

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. Ali Raza
(Contact: 0300-7275117).

Subject: **Testing of Crush**

Dear Sir,

It is with reference to your letter No. Nil dated 10-06-2024.

Please find below the results for the tests conducted on the aggregate sample (crush) 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	89.19	35.05	9.54	0.18

2. 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 (%)	0.45

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"	1003.2	991.1	1.20	0.96
	Total = 0.96%			

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

Grading Used	Los Angeles Abrasion Value (%)
B	18.96

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

Best Regards,

Director
Transportation Engineering Laboratory

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TEL-UET

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Ref:-----

Date:-----

Mr. Ali Raza
(Contact: 0300-7275117).

Subject: **Testing of Sand**

Dear Sir,

It is with reference to your letter No. Nil dated 10-06-2024.

Please find below the results for the tests conducted on the aggregate sample (sand) 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	99.11	96.12	90.88	80.10	64.12	27.04	5.52	1.07

2. Fineness Modulus (ASTM C-142)

Fineness Modulus (%)	2.37
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If you have further query, please do not hesitate to contact the undersigned.

Best Regards,

Director
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Ref.:-----

Date:-----

Major Ghulam Abbas
For ADH (QA) Centre,
GHQ, AG's Br (Housing Dte),
Askari-XI, Lahore.

Subject: **Testing of Bitumen**

Dear Sir,

It is with reference to your letter No. 24501/HD/Lab dated 11-07-2024.

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)	10 Units
2	Softening Point (ASTM D-36)	88.0°C
3	Fire Point (ASTM D-92)	164°C

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

Ref:-----

Date:-----

Mr. Shafat Ullah Khan
Resident Engineer,
NESPAK.

Subject: **Testing of Asphalt Mix (Bitumen Extraction Test)**
Rehabilitation of Chakwal-Tammun-Multan Khurd-Shah Muhammad Wali to CPEC
Tarap Interchange, Length 54.00 km in District Chakwal (Group-II) from km No. 27.00
to 47.50 km; Length 20.50 km

Dear Sir,

It is with reference to your letter No. NESPAK/SUK/RE-4085/CHK/ADP23/166 dated 27-05-2024.
Please find below the results of the test conducted on the asphalt mix sample provided to this laboratory on
11-07-2024 through your representative.

BITUMEN EXTRACTION TEST:

<i>Bitumen Extraction Value (ASTM D-2172)</i>								4.42%	
<i>Gradation Analysis</i>									
<i>Sieve No.</i>	1"	¾"	½"	3/8"	#4	#8	#50	#200	
<i>% Passing</i>	100	95.50	83.51	65.13	48.64	30.64	12.30	4.95	

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

Ref:-----

Date:-----

Mr. Rajab Ali
Resident Engineer,
PRSWSSP, Taunsa.

Subject: **Testing of Coarse Aggregate Samples** (Source: Subhan Crusher)
Punjab Rural Municipal Services Company
Procurement of Civil Works, South-III, Tehsil Taunsa Package Tau-01
(Villages: Mithay Wali & Kaluwala)

Dear Sir,

It is with reference to your letter No. NESPAK/PRSWSSP/TAUNSA/RE/249 dated 30-05-2024. Please find below the results for the tests conducted on the coarse aggregate samples provided to this laboratory through your representative.

Coarse Aggregate (1 1/2" Down)

1. Sieve Analysis (ASTM C-136)

Sieve Size	1"	3/4"	1/2"	3/8"	#4
%age Passing	100	59.93	2.58	0	0

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

Specific Gravity (oven dried condition)	2.68
Specific Gravity (saturated surface dry condition)	2.70
Apparent Specific Gravity	2.73
Water Absorption (%)	0.69

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"	1009.8	994.0	1.57	0.94
	Total = 0.94%			

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

Loose Unit Weight (g/cm ³)	1.41
Rodded Unit Weight (g/cm ³)	1.62

Coarse Aggregate (3/4" Down)

5. Sieve Analysis (ASTM C-136)

Sieve Size	3/4"	1/2"	3/8"	#4
%age Passing	100	98.22	70.47	2.61

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

Specific Gravity (oven dried condition)	2.68
Specific Gravity (saturated surface dry condition)	2.70
Apparent Specific Gravity	2.74
Water Absorption (%)	0.75

7. 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	987.4	1.60	0.47
	Total = 0.47%			

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

Loose Unit Weight (g/cm ³)	1.47
Rodded Unit Weight (g/cm ³)	1.66

Coarse Aggregate (3/8" Down)

1. Sieve Analysis (ASTM C-136)

Sieve Size	1/2"	3/8"	#4
%age Passing	100	80.21	3.34

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

Specific Gravity (oven dried condition)	2.67
Specific Gravity (saturated surface dry condition)	2.69
Apparent Specific Gravity	2.73
Water Absorption (%)	0.84

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	300.8	288.9	3.96	3.04
Total = 3.04%				

4. 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
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Ref.-----

Date:-----

Mr. Rajab Ali
Resident Engineer,
PRSWSSP, Taunsa.

Subject: **Testing of Fine Aggregate** (Source: Zinda Pir)
Punjab Rural Municipal Services Company
Procurement of Civil Works, South-III, Tehsil Taunsa Package Tau-01
(Villages: Mithay Wali & Kaluwala)

Dear Sir,

It is with reference to your letter No. NESPAK/PRSWSSP/TAUNSA/RE/250 dated 30-05-2024. Please find below the results for the tests conducted on the fine aggregate sample provided to this laboratory through your representative.

3. Sieve Analysis (ASTM C-136)

Sieve Size	1/2"	3/8"	#4	#8	#16	#30	#50	#100	#200
%age Passing	100	97.55	93.35	88.67	77.90	62.21	26.23	5.51	1.19

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

Specific Gravity (OD)	2.67
Specific Gravity (SSD)	2.68
Apparent Specific Gravity	2.71
Water Absorption (%)	0.67

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	98.0	2.00	0.09
#8 to #16	100	97.8	2.20	0.24
#16 to #30	100	97.9	2.10	0.33
#30 to #50	100	98.5	1.50	0.54
Total = 1.20%				

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

Loose Unit Weight (g/cm ³)	1.61
Rodded Unit Weight (g/cm ³)	1.73

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