyover to Connect with Industrial Area-II Gujrat Link

Dear Sir,

It is with reference to your letter No. 4376/GF/GRD/11 dated 23-06-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	1”	¾”	½”	3/8”	#4
%age Passing	100	60.31	16.00	1.91	0.12

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.85
Specific Gravity (saturated surface dry condition)	2.86
Apparent Specific Gravity	2.87
Water Absorption (%)	0.30

3. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
$1/2$” + $3/8$”	1001.3	991.6	0.97	0.57
	Total = 0.57%			

4. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
B	14.55

5. Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)

Loose Unit Weight (g/cm^3)	1.55
Rodded Unit Weight (g/cm^3)	1.66

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Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Hamza Tariq
ARE,
NESPAK, Gujrat.

Subject: **Testing of Fine Aggregate** (Source: Lawrencepur)
Project: Construction of Service More Flyover to Connect with Industrial Area-II Gujrat Link

Dear Sir,

It is with reference to your letter No. 4376/GF/GRD/12 dated 23-06-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	½"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	98.79	95.51	89.98	79.37	63.27	26.93	5.36	1.05

2. **Fineness Modulus (ASTM C-142)**

Fineness Modulus (%)	2.43

3. **Specific Gravity & Water Absorption (ASTM C-128)**

Specific Gravity (OD)	2.68
Specific Gravity (SSD)	2.70
Apparent Specific Gravity	2.73
Water Absorption (%)	0.70

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.62
Rodded Unit Weight (g/cm^3)	1.73

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
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Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

The Sub Divisional Officer,
Highway Sub Division,
Shakargarh.

Subject: **Testing of Coarse Aggregate**
Restoration/Improvement of Shakargarh to Chak Amru Road (Length = 16.25 km) in District Narowal

Dear Sir,

It is with reference to your letter No. 57 dated 27-05-2025.
Please find below the results for the test conducted on the coarse aggregate sample provided to this laboratory on 01-07-2025 through your representative.

Los Angeles Abrasion Value Test (ASTM C-131/535)

Grading Used	Los Angeles Abrasion Value (%)
1	20.41

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Ishtiaq Ahmad
Resident Engineer,
NESPAK.

Subject: **Testing of Sub-base**
Project: Improvement of Water Supply/Sewerage System inUC-27 Shalimar Zone, Lahore

Dear Sir,

It is with reference to your letter No. NESPAK/LDP/LHR/ST/146-C dated 31-01-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 02-07-2025 through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	1 ½"	1"	¾"	½"	3/8"	#4
%age Passing	100	80.12	57.71	42.66	32.09	25.22

2. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
A	28.18

3. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test. (gm)	Weight of Fraction After Test. (gm)	Percentage Passing Designated Sieve After Test.	Weighted Percentage Loss.
1" + 3/4"	1504.3	1478.3	1.73	0.73
	Total = 0.73%			

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Coarse Aggregate**
Tender No. XEN (O&M-I) RT/2024-2025/84 – Provision of Water Supply and Sewerage in Main Saggian Road from Dagia Road in Abu Bakar Road, UC-01 Ravi Zone, Lahore (M/s Ch. Muhammad Jamil)

Dear Sir,
It is with reference to your letter No. QCD/2973 dated 02-07-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	¾”	½”	3/8”	#4
%age Passing	100	35.37	4.19	0.24

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.84
Specific Gravity (saturated surface dry condition)	2.85
Apparent Specific Gravity	2.87
Water Absorption (%)	0.34

3. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
$^1/_2$” + $^3/_8$”	1004.9	994.9	1.00	0.96
	Total = 0.96%			

4. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
B	17.52

5. Flakiness & Elongation Index (BS 812: Part 105)

Sieve Size		Individual Flakiness Index (%)	Weighted Flakiness Index (%)	Individual Elongation Index (%)	Weighted Elongation Index (%)
Passing (in.)	Retained (in.)				
$^3/_4$	$^1/_2$	7.32	4.73	11.21	7.25
$^1/_2$	$^3/_8$	6.36	1.98	8.88	2.77
$^3/_8$	$^1/_4$	11.95	0.47	16.14	0.64
		Flakiness Index = 7.18%		**Elongation Index = 10.66%**	

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Local Sand**
Tender No. XEN (O&M-I)/RT/2024-2025/84
Provision of Water Supply and Sewerage System in Main Saggian Road from Dagia Road in Abu Bakar Road UC-01 Ravi Zone, Lahore
(M/s Ch. Muhammad Jamil)

Dear Sir,

It is with reference to your letter No. QCD/2975 dated 02-07-2025.
Please find below the result for the test conducted on the aggregate sample provided to this laboratory through your representative.

Organic Impurities (ASTM C-40)

Organic Impurities	Nil

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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Transportation Engineering Laboratory (TEL)

Department of Civil Engineering (CED)

UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Coarse Aggregate**
Tender No. XEN (O&M-II) AWT/2024-2025/131/Provision of Trunk Sewer (BRB Canal to Madina Town Bus Stop)
M/s Saddaqat Builders Pvt. Ltd.

Dear Sir,

It is with reference to your letter No. QCD/2966 dated 02-07-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	¾”	½”	3/8”	#4
%age Passing	100	81.66	32.99	0.27

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.73
Specific Gravity (saturated surface dry condition)	2.80
Apparent Specific Gravity	2.83
Water Absorption (%)	0.60

3. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test. (gm)	Weight of Fraction After Test. (gm)	Percentage Passing Designated Sieve After Test.	Weighted Percentage Loss.
$1/2" + 3/8"$	1004.3	990.3	1.39	0.93
	Total = 0.93%			

4. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
B	20.08

5. Flakiness & Elongation Index (BS 812: Part 105)

Sieve Size		Individual Flakiness Index (%)	Weighted Flakiness Index (%)	Individual Elongation Index (%)	Weighted Elongation Index (%)
Passing (in.)	**Retained (in.)**				
$^3/_4$	$^1/_2$	3.49	0.64	7.40	1.36
$^1/_2$	$^3/_8$	6.42	3.12	9.50	4.62
$^3/_8$	$^1/_4$	6.86	2.24	10.04	3.28
		Flakiness Index = 6.00%		**Elongation Index = 9.26%**	

6. Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)

Loose Unit Weight (g/cm^3)	1.51
Rodded Unit Weight (g/cm^3)	1.63

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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Department of Civil Engineering (CED)

UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Kashif Sajjad Rao
Resident Engineer,
PAVRON.

Subject: **Testing of Granular Sub-base Sample**

Dear Sir,

It is with reference to your letter No. RE/PAVRON/ESSAN/05 dated 08-07-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.65
Specific Gravity (saturated surface dry condition)	2.68
Apparent Specific Gravity	2.72
Water Absorption (%)	0.94

2. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
A	28.48

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. M. Armughan Khan
Deputy Director (QCD),
WASA, Lahore.

Subject: **Testing of Coarse Aggregate**
Tender No. XEN (O&M-II) AWT/2024-2025/139/Provision of Trunk Sewer (Kingdom Arena Lahore to MJ Mughal Fabrication & Engineering)
M/s Al-Fazal Construction

Dear Sir,

It is with reference to your letter No. QCD/3015 dated 07-07-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	¾”	½”	3/8”	#4
%age Passing	100	37.03	8.55	0.16

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.81
Specific Gravity (saturated surface dry condition)	2.82
Apparent Specific Gravity	2.84
Water Absorption (%)	0.37

3. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test. (gm)	Weight of Fraction After Test. (gm)	Percentage Passing Designated Sieve After Test.	Weighted Percentage Loss.
$1/2" + 3/8"$	1002.4	992.4	1.00	0.91
	Total = 0.91%			

4. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
B	16.80

5. Flakiness & Elongation Index (BS 812: Part 105)

Sieve Size		Individual Flakiness Index (%)	Weighted Flakiness Index (%)	Individual Elongation Index (%)	Weighted Elongation Index (%)
Passing (in.)	**Retained (in.)**				
$^3/_4$	$^1/_2$	6.77	4.26	13.26	8.35
$^1/_2$	$^3/_8$	7.38	2.10	14.33	4.08
$^3/_8$	$^1/_4$	9.68	0.81	18.03	1.51
		Flakiness Index = 7.17%		**Elongation Index = 13.94%**	

6. Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)

Loose Unit Weight (g/cm^3)	1.44
Rodded Unit Weight (g/cm^3)	1.51

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Muhammad Shahbaz
Resident Engineer,
Dynamic Engineering Consultant.

Subject: **Testing of Coarse Aggregates**
Project: Construction of Girls Hostel at CUI Sahiwal Campus

Dear Sir,

It is with reference to your letter No. DEC/GH/CUI/SWL/008 dated 15-07-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory through your representative.

Sample # 1 (Taxila; ¾")

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	1"	¾"	½"	3/8"	#4
%age Passing	100	87.99	58.95	11.89	7.89

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.63
Specific Gravity (saturated surface dry condition)	2.65
Apparent Specific Gravity	2.69
Water Absorption (%)	0.87

3. **Flakiness & Elongation Index (BS 812: Part 105)**

Sieve Size		**Individual Flakiness Index (%)**	**Weighted Flakiness Index (%)**	**Individual Elongation Index (%)**	**Weighted Elongation Index (%)**
Passing (in.)	**Retained (in.)**				
1	$^3/_4$	13.11	1.71	16.39	2.14
$^3/_4$	$^1/_2$	11.64	3.67	14.57	4.59
$^1/_2$	$^3/_8$	10.78	5.51	13.15	6.72
$^3/_8$	$^1/_4$	15.59	0.68	29.63	1.29
		Flakiness Index = 11.57%		**Elongation Index = 14.74%**	

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.40
Rodded Unit Weight (g/cm^3)	1.49

<u>Sample # 2</u> (Sargodha; ¾")

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	1"	¾"	½"	3/8"	#4
%age Passing	100	95.00	34.96	5.94	2.94

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.81
Specific Gravity (saturated surface dry condition)	2.82
Apparent Specific Gravity	2.84
Water Absorption (%)	0.30

3. **Flakiness & Elongation Index (BS 812: Part 105)**

Sieve Size		**Individual Flakiness Index (%)**	**Weighted Flakiness Index (%)**	**Individual Elongation Index (%)**	**Weighted Elongation Index (%)**
Passing (in.)	**Retained (in.)**				
1	$^3/_4$	0	0	11.98	0.62
$^3/_4$	$^1/_2$	5.67	3.51	6.68	4.13
$^1/_2$	$^3/_8$	6.20	1.85	8.06	2.41
$^3/_8$	$^1/_4$	0	0	13.33	0.41
		Flakiness Index = 5.36%		**Elongation Index = 7.57%**	

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.51
Rodded Unit Weight (g/cm^3)	1.64

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Muhammad Shahbaz
Resident Engineer,
Dynamic Engineering Consultant.

Subject: **Testing of Coarse Aggregates**
Project: Construction of Girls Hostel at CUI Sahiwal Campus

Dear Sir,

It is with reference to your letter No. DEC/GH/CUI/SWL/009 dated 15-07-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory through your representative.

Sample # 1 (Taxila; ½")

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	65.00	35.00	12.00

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.62
Specific Gravity (saturated surface dry condition)	2.65
Apparent Specific Gravity	2.69
Water Absorption (%)	1.00

3. **Flakiness & Elongation Index (BS 812: Part 105)**

Sieve Size		**Individual Flakiness Index (%)**	**Weighted Flakiness Index (%)**	**Individual Elongation Index (%)**	**Weighted Elongation Index (%)**
Passing (in.)	**Retained (in.)**				
$^3/_4$	$^1/_2$	12.95	5.15	15.19	6.04
$^1/_2$	$^3/_8$	12.97	4.42	16.02	5.46
$^3/_8$	$^1/_4$	11.88	3.10	15.49	4.05
		Flakiness Index = 12.67%		**Elongation Index = 15.55%**	

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.39
Rodded Unit Weight (g/cm^3)	1.49

<u>Sample # 2</u> (Sargodha; ½")

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	45.00	20.00	5.00

2. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.79
Specific Gravity (saturated surface dry condition)	2.80
Apparent Specific Gravity	2.82
Water Absorption (%)	0.38

3. **Flakiness & Elongation Index (BS 812: Part 105)**

Sieve Size		**Individual Flakiness Index (%)**	**Weighted Flakiness Index (%)**	**Individual Elongation Index (%)**	**Weighted Elongation Index (%)**
Passing (in.)	**Retained (in.)**				
$^3/_4$	$^1/_2$	3.93	2.28	6.27	3.63
$^1/_2$	$^3/_8$	7.59	2.00	9.75	2.57
$^3/_8$	$^1/_4$	5.41	0.85	9.10	1.44
		Flakiness Index = 5.13%		**Elongation Index = 7.64%**	

4. **Unit Weight *(Loose & Rodded)*; (ASTM C 29/C 29M)**

Loose Unit Weight (g/cm^3)	1.50
Rodded Unit Weight (g/cm^3)	1.63

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Engr. Asmat Ullah Siyal
CRE/The Engineer,
Indus Associated Consultants (JV),
Mianwali.

Subject: **Testing of Aggregate for Asphalt Work**
Project: Contract No. RH-N-135-21-22/08 for Rehabilitation/Improvement of Mianwali Muzaffargarh Road (N-135) from km 160+000 to km 200+000 o N-135 (Mianwali Source Al-Fatheh Crush Plant)

Dear Sir,

It is with reference to your letter No. CRE/IAC/2025/1570 dated 18-07-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 29-07-2025 through your representative.

1. **Specific Gravity & Water Absorption (ASTM C-127)**

Specific Gravity (oven dried condition)	2.65
Specific Gravity (saturated surface dry condition)	2.68
Apparent Specific Gravity	2.71
Water Absorption (%)	0.78

2. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
1" + ¾"	1503.4	1484.4	1.26	0.76
	Total = 0.76%			

3. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
A	24.33

4. Flakiness & Elongation Index (BS 812: Part 105)

Sieve Size		Individual Flakiness Index (%)	Weighted Flakiness Index (%)	Individual Elongation Index (%)	Weighted Elongation Index (%)
Passing (in.)	Retained (in.)				
2	1 ½	0	0	11.38	0.75
1 ½	1	8.72	2.42	11.46	3.18
1	¾	6.69	2.19	8.35	2.73
¾	½	7.58	1.22	8.91	1.44
½	3/8	7.93	0.77	9.08	0.89
3/8	¼	6.85	0.48	8.38	0.59
		Flakiness Index = 7.08%		**Elongation Index = 9.58%**	

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Engr. Asmat Ullah Siyal
CRE/The Engineer,
Indus Associated Consultants (JV), Mianwali.

Subject: **Testing of Water Bound Macadam**
Project: Contract No. RH-N-135-21-22/08 for Rehabilitation/Improvement of Mianwali Muzaffargarh Road (N-135) from km 160+000 to km 200+000 o N-135 (Tunsa Sharif Source Koh-e-Noor Crush Plant)

Dear Sir,

It is with reference to your letter No. CRE/IAC/2025/1574 dated 25-07-2025.
Please find below the results for the tests conducted on the WBM sample provided to this laboratory on 29-07-2025 through your representative.

1. **Sodium Sulphate Soundness (ASTM C-88)**

Sieve Size	Weight of Fraction Before Test (gm)	Weight of Fraction After Test (gm)	Percentage Passing Designated Sieve After Test	Weighted Percentage Loss
2" + 1 ½"	5004.9	4980.0	0.50	0.34
	Total = 0.34%			

2. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	Los Angeles Abrasion Value (%)
1	23.22

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

The Deputy Director,
Punjab Housing & Town Planning Agency,
Sub Region, Jhelum.

Subject: **Testing of Construction Materials** (Coarse and Fine Aggregates)
Rehabilitation of ADS-IV, Jhelum

Dear Sir,

It is with reference to your letter No. 244 dated 29-07-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory through your representative.

Sample # 1 (Coarse Aggregate)

Sieve Analysis (ASTM C-136)

Sieve Size	1”	¾”	½”	3/8”	#4
%age Passing	100	98.08	57.71	17.41	0.31

Sample # 2 (Coarse Aggregate)

Sieve Analysis (ASTM C-136)

Sieve Size	1”	¾”	½”	3/8”	#4
%age Passing	100	18.72	0.43	0	0

Mixed Sample

Los Angeles Abrasion Value Test (ASTM C-131/535)

Grading Used	**Los Angeles Abrasion Value (%)**
B	16.12

Fine Aggregate (Sand)

Sieve Analysis (ASTM C-136)

Sieve Size	3/8”	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	99.61	98.59	97.45	95.86	78.87	10.03	1.97

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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Department of Civil Engineering (CED)

UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Syed Mubashir Hassan Naqvi
Resident Engineer,
NESPAK,
Ravi Zone.

Subject: **Testing of Granular Sub-base Material**
Rehabilitation/Improvement of Street Pavement, Sewerage/Drainage, Chatha Park, Kot Shahabdin, Hameed Park, Shahdara, UC 06 & 07, Ravi Zone MCL

Dear Sir,

It is with reference to your letter No. 4084/103/LDP/Ravi/04/678 dated 06-08-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	83.18	63.90	49.84	42.07	36.15

2. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
A	28.18

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

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Department of Civil Engineering (CED)

UNIVERSITY OF ENGINEERING & TECHNOLOGY (UET)

LAHORE – 54890 (PAKISTAN)

Phone: 092-42-9929202 Cable: UNIVENGTECH Fax: 092-42-9922566

Ref.---------- Date:----------

Mr. Tanvir Naqvi
Resident Engineer,
NESPAK.

Subject: **Testing of Granular Sub-base Material**
Scheme No. 13 Rehabilitation/Improvement of Streets (P.C.C), Sewerage/Drainage
UC 193(B) Aziz Bhatti Zone, MCL

Dear Sir,

It is with reference to your letter No. 4084/103/LDP/AZB(S-13)/04/07 dated 04-08-2025. Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 11-08-2025 through your representative.

1. **Sieve Analysis (ASTM C-136)**

Sieve Size	1 ½"	1"	¾"	½"	3/8"	#4
%age Passing	100	78.94	54.89	38.44	28.71	21.73

2. **Los Angeles Abrasion Value Test (ASTM C-131/535)**

Grading Used	**Los Angeles Abrasion Value (%)**
A	29.49

If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
Transportation Engineering Laboratory

Note:
1. This test report is based solely on the particular sample(s) supplied by the client and should not be reproduced in parts.
2. Sampling has not been performed by Transportation Engineering Laboratory (TEL), UET and TEL-UET does not accept the responsibility that the sample(s) supplied is/are truly representative sample(s) of any batch or stock or entire project.
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