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:----------

The Assistant Director (QCD),
WASA,
LDA,
Lahore.

Subject: **Testing of Crush**
M/s RMC RCC Pipe Factory

Dear Sir,

It is with reference to your letter No. QCD/1084 dated 17-03-2025.
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	2.83
Water Absorption (%)	0.41

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	988.4	1.40	1.29
	Total = 1.29%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	16.55

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:----------

The Assistant Director (QCD),
WASA, LDA,
Lahore.

Subject: **Testing of (Harrow) Sand**
M/s RMC RCC Pipe Factory

Dear Sir,

It is with reference to your letter No. QCD/1092 dated 17-03-2025.
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	98.90	96.00	90.90	80.20	64.00	26.60	4.80	0.90

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

Material Finer than #200 Sieve (%)	1.32

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

Fineness Modulus (%)	2.39

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

Specific Gravity (OD)	2.65
Specific Gravity (SSD)	2.67
Apparent Specific Gravity	2.71
Water Absorption (%)	0.80

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 Assistant Director (QCD),
WASA, LDA,
Lahore.

Subject: **Testing of Fine Aggregate (Sand)**
M/s RMC RCC Pipe Factory

Dear Sir,

It is with reference to your letter No. QCD/1090 dated 17-03-2025.
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	99.70	99.30	98.74	97.93	82.69	11.61	2.00

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

Material Finer than #200 Sieve (%)	2.55

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

Fineness Modulus (%)	1.12

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

Specific Gravity (OD)	2.63
Specific Gravity (SSD)	2.65
Apparent Specific Gravity	2.68
Water Absorption (%)	0.70

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:----------

Mr. Muhammad Khalid Zaman
Resident Engineer,
ECSP.

Subject: **Testing of Base Course Material**
Model Cattle Market Shahpur Kanjra, Lahore

Dear Sir,

It is with reference to your letter No. ECSP/MCML/88 dated 11-03-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 24-03-2025 through your representative.

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

Sieve Size	3”	2 ½”	2”	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	85.31	23.19	0.51	0	0	0	0	0

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

Grading Used	**Los Angeles Abrasion Value (%)**
1	20.17

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	2 ½	5.15	0.76	0	0
2 ½	2	5.25	3.26	12.39	7.70
2	1 ½	6.45	1.46	11.31	2.57
1 ½	1	0	0	17.42	0.09
		Flakiness Index = 5.48%		**Elongation Index = 10.36%**	

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. Muhammad Khalid Zaman
Resident Engineer,
ECSP.

Subject: **Testing of Sub-base Course Material**
Model Cattle Market Shahpur Kanjra, Lahore

Dear Sir,

It is with reference to your letter No. ECSP/MCML/87 dated 11-03-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 24-03-2025 through your representative.

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

Sieve Size	2”	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	98.74	79.38	58.01	42.84	34.45	28.06

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

Grading Used	**Los Angeles Abrasion Value (%)**
A	28.21

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.)**				
2	1 ½	0	0	0	0
1 ½	1	11.68	3.14	25.14	6.77
1	$^{3}/_{4}$	16.84	5.00	20.16	5.99
$^{3}/_{4}$	$^{1}/_{2}$	12.27	2.59	19.78	4.17
$^{1}/_{2}$	$^{3}/_{8}$	18.65	2.17	25.83	3.01
$^{3}/_{8}$	$^{1}/_{4}$	6.83	0.61	10.57	0.94
		Flakiness Index = 13.51%		**Elongation Index = 20.88%**	

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 Resident Engineer,
Metroplan-Asian JV,
NSICTR, Phase-1, Pkg (B&C).

Subject: **Testing of Coarse and Fine Aggregates**
Project: Establishment of Nawaz Sharif Institute of Cancer Treatment & Research, Lahore Phase-1 (Package-B)

Dear Sir,

It is with reference to your letter No. Metroplan-Asian(JV)/NSICTR/RE-B&C/B/246 dated 29-04-2025. Please find below the results for the tests conducted on the aggregate samples provided to this laboratory on 30-04-2025 through your representative.

Coarse Aggregate

1. **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 (%)	0.36

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	992.2	1.02	0.74
	Total = 0.74%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	16.20

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

Clay Lumps and Friable Particles (%)	0.34

Fine Aggregate (Lawrencepur Sand)

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

Sieve Size	½"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	98.99	96.00	91.13	80.33	64.10	27.09	5.48	1.10

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

Fineness Modulus (%)	2.37

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
#4 to #8	100	98.4	1.60	0.08
#8 to #16	100	98.6	1.40	0.15
#16 to #30	100	98.7	1.30	0.21
#30 to #50	100	98.8	1.20	0.45
			Total = 0.89%	

4. **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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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:----------

Engr. Riaz Ahmad
Resident Engineer (A & D),
Metroplan-Asian Consulting Engineers,
NSICTR Project, Lahore.

Subject: **Testing of Coarse Aggregate** (Source: Sargodha)
Establishment of Nawaz Sharif Institute of Cancer Treatment & Research, Lahore
Phase-1 (Package A & D)

Dear Sir,

It is with reference to your letter No. Metroplan-Asian (JV), NSICTR-RE(A&D)/148 dated 29-04-2025. Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 30-04-2025 through your representative.

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

Sieve Size	1”	¾”	½”	3/8”	#4
%age Passing	100	70.79	10.44	0.89	0.19

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	2.86
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
$^1/_2$” + $^3/_8$”	1001.7	992.8	0.89	0.62
	Total = 0.62%			

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

Grading Used	**Los Angeles Abrasion Value (%)**
B	15.49

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	0	0
$^3/_4$	$^1/_2$	6.25	3.77	7.79	4.70
$^1/_2$	$^3/_8$	5.96	0.57	8.26	0.79
$^3/_8$	$^1/_4$	0	0	18.39	0.13
		Flakiness Index = 4.34%		**Elongation Index = 5.62%**	

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

Clay Lumps and Friable Particles (%)	0.22

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

Loose Unit Weight (g/cm^3)	1.49
Rodded Unit Weight (g/cm^3)	1.61

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 Resident Engineer,
Metroplan-Asian JV,
NSICTR, Phase-1, Pkg (B&C).

Subject: **Testing of Coarse Aggregates**
Project: Establishment of Nawaz Sharif Institute of Cancer Treatment and Research, Lahore Phase-1 (Package B)

Dear Sir,

It is with reference to your letter No. Metroplan-Asian (JV),NSICTR/RE-B&C/B/247 dated 29-04-2025. Please find below the results for the tests conducted on the aggregate samples provided to this laboratory through your representative.

Coarse Aggregate (9 – 12 mm)

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.)				
$^3/_4$	$^1/_2$	7.68	5.63	8.53	6.25
$^1/_2$	$^3/_8$	8.82	2.36	10.31	2.76
		Flakiness Index = 7.99%		**Elongation Index = 9.01%**	

Coarse Aggregate (19 mm)

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	0	0	0	0
1	$^3/_4$	7.98	6.06	9.32	7.08
$^3/_4$	$^1/_2$	5.26	0.82	7.19	1.12
$^1/_2$	$^3/_8$	0	0	22.75	0.24
		Flakiness Index = 6.88%		**Elongation Index = 8.44%**	

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:----------

Engr. Riaz Ahmad
Resident Engineer (A&D),
Metroplan-Asian Consulting Engineers,
NSICTR Project, Lahore.

Subject: **Testing of Fine Aggregate** (Chenab Sand)
Project: Establishment of Nawaz Sharif Institute of Cancer Treatment and Research, Lahore (Phase-1, Package A & D)

Dear Sir,

It is with reference to your letter No. Metroplan-Asian (JV),NSICTR-RE(A & D)/156 dated 29-04-2025. Please find below the results for the tests conducted on the fine 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	99.60	99.00	97.90	97.20	81.70	10.70	2.1

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

Material Finer than #200 Sieve (%)	2.17

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

Fineness Modulus (%)	1.16

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:----------

Engr. Riaz Ahmad
Resident Engineer (A&D),
Metroplan-Asian Consulting Engineers,
NSICTR Project, Lahore.

Subject: **Testing of Fine Aggregate** (Lawrancepur Sand)
Project: Establishment of Nawaz Sharif Institute of Cancer Treatment and Research, Lahore (Phase-1 Package A & D)

Dear Sir,

It is with reference to your letter No. Metroplan-Asian (JV),NSICTR-RE(A & D)/155 dated 29-04-2025. Please find below the results for the tests conducted on the fine 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	99.00	96.60	90.90	79.50	63.50	27.30	5.10	1.00

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

Material Finer than #200 Sieve (%)	1.10

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

Fineness Modulus (%)	2.41

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

Specific Gravity (OD)	2.68
Specific Gravity (SSD)	2.70
Apparent Specific Gravity	2.74
Water Absorption (%)	0.79

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

Loose Unit Weight (g/cm^3)	1.63
Rodded Unit Weight (g/cm^3)	1.71

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. M. Khurram Iqbal
Resident Engineer (NESPAK),
RRP Narowal (Punjab).

Subject: **Testing of Coarse Aggregate**
Project: Restoration/Improvement of Shakargarh to Chak Amru Road
Restoration/Improvement of Noor Kot to Fatwal via Essa

Dear Sir,

It is with reference to your letter No. RE/RRP/NRWL/KI/112 dated 20-04-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 12-05-2025 through your representative.

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

Sieve Size	1”	¾”	½”	3/8”	#4
%age Passing	100	39.81	6.71	1.69	0.69

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	990.9	1.10	0.42
	Total = 0.42%			

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

Grading Used	**Los Angeles Abrasion Value (%)**
B	16.26

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	$^3/_4$	7.92	4.77	9.87	5.94
$^3/_4$	$^1/_2$	12.48	4.13	13.52	4.48
$^1/_2$	$^3/_8$	13.93	0.70	16.97	0.85
$^3/_8$	$^1/_4$	0	0	0	0
		Flakiness Index = 9.60%		**Elongation Index = 11.27%**	

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. Muhammad Shafait Munir
Material Specialist,
NESPAK, Gujranwala.

Subject: **Testing of Coarse Aggregate**
Construction of Flyover at GT Road, Chan Da Qila Chowk in District Gujranwala

Dear Sir,

It is with reference to your letter No. 4834/103/CQF/ML/Lab/11 dated 05-05-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 16-05-2025 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
$1/2" + 3/8"$	1004.7	993.6	1.10	1.04
	Total = 1.04%			

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

Grading Used	**Los Angeles Abrasion Value (%)**
B	16.56

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

Clay Lumps and Friable Particles (%)	0.27

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. Javaid Akhter
Lab. Incharge,
CMEC.

Subject: **Testing of Asphaltic Base Course and Wearing Course**
Project: Construction of 1263 MW Punjab Power Plant, Jhang

Dear Sir,

It is with reference to your letter No. CMEC/HC/25052001 dated 20-05-2025.
Please find below the results for the tests conducted on asphalt concrete cores and chunks provided to this laboratory through your representative.

BULK SPECIFIC GRAVITY OF COMPACTED ASPHALT (ASTM D2726):

Core		Mean Thickness (cm)	Mean Diameter (cm)	Bulk Specific Gravity
Base Course	Sr # 1	9.650	10.000	2.420
	Sr # 2	8.970	10.000	2.500
	Sr # 3 (3/1)	7.750	10.000	2.500
	Sr # 3 (3/2)	8.430	10.000	2.501
	Sr # 4 (4/1)	7.710	10.000	2.503
	Sr # 4 (4/2)	7.920	10.000	2.460
	Sr # 5	8.530	10.000	2.470
	Sr # 6	8.230	10.000	2.440
Wearing Course	Sr # 1	8.890	10.000	2.430
	Sr # 2	8.710	10.000	2.440
	Sr # 3	10.180	10.000	2.430
	Sr # 4	8.920	10.000	2.450
	Sr # 5	7.930	10.000	2.450
	Sr # 6	8.130	10.000	2.430
	Sr # 7	8.700	10.000	2.420
	Sr # 8 (8/1)	4.880	10.000	2.440
	Sr #8 (8/2)	5.550	10.000	2.430
	Sr # 9 (9/1)	6.180	10.000	2.410
	Sr # 9 (9/2)	6.150	10.000	2.410

	Sr # 10 (10/1)	6.060	10.000	2.420
	Sr # 10 (10/2)	6.800	10.000	2.460
	Sr # 11 (11/1)	6.010	10.000	2.470
	Sr # 11 (11/2)	7.210	10.000	2.420
	Sr # 12	5.520	10.000	2.470
	Sr # 13	7.250	10.000	2.430
	Sr. # 14	7.330	10.000	2.420

BITUMEN EXTRACTION TEST: (Chunks)

Sr. # 1, Base Course

Bitumen Extraction Value (ASTM D-2172)									**3.50%**
Gradation Analysis									
Sieve No.	1 ½"	1"	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	83.01	73.01	60.00	50.01	36.00	21.50	9.00	4.00

Sr. # 2, Base Course

Bitumen Extraction Value (ASTM D-2172)									**3.51%**
Gradation Analysis									
Sieve No.	1 ½"	1"	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	85.00	72.01	61.00	52.00	35.00	21.01	9.00	3.90

Sr. # 3, Base Course

Bitumen Extraction Value (ASTM D-2172)									**3.51%**
Gradation Analysis									
Sieve No.	1 ½"	1"	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	86.42	70.42	60.41	50.53	34.40	21.39	9.39	4.38

Sr. # 4, Base Course

Bitumen Extraction Value (ASTM D-2172)									**3.49%**
Gradation Analysis									
Sieve No.	1 ½"	1"	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	85.05	70.79	60.83	51.86	34.92	21.76	9.00	4.02

Sr. # 5, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.21%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	80.01	66.01	48.01	28.05	11.05	5.06

Sr. # 6, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.23%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	85.00	67.00	48.00	29.19	11.01	5.02

Sr. # 7, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.22%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	84.00	63.00	44.99	26.00	11.99	5.50

Sr. # 8, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.22%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	82.99	64.98	43.93	24.98	10.98	4.78

Sr. # 9, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.23%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	83.99	65.98	48.98	27.19	11.15	5.00

Sr. # 10, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.24%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	85.00	70.13	48.98	28.98	11.98	4.97

Sr. # 11, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.23%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	85.99	70.99	49.98	26.99	10.99	4.79

Sr. # 12, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.23%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	82.01	67.01	47.01	30.00	11.00	4.99

Sr. # 13, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.22%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	83.00	66.17	45.02	31.02	12.02	5.02

Sr. # 14, Wearing Course

Bitumen Extraction Value (ASTM D-2172)							**4.24%**
Gradation Analysis							
Sieve No.	¾"	½"	3/8"	#4	#8	#50	#200
% Passing	100	86.04	69.04	51.04	30.04	11.04	5.04

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 Engineer,
Highway Division,
Jhang.

Subject: **Testing of Coarse Aggregate** (Base Material)
Rehabilitation of Jhang Bhakkar Road from Mallu More to Bharairhi, km No. 231.00 to 272.00. Length = 41.00 km, District Jhang
(ADP No. 1781 for the Year 2024-25)

Dear Sir,

It is with reference to your letter No. 1733/CB dated 20-05-2025.
Please find below the results for the tests conducted on the aggregate sample provided to this laboratory on 30-05-2025 through your representative.

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

Sieve Size	3”	2 ½”	2”	1 ½”	1”	¾”	½”	3/8”	#4
%age Passing	100	86.70	21.95	1.25	0.07	0	0	0	0

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

Specific Gravity (oven dried condition)	2.71
Specific Gravity (saturated surface dry condition)	2.73
Apparent Specific Gravity	2.77
Water Absorption (%)	0.71

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
2” + 1 ½”	5004.9	4984.6	0.41	0.35
	Total = 0.35%			

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

Grading Used	Los Angeles Abrasion Value (%)
1	20.30

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. M. Hassan Khan
Resident Engineer,
NESPAK.

Subject: **Testing of Bitumen – AASHTO Standard (M-20)**
Scheme # 11: Rehabilitation/Improvement of Ehsan Road, Faiz Bagh Shahi Road, Macca Chowk to Khushi Marriage Ghulam Hussain Park Road, Shalamar Zone MCL
Source: Attock Refinery

Dear Sir,

It is with reference to your letter No. 4084/103/LDP/SMZ(S-11)/04/42 dated 28-05-2025. Please find below the results of tests conducted on the bitumen sample provided to this laboratory on 04-07-2025 through your representative.

Sr.#	Laboratory Tests	Results
1	Penetration (ASTM D-5)	65 Units
2	Penetration of Residue (ASTM D-5)	58 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)	48.4°C
6	Flash Point (ASTM D-92)	295°C
7	Solubility (ASTM D-2042)	99.80%
8	Specific Gravity Value (ASTM D-70)	1.021
9	Thin Film Oven Test Value (ASTM D-1754)	0.476%
10	Loss on Heating Value (ASTM D-6)	0.407%

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 Saleem
Material Engineer, NESPAK,
LDP/ADP LDA, Lahore.

Subject: **Testing of Material (Sub-base Material)**
Rehabilitation of Road Under WASA Scheme
Improvement of Water Supply/Sewerage System, UC 107, Samanabad Zone, Lahore

Dear Sir,

It is with reference to your letter No. 4891/MS/ME/01 dated 24-06-2025.
Please find below the results of tests conducted on the sample of aggregate provided to this laboratory on 04-07-2025 through your representative.

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

Sieve Size	1 ½"	1"	¾"	½"	3/8"	#4
%age Passing	100	100	82.90	63.80	49.45	39.84

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

Grading Used	**Los Angeles Abrasion Value (%)**
A	28.26

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

Best Regards,

Director
Transportation Engineering Laboratory

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