

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. Rashid Kamran
Resident Engineer,
NESPAK,
Lahore.

Subject: **Testing of Coarse and Fine Aggregates**
Construction of Electric Bus Depot at Green Town, Lahore
Source: Sargodha Aggregate and Lawrencepur Sand

Dear Sir,

It is with reference to your letter No. 4792/13/RK/05/11 dated 19-12-2024.
Please find below the results for the tests conducted on the aggregate samples provided to this laboratory on 06-01-2025 through your representative.

Coarse Aggregate

1. Sieve Analysis (ASTM C-136)

Sieve Size	1"	3/4"	1/2"	3/8"	#4
%age Passing	100	88.06	36.27	11.22	0

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	993.1	0.93	0.72
	Total = 0.72%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	15.80

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	8.94	1.07	14.26	1.70
3/4	1/2	9.31	4.82	12.47	6.46
1/2	3/8	8.35	2.09	12.99	3.25
3/8	1/4	6.51	0.73	18.02	2.02
Flakiness Index = 8.71%			Elongation Index = 13.43%		

5. Clay Lumps and Friable Particles (ASTM C-142)

Clay Lumps and Friable Particles (%)	0.52
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Fine Aggregate

1. Sieve Analysis (ASTM C-136)

Sieve Size	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	98.99	95.68	90.35	79.69	63.34	26.83	5.39	1.03

2. Fineness Modulus (ASTM C-142)

Fineness Modulus (%)	2.40
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3. Clay Lumps and Friable Particles (ASTM C-142)

Clay Lumps and Friable Particles (%)	0.74
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4. 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 to #8	100	98.8	1.20	0.06
#8 to #16	100	98.1	1.90	0.20
#16 to #30	100	98.7	1.30	0.21
#30 to #50	100	98.7	1.30	0.48
Total = 0.95%				

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. Mohammad Iqbal
Project Manager,
BARQAAB Consulting Services (Pvt.) Limited.

Subject: **Testing of Coarse and Fine Aggregates**

Project: ADB-300C-R-2020: Design, Manufacturing, Supply, Installation, Testing and Commissioning of 220 kV Jauharabad Grid Station

Dear Sir,

It is with reference to your letter No. BQB/220kV/GS/JHR/292 dated 28-02-2025.

Please find below the results for the tests conducted on the aggregate samples provided to this laboratory on 04-03-2025 through your representative.

Coarse Aggregate

Specific Gravity & Water Absorption (ASTM C-127)

Specific Gravity (oven dried condition)	2.62
Specific Gravity (saturated surface dry condition)	2.64
Apparent Specific Gravity	2.69
Water Absorption (%)	1.00

Fine Aggregate

Specific Gravity & Water Absorption (ASTM C-128)

Specific Gravity (OD)	2.57
Specific Gravity (SSD)	2.61
Apparent Specific Gravity	2.67
Water Absorption (%)	1.58

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Ref.:-----

Date:-----

Engr. Muhammad Farooq Memon
Resident Engineer,
Metroplan-Asian JV, Site Office,
NSIC - Sargodha.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**
Project: Establishment of Nawaz Sharif Institute of Cardiology, Sargodha
Source: NRL

Dear Sir,

It is with reference to your letter No. Metroplan-Asian-JV/IDAP-NSIC-LAB/MB-SGD-RE/217 dated 03-03-2025.

Please find below the results of tests conducted on the bitumen sample provided to this laboratory through your representative.

Sr.#	Laboratory Tests	Results
1	Penetration (ASTM D-5)	69 Units
2	Penetration of Residue (ASTM D-5)	61 Units
3	Ductility (ASTM D-113)	Above 100 cm
4	Ductility of Residue (ASTM D-113)	Above 100 cm
5	Softening Point (ASTM D-36)	49.0°C
6	Flash Point (ASTM D-92)	290°C
7	Fire Point (ASTM D-92)	321°C
8	Solubility (ASTM D-2042)	99.80%
9	Specific Gravity Value (ASTM D-70)	1.021
10	Loss on Heating Value (ASTM D-6)	0.274%

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

Best Regards,

Director
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Ref.:-----

Date:-----

The Sub Divisional Officer,
Highway Sub Division,
Bhera.

Subject: **Testing of Bituminous Asphaltic Cores (AWC)**
Special Repair of Road from Bhera Malikwal Road at Awanwala to
Huzarpur via Chak Sab Khan, Length = 9.00 km in District Sargodha

Dear Sir,

It is with reference to your letter No. 71Bhr dated 07-03-2025.

Please find below the results for the tests conducted on the three cores of asphalt wearing course provided to this laboratory on 19-03-2025 through your representative.

BULK SPECIFIC GRAVITY OF COMPACTED ASPHALT (ASTM D2726):

Core #	Mean Thickness (cm)	Mean Diameter (cm)	Bulk Specific Gravity
11	7.710	10.000	2.215
12	8.520	10.000	2.258
23	5.883	10.000	2.245

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

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Date:-----

Mr. Karar Abbas
Sr. Assistant Manager,
Department of Procurement,
Pioneer Cement.

Subject: **Testing of Coarse and Fine Aggregates**

Dear Sir,

It is with reference to your letter No. PCL/PL04/UET/S&C/1151 dated 19-03-2025.

Please find below the results for the tests conducted on the aggregate samples provided to this laboratory through your representative.

Coarse Aggregate

1. Sieve Analysis (ASTM C-136)

Sieve Size	¾"	½"	3/8"	#4
%age Passing	100	83.73	32.55	7.39

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

Specific Gravity (oven dried condition)	2.86
Specific Gravity (saturated surface dry condition)	2.87
Apparent Specific Gravity	2.89
Water Absorption (%)	0.31

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	994.5	0.79	0.60
	Total = 0.60%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	15.50

Fine Aggregate

1. Sieve Analysis (ASTM C-136)

Sieve Size	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	91.18	82.74	67.63	51.56	37.28	17.46	3.71	1.73

2. Fineness Modulus (ASTM C-142)

Fineness Modulus (%)	3.48
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3. Specific Gravity & Water Absorption (ASTM C-128)

Specific Gravity (OD)	2.69
Specific Gravity (SSD)	2.71
Apparent Specific Gravity	2.75
Water Absorption (%)	0.83

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

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The Resident Engineer,
ESS-I-AAR Consultants,
Sargodha.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**
Rehabilitation of Lillah Kandwal-Katha Saghrat Tehsil P. D Khan (Phase-II)
District Jhelum & Khushab, Length = 20.53 km in District Khushab

Dear Sir,

It is with reference to your letter No. 517 dated 02-03-2025.

Please find below the results of tests conducted on the bitumen sample provided to this laboratory on 27-03-2025 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)	49.1°C
4	Flash Point (ASTM D-92)	298°C
5	Fire Point (ASTM D-92)	336°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)	0.238%

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

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