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:----------

Dr. Mansoor Ahmad Hashmi
Project Manager/Team Leader,
NESPAK,
Lahore.

Subject: **Testing of Coarse Aggregates**
Installation of Telemetry System for Real Time Discharge Monitoring at 27 Key Sites on Indus Basin Irrigation System (IBIS)
Contract No. IBIS-PSDP (1170)/ICB-01

Dear Sir,

It is with reference to your letter No. 4641/061/MAH/01/325 dated 15-01-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory through your representative.

Sample No. 1 (Mohsin Khosa Crusher Taunsa)

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

Sieve Size	3”	2 ½”	2”	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	95.91	72.62	64.29	55.30	34.78	31.88	27.50	2.35

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

Specific Gravity (oven dried condition)	2.60
Specific Gravity (saturated surface dry condition)	2.62
Apparent Specific Gravity	2.65
Water Absorption (%)	0.88

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”	1503.4	1486.9	1.10	0.33
	Total = 0.33%			

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

Grading Used	Los Angeles Abrasion Value (%)
A	23.40

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	2 ½	0	0	0	0
2 ½	2	6.95	1.66	7.66	1.83
2	1 ½	41.76	3.56	31.24	2.67
1 ½	1	8.51	0.78	44.32	4.08
1	3/4	8.70	1.83	7.84	1.65
3/4	1/2	2.72	0.08	38.02	1.13
1/2	3/8	1.33	0.06	17.73	0.80
3/8	1/4	2.38	0.61	10.41	2.68
		Flakiness Index = 8.58%		**Elongation Index = 14.84%**	

<u>Sample No. 2</u> (Subhan Crusher Taunsa)

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

Sieve Size	3”	2 ½”	2”	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	90.25	62.59	46.39	15.78	6.98	0	0	0

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

Specific Gravity (oven dried condition)	2.60
Specific Gravity (saturated surface dry condition)	2.62
Apparent Specific Gravity	2.64
Water Absorption (%)	0.82

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”	1501.3	1485.1	1.08	0.43
	Total = 0.43%			

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

Grading Used	Los Angeles Abrasion Value (%)
A	22.88

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	2 ½	0	0	0	0
2 ½	2	8.88	2.46	8.88	2.46
2	1 ½	46.37	7.51	40.44	6.55
1 ½	1	6.58	2.02	41.01	12.55
1	$^{3}/_{4}$	8.44	0.74	7.47	0.66
$^{3}/_{4}$	$^{1}/_{2}$	1.00	0.07	54.28	3.79
		Flakiness Index = 12.80%		**Elongation Index = 26.01%**	

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:----------

The Executive Officer,
Faizan Stone Supplier.

Subject: **Testing of Coarse Aggregate**

Dear Sir,

It is with reference to your letter No. Nil dated 01-02-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 14-02-2025 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	2.83
Water Absorption (%)	0.38

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.
$1/2" + 3/8"$	1008.3	999.1	0.91	0.77
	Total = 0.77%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	16.01

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	16.27	1.02
$^3/_4$	$^1/_2$	11.41	5.93	13.63	7.09
$^1/_2$	$^3/_8$	8.30	2.73	9.54	3.14
$^3/_8$	$^1/_4$	15.36	1.36	13.61	1.20
		Flakiness Index = 10.02%		**Elongation Index = 12.45%**	

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:----------

The Executive Officer,
Hayat Ullah Stone Supplier.

Subject: **Testing of Coarse Aggregate**

Dear Sir,

It is with reference to your letter No. Nil dated 01-02-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 14-02-2025 through your representative.

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

Specific Gravity (oven dried condition)	2.72
Specific Gravity (saturated surface dry condition)	2.73
Apparent Specific Gravity	2.74
Water Absorption (%)	0.29

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.
$1/2" + 3/8"$	1002.4	994.6	0.78	0.62
	Total = 0.62%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	16.50

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	$^3/_4$	8.41	0.71	16.31	1.38
$^3/_4$	$^1/_2$	10.41	5.26	12.74	6.44
$^1/_2$	$^3/_8$	6.74	1.96	10.02	2.92
$^3/_8$	$^1/_4$	5.97	0.71	6.99	0.83
		Flakiness Index = 8.64%		**Elongation Index = 11.57%**	

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 Zain-Ul-Abadeen
Resident Engineer,
NESPAK, Lahore.

Subject: **Testing of Bedding Material of Sewer Pipe**
Tender No. XEN(O&M-I) NT/2024-25/84
Improvement of Water Supply/Sewerage System in UC-236,
Nishter Zone, Lahore

Dear Sir,

It is with reference to your letter No. 43101/MZA/01/1048 dated 03-01-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 18-02-2025 through your representative.

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

Sieve Size	1 ½"	1"	¾"	½"	3/8"	#4
%age Passing	100	30.59	5.37	0.71	0.14	0

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

Specific Gravity (oven dried condition)	2.70
Specific Gravity (saturated surface dry condition)	2.73
Apparent Specific Gravity	2.78
Water Absorption (%)	1.12

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" + ¾"	1504.4	1490.0	0.96	0.91
	Total = 0.91%			

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

Grading Used	**Los Angeles Abrasion Value (%)**
A	23.56

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.)				
1 ½	1	11.52	7.99	13.77	9.56
1	¾	14.92	3.76	19.65	4.96
¾	½	16.83	0.79	20.19	0.94
½	3/8	11.08	0.06	31.02	0.18
3/8	¼	0	0	21.98	0.03
		Flakiness Index = 12.60%		**Elongation Index = 15.67%**	

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 Zain-Ul-Abadeen
Resident Engineer,
NESPAK, Lahore.

Subject: **Testing of Fine Aggregate (Ravi Sand)**
Tender No. XEN(O&M-I) NT/2024-25/84
Improvement of Water Supply/Sewerage System in UC-236, Nishter Zone, Lahore

Dear Sir,

It is with reference to your letter No. 43101/MZA/01/1049 dated 03-01-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 18-02-2025 through your representative.

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

Sieve Size	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	99.42	98.38	97.23	96.19	5.25	0.77

2. **Percentage of Fines (ASTM D-1140) *Wet Sieving***

Silt and Clay (%)	2.25

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

Fineness Modulus (%)	1.04

4. **Organic Impurities (ASTM C-40)**

Organic Impurities	Nil

5. **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
#30 to #50	100.0	98.2	1.80	0.06
				Total = 0.06%

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

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Director
Transportation Engineering Laboratory

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

The Sub Divisional Officer,
Headworks Sub Division,
Suliemanki.

Subject: **Testing of Coarse Aggregate**
Reconstruction of Residences and Allied Structures in Canal Colony, Suliemanki Barrage

Dear Sir,

It is with reference to your letter No. 70-72 dated 08-02-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 18-02-2025 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	2.82
Water Absorption (%)	0.51

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.
$1/2$" + $3/8$"	1002.1	990.0	1.21	0.96
	Total = 0.96%			

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

Grading Used	**Los Angeles Abrasion Value (%)**
B	19.46

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. Abid Azim
Resident Engineer, NESPAK,
Ravi Zone.

Subject: **Testing of Granular Sub-base Material**
Rehabilitation/Improvement of Street Pavement, Sewerage/Drainage
UC 36, 37, 38 & 39 Ravi Zone MCL

Dear Sir,

It is with reference to your letter No. 4084/103/LDP/Ravi/04/172 dated 14-02-2025. Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 05-03-2025 through your representative.

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

Sieve Size	2”	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	97.72	79.28	61.63	47.04	38.25	31.55

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

Grading Used	**Los Angeles Abrasion Value (%)**
A	27.16

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

Best Regards,

Director
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