



DEVBHOOMI TESTING LABORATORY DEHRADUN

NABL Accredited, Govt. Approved, MSME Registered, & ISO : 9001:2015 & 14001: 2015 Certified Laboratory

Neelkanth Enclave, Harbhajwala, Telpur Chowk, Shimla By Pass Road, Dehradun 248171

Mob: +91-7217360360, +91-7579118238, 8859392493, 9760764229

Email: devbhoomilab@gmail.com

TEST REPORT

Description of Sample: Design Mix M-40	Report No.: DTL/DDN/2025/2910/23
Sample Id.: 29102024/23	Date of Report: 15/04/2025
Sample Quantity: As per Requirement	Date of Receipt: 04/04/2025
Sample Condition: Receipt as OK	Start Date of Testing: 05/04/2025
Sample Plan & Sampling Method: NA	Date of Completion: 15/04/2025
Environment Condition (Temp. & Humidity): NA.	
Addition to, Deviation or Exclusion from the Method: NA	
Bond No: 09/BR/RFB-EPC/UGRIDP/2023	Dated: 18/09/2024
N.O.W.: 1. Construction of 24M Span Intermediate Lane Motor Bridge & its approach in KM-2 of Ujjawalpur to Gwad Dungri Jaspur Motor Road: 2. Construction of 48M Span Intermediate Lane Motor Bridge & its approach over Meeng Gadera in KM-1 of Gadhani Motor Road. 3. Construction of 48M Span Intermediate Lane Motor Bridge & its approach in KM-2 of Gairsan to Village Devlkot Motor Road in District Chamoli under EPC Mode.	
Contractor: M/S Umashankar Singh Rawat,	
Issued to: Umashankar Singh Rawat, Tharali Chamoli, Uttarakhand.	

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Design Mix Test Data of M-40

(As per IS-10262-2009, IS-456-2000)

S. No.	1. Test Data: -	Test Value	Method of Test
i	Specific Gravity of Shree OPC-43 Cement	3.15	IS: 4031 (P-XI)-1988
ii	Specific Gravity of Coarse Aggregate	2.67	IS: 2386 (P-III)-1963
iii	Specific Gravity of Fine Aggregate	2.62	IS: 2386 (P-III)-1963
iv	Specific Gravity of Admixture	1.08	IS:9103-1963
v	Water Absorption of Coarse Aggregate, % w/w	0.60	IS: 2386 (P-III)-1963
Vi	Water Absorption of Fine Aggregate, % w/w	1.20	IS: 2386 (P-III)-1963
Vii	Free Surface Moisture of Coarse Aggregate, % w/w	Nil	IS: 2386 (P-III)-1963
Viii	Free Surface Moisture of Fine Aggregate, % w/w	Nil	IS: 2386 (P-III)-1963

2. Sieve Analysis of 20mm Aggregate.

S. No.	Parameter Sieve Analysis	Test Value % Passing	Requirements as per IS:383-2016	Method of Test Ref. to:-
i	40 mm	100	100	
ii	20 mm	92.6	85-100	
iii	10 mm	6.8	0-20	
iv	4.75 mm	0.9	0-5	IS-2386(Part-I)-1963

Checked & Issued by
Authorised Signatory

- The result Listed refer only to the tested sample & applicable parameters endorsement of products is neither inferred nor implied.
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- Sample not drawn by lab and sample will be destroyed after 30 days from the date of issue of test report.
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3. Sieve Analysis of 10mm Aggregate.

S. No.	Parameter Sieve Analysis	Test Value % Passing	Requirements as per IS:383-2016	Method of Test Ref. to:-
i	12.5 mm	100	100	IS-2386(Part-1)-1963
ii	10 mm	96.2	85-100	
iii	4.75 mm	12.4	0-20	
iv	2.36 mm	1.8	0-5	

4. Fraction of Coarse Agg.

Fraction-I (20mm) – 60 %

Fraction-II (10mm) – 40 %

5. Grading of Fine Aggregate

S. No.	Parameter Sieve Analysis	Test Value % Passing	Requirement as per IS-383-2016	Method of Test Ref. to:-
i	10 mm	100	100	IS-2386(Part-1)-1963
ii	4.75 mm	94.7	90-100	
iii	2.36 mm	81.3	75-100	
iv	1.18 mm	64.5	55-90	
v	600 micron	42.2	35-59	
vi	300 micron	19.3	8-30	
vii	150 micron	4.2	0-10	

Fine Aggregate sample confirming to Grade Zone – IInd

Fineness Modulus	2.94
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Technical Manager
Dehradun

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6. Design Stipulations for M-40:-

i	Characteristic Comp. Stg. required in the field at 28 days	40 N/mm ² (Min.)
ii	Maximum size of aggregate, mm	20
iii	Workability (Slump), mm	100-150
iv	Degree of Quality Control	Good
v	Target mean strength, after 28 days	48.2 N/mm ² (min.)
vi	Admixture	Super plasticizer

7. Typical Test Result For M-40

Quantities of material per cubic Meter Of concrete in S.S.D. Condition							Concrete characteristics workability		
Mix No.	Cement Kg	Water kg	Fine Aggregate Kg (40.0%)	Coarse Agg. Fraction-I 60% , Kg	Coarse Agg. Fraction-II 40% , Kg	Admixture (0.6%),kg	Slump, mm	Comp.Stgth. by accelerated Boiling method, as per IS: 9013 N/mm ²	Eqvt Comp. Stgth. At 28 days, as per IS 9013, N/mm ²
1.	390 (W/C 0.40)	156.0	752.464	690.142	460.094	2.34 %	120	24.9	48.93

8. Mix Proportion: - Cement : Water : Fa : Ca : Admixture

1	: 0.40	: 1.929	: 2.949	: 0.006
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Material Required for the mix/bag of cement (50kg) for M-40

a.	Cement	50.000 Kg.
b.	Fine Aggregate	96.450 Kg
c.	Coarse Aggregate	147.450 Kg.
d.	Fraction-I, 20mm	88.470 Kg.
e.	Fraction-II, 10mm	58.980 Kg.
f.	Admixture (Super Plasticizer)	0.300 Kg.

Debhoomi
Technical
Manager
Dehradun
2023

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d. Water

i.	For water-cement Ratio of 0.40 quantity = 20.00 ltr. of water
ii.	Extra quantity of water to be added = (+) 0.885 kg as water absorption of coarse agg is 0.60 % w/w
	= (+) 1.157 kg as water absorption of fine agg. is 1.20 % w/w
III	Actual quantity of water = 20.0+0.885+1.157 = 22.042 Kg

e. Actual quantity of Coarse Agg. & Fine Agg. Required

Fraction-I, 20mm	88.470-0.531=87.939 Kg
Fraction-II, 10mm	58.980-0.354=58.626 Kg
Fine Aggregate	96.450-1.157=95.293 Kg

9. Therefore, the actual quantities of different constituents required for the mix/bag of cement:-

Water	22.042 Kg.
Cement	50.000 Kg.
Fine Aggregate	95.293 Kg.

Coarse Aggregate:-

Fraction -I, 20mm	87.939 Kg.
Fraction -II, 10mm	58.626 Kg.
Admixture	0.300 Kg

Remarks: Quantity of water may be decreased or increased considering the free surface moisture of Aggregate.

*****End of Report*****



Devbhoomi
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