

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. Athar Hashmi
Resident Engineer,
NESPAK,
Burewala, District Vehari.

Subject: **Bitumen Quality Tests**
Project: Additional Carriageway (Dehli-Multan Road) from Pull 114/10-R to Pir Murad Morr, Length = 49.60 km, District Vehari

Dear Sir,

It is with reference to your letter No. NESPAK/RE/VEHARI/101 dated 23-05-2025. Please find below the results of tests conducted on the bitumen sample provided to this laboratory on 10-07-2025 through your representative.

Sr.#	Laboratory Tests	Results
1	Penetration (ASTM D-5)	67 Units
2	Ductility (ASTM D-113)	Above 100 cm
3	Softening Point (ASTM D-36)	48.9°C
4	Flash Point (ASTM D-92)	295°C
5	Fire Point (ASTM D-92)	325°C
6	Solubility (ASTM D-2042)	99.80%
7	Specific Gravity Value (ASTM D-70)	1.021
8	Loss on Heating Value (ASTM D-6)	0.231%

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

Best Regards,

Director
Transportation Engineering Laboratory

Note:

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Ref.:-----

Date:-----

Mr. Athar Hashmi
Resident Engineer,
NESPAK, Burewala, District Vehari.

Subject: **Quality Tests on Aggregates**
Project: Additional Carriageway (Dehli-Multan Road) from Pull 114/10-R to Pir Murad Morr, Length = 49.60 km, District Vehari

Dear Sir,

It is with reference to your letter No. NESPAK/RE/VEHARI/93 dated 23-05-2025.
Please find below the results of tests conducted on the aggregate samples provided to this laboratory on 10-07-2025 through your representative.

Sub-base

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
1" + 3/4"	1501.4	1479.3	1.47	0.50
Total = 0.50%				

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

Grading Used	Los Angeles Abrasion Value (%)
A	27.39

Base (WBM)

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 1/2"	5009.3	4992.4	0.34	0.27
Total = 0.27%				

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

Grading Used	Los Angeles Abrasion Value (%)
1	20.21

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)/J.T/2024-2025/334/Replacement of Outlived Trunk Sewer from Shouq Chowk to Shaukat Khanum at Main Khayaban-e-Firdousi Johar Town, Lahore
M/s EDDCO-ANEM Joint Venture

Dear Sir,

It is with reference to your letter No. QCD/3044 dated 14-07-2025.

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	1"	3/4"	1/2"	3/8"	#4
%age Passing	100	96.46	34.49	8.08	0.13

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

Specific Gravity (oven dried condition)	2.83
Specific Gravity (saturated surface dry condition)	2.84
Apparent Specific Gravity	2.86
Water Absorption (%)	0.35

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	993.5	0.89	0.79
	Total = 0.79%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	16.00

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:-----

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

Subject: **Testing of Fine Aggregate**

Tender No. XEN (O&M-I)/J.T/2024-2025/334/Replacement of Outlived Trunk Sewer from Shouq Chowk to Shaukat Khanum at Main Khayaban-e-Firdousi Johar Town, Lahore
M/s EDDCO-ANEM Joint Venture

Dear Sir,

It is with reference to your letter No. QCD/3043 dated 14-07-2025.

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	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	98.95	95.41	90.14	79.55	63.01	26.51	5.40	1.08

2. Fineness Modulus (ASTM C-142)

Fineness Modulus (%)	2.41
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3. Specific Gravity & Water Absorption (ASTM C-128)

Specific Gravity (OD)	2.67
Specific Gravity (SSD)	2.69
Apparent Specific Gravity	2.73
Water Absorption (%)	0.86

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

Best Regards,

Director
Transportation Engineering Laboratory

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Ref:-----

Date:-----

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

Subject: **Testing of Coarse Aggregate**

Tender No. XEN (O&M-II) AWT/2024-2025/141/Provision of Trunk Sewer
(Lahore Lyceum School Manawan Campus to Zoom Petrol Pump Jhuggian))
M/s Naveed Construction (Private) Limited

Dear Sir,

It is with reference to your letter No. QCD/3010 dated 07-07-2025.

Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 15-07-2025 through your representative.

1. Sieve Analysis (ASTM C-136)

Sieve Size	1"	3/4"	1/2"	3/8"	#4
%age Passing	100	96.25	36.99	7.76	0.20

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"	1001.4	990.3	1.11	0.98
	Total = 0.98%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	16.44

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	3/4	0	0	16.17	0.61
3/4	1/2	7.01	4.15	11.93	7.07
1/2	3/8	6.36	1.86	12.41	3.63
3/8	1/4	7.86	0.59	15.73	1.19
Flakiness Index = 6.60%			Elongation Index = 12.50%		

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

Loose Unit Weight (g/cm ³)	1.43
Rodded Unit Weight (g/cm ³)	1.52

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. Kashif Shahzad
Manager - Technical,
Gharibwal Cement Limited.

Subject: **Testing of Coarse Aggregates**
Sample ID: M/s New Mughal Crusher Market-116

Dear Sir,

It is with reference to your letter No. GCL/Purchase/UET/010 dated 15-08-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory on 18-08-2025 through your representative.

Sample # 1 (¾")

Sieve Analysis (ASTM C-136)

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	39.15	0.82	0

Sample # 2 (½")

Sieve Analysis (ASTM C-136)

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	96.84	27.08	1.44

Mixed Sample

1. 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	2.86
Water Absorption (%)	0.27

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"	1001.9	991.0	1.09	0.97
	Total = 0.97%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	15.95

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.)				
3/4	1/2	4.13	0.13	9.06	0.29
1/2	3/8	6.48	4.52	7.11	4.96
3/8	1/4	4.97	1.27	9.78	2.51
Flakiness Index = 5.92%			Elongation Index = 7.76%		

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

Loose Unit Weight (g/cm ³)	1.46
Rodded Unit Weight (g/cm ³)	1.53

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

Best Regards,

Director
Transportation Engineering Laboratory

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Ref.:-----

Date:-----

Mr. Kashif Shahzad
Manager - Technical,
Gharibwal Cement Limited.

Subject: **Testing of Coarse Aggregates**
Sample ID: M/s Shaheen Stone Crusher Market 123

Dear Sir,

It is with reference to your letter No. GCL/Purchase/UET/011 dated 15-08-2025.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory on 18-08-2025 through your representative.

Sample # 1 (¾")

Sieve Analysis (ASTM C-136)

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	38.23	0.74	0

Sample # 2 (½")

Sieve Analysis (ASTM C-136)

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	97.59	25.44	1.75

Mixed Sample

1. 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 (%)	0.27

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"	1003.4	993.8	0.96	0.86
	Total = 0.86%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	15.19

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.)				
3/4	1/2	2.48	0.06	7.01	0.17
1/2	3/8	5.16	3.72	8.31	6.00
3/8	1/4	11.02	2.61	14.42	3.42
Flakiness Index = 6.39%			Elongation Index = 9.59%		

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

Loose Unit Weight (g/cm ³)	1.47
Rodded Unit Weight (g/cm ³)	1.54

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

Ref.-----

Date:-----

Mr. Jawad Qayyum Khan
Resident Engineer,
NESPAK,
Sargodha.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**
Restoration/Improvement of Road from Harnoli to Musa Khel via Wanbachran,
Length= 49.13 km, District Mianwali (Reach from Harnoli km 0.00 to Wanbachran
km No. 24.00 km) Length = 24.00 km

Dear Sir,

It is with reference to your letter No. RE/4834/JQK/25/8093 dated 23-06-2025.
Please find below the results of tests conducted on the bitumen sample provided to this
laboratory on 14-07-2025 through your representative.

Sr.#	Laboratory Tests	Results
1	Penetration (ASTM D-5)	107 Units
2	Ductility (ASTM D-113)	Above 100 cm
3	Softening Point (ASTM D-36)	44.8°C
4	Flash Point (ASTM D-92)	290°C
5	Solubility (ASTM D-2042)	99.80%
6	Specific Gravity Value (ASTM D-70)	1.021
7	Thin Film Oven Test Value (ASTM D-1754)	0.291%
8	Loss on Heating Value (ASTM D-6)	0.235%

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Director
Transportation Engineering Laboratory

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