



Mukhya Mantri Gram Sampark Yojana

Quality Control Register -Part 1

Record of Tests

This is to certify that this Quality Control Register contains 287 pages which has been issued for the work under MGSY (C) Road from Chakra Village to Dargah Shiv mandir to the Contractor.

21/7/18
Executive Engineer
R.W.D., Works Division
Bansi (Patna)

Prescribed By:

Bihar Rural Roads Development Agency

(An Agency of the Rural Works Department)

Government of Bihar, Patna



Mukhya Mantri Gram Sampark Yojana

Quality Control Register Part 1

Record of Tests

State: *Bihar*

District: *Purnea*

Programme Implementation Unit: *Executive Engineer RWD (W), Dist,
Balsi Purnea*

Package Number:

Name of Work: *Chalsa village to Dagarua Shiv Mandir*

Register From km. *0.00* ... to km. *3.00*

Total Volumes of this Register: *1*

This Volume Number: *1*

Prescribed By:

Bihar Rural Roads Development Agency

(An Agency of the Rural Works Department)

Government of Bihar, Patna

National Rural Roads Development Agency
(An Agency of the Ministry of Rural Development)
Government of India, New Delhi

Quality Control Register Part 1

Record of Tests

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Quality Control Register Part 1

Record of Tests

Fly Sheet

State: Bihar
District: Purnea
Block: Dargahua
Package Number:

Name of Road : Chitra village to Dargahua Sher
Mander

Length (km) : 3.40 km

Contract Amount (Rs.) : 219.306600

Construction Contractor
(Name & Address)

Date of Commencement of
Work

Stipulated Date of Completion

(a) As per Agreement

(b) As Revised & Agreed

Project Implementation Unit : Executive Engineer, RWD, (W),
(Address) DIV. Balli

Laboratory Incharge (Name)

This Register

: From km. 0.00 to km. 3.40

Record of Tests

Earthworks			
Material		Workmanship	
EW-1	Soil gradation	EW-4	Proctor density
EW-2	Atterberg limits	EW-5	CBR
EW-3	Natural moisture content	EW-6	Moisture content at the time of compaction
EW-5 (a)	Swelling Index (In case of Expansive Soils)	EW-7	Thickness
		EW-8	Field density (degree of compaction)
		ALS-1	Horizontal alignment
		ALS-2	Surface level
		ALS-3	Surface regularity
Granular Construction			
Material		Workmanship	
<u>Aggregates</u>		<u>Granular Sub Base</u>	
<u>Granular Sub Base</u>		<u>Granular Sub Base</u>	
SB-1 Gradation		SB-3	Moisture content prior to compaction
SB-2 Atterberg Limits		SB-4	Density of compacted layer
SB-3 CBR		SB-6	Thickness
<u>Base Course</u>		<u>Base Course</u>	
GB-1 Aggregate impact value		GB-6	Thickness
GB-2 Gradation of Aggregate & Screening		A 1 S-2	Surface level
GB-3 Flakiness index		ALS-3	Surface regularity
GB-7 CBR of screening (Crushable Type Aggregate as Screening)			
GR-4 Atterberg limits of binding material (same as EW-2)			
GB-5 Water absorption			
Bituminous Construction			
Material		Workmanship	
<u>Bitumen/Modified Bitumen</u>		<u>Bitumen/Modified Bitumen</u>	
BL-1(A) to (I) Penetration, Ductility, Softening point, Specific gravity, Water content, Flash point, Viscosity, Loss on heating, Solubility in Trichloroethylene		BL-2	Temperature of binder
		BL-3	Rate of spread of binder
		BL-10	Thickness
		BL-12	Rate of spread of aggregate
		BL-13	Soundness
		BL-14	Binder Content
		ALS-2	Surface level
		ALS-3	Surface regularity
<u>Bituminous Emulsion</u>			
BL-1 (J) to (O) Sieve Test, Stability to Mixing with Course Aggregate, Viscosity, Storage Stability, Particle Charge, Miscibility with Water			
		<u>Aggregate</u>	
BL-4 Aggregate impact value			
BL-5 Flakiness index			
BL-6 Stripping Value			
BL-7 Water Absorption			
BL-8 Gradation			

Instructions for Maintaining Quality Control Registers

Rural Roads Manual, Special Publication 20, Indian Roads Congress, New Delhi 2002 Para 10.11 provides for recording of the Data in the prescribed forms; therefore, this Register will be maintained for each Road. The guidelines for maintenance of this Register are as follows:

1. The Quality Control Register will be maintained in two Parts. The first Part will be Quality Control Register Record of Tests and the Second Part will be the Record of Abstract of Quality Control Tests and Non Conformance Report Register.

- a. The first Part of the Register is the Register of all Quality Control Tests conducted by the person who is responsible for the basic Quality Control Testing; therefore, the first Part of the Register will be maintained by the person who is responsible for the basic Quality Control tests. If there is a provision of Quality Control by contractor in the Tender Document, the Quality Control Register will be issued to the contractor for every Road Work but if the responsibility of the basic Quality Control Tests is with the Department, the Register will be issued to the site incharge officer of the basic Quality Control Testing of work not below the rank of Junior Engineer/sub Engineer.

This Register will always be available at the work site. If some tests are required to be conducted in the laboratory which is situated away from the work, the prescribed format of the test conducted will be duly filled up on a separate sheet and this sheet will be pasted on the space prescribed for that test but the register will not be taken away from the site in any case.

This Register contains forms for tests sufficient to accommodate quantities given in Appendix 12.2 of the Rural Roads Manual for a length of Road up to 3 km. If the quantities or the items in the work are more, additional forms required as per the prescribed frequency may be added at the end of the Register and the corresponding entries should be done in the abstract. In case the quantities or the items in the work are less, the forms may be left blank and the corresponding note may be recorded in the abstract. If the length of the Road is more than 3 km, additional Register(s) should be maintained. The first part of the Register will have following three Sections:

Section 1: Earthwork

Section 2: Granular construction

Section 3: Bituminous construction

- b. The Second Part of the Register is the Record of abstract of the Tests conducted and Non conformance reports; therefore, will be maintained by the site in charge officer not below the rank of Assistant Engineer.
If the test results do not conform to the prescribed limits, a Nonconformance Report (NCR) in the Format Prescribed in this Register will be issued to the Contractor.
2. The Quality Control (QC) Register will be issued in the same manner as the Measurement Book is issued to the work. Every register should be page numbered and no page should be removed. The Register of issue of the Quality Control Register will be maintained by the Head of the PIU.
3. In case of Hill Roads, where the work of formation cutting may be executed, all the tests shown in the Earthwork Section may not be required but the tests for CBR and Compaction will be required in such cases also, the formats will be left blank in such cases.
4. How to Fill up Register Part 1:
 - a. **Filling up the Test Format-** Take sample as per specifications and complete the basic entries of the Register like Sample Number, Reference of Road/Section from where the sample has been taken etc. Subject the sample for testing and enter the Date of Testing and other relevant details at the prescribed places.
 - i. Enter the test Results at specified places and compare the results with the prescribed limits. If the test results conform to the prescribed limits, the corresponding entry should be done and the work should be allowed to continue but if the results of the tests don't conform to the prescribed limits, the work should not be allowed to be continued and a Non Conformance Report (NCR) should be issued by the officer in-charge of the work.
 - ii. The compliance of the instructions given in the NCR should be ensured and again the test should be repeated. The work should be allowed to continue only after the Test results conform to the prescribed limits.
 - b. **Filling up the Format of the Abstract of Tests Conducted -**
 - i. Columns 1 to 5 are self explanatory.
 - ii. The reference of the page number of the Part two of the Register on which the office copy of the Non Conformance Report (NCR) is preserved should be entered along with the Date of issue of the NCR in the column number 6 of the abstract.
 - iii. The Date of compliance reported by the contractor should be entered in this column.
 - iv. The reference of the page number on which the repeat test (which qualifies) record is maintained should be given in this column.
 - v. The basic abstract of the Tests conducted will be maintained in Part one of the Register but the copy of the abstract will also be maintained in Part two of the Register.

5. How to Fill up Register Part 2 Record of abstract of tests and Non Conformance Reports:

- a. **Filling up the Abstract of Tests Format-** Basic abstracts of the tests conducted will be maintained in the First Part of the register but the same abstract will also be maintained in Part two and it will be the Responsibility of officer incharge to update this abstract once in every week (Generally on every Saturday of the Week).
- b. **Issuance of Non Conformance Reports-** The Register contains one perforated copy of the NCR and one office copy, as soon as the incidence of non conformance of any test occurs, it will be the responsibility of the person responsible for the basic Quality Control Testing to inform to the officer in charge of the work. The officer in charge of the work will immediately issue a Non Conformance Report to the contractor and the office copy will be retained in this Register.

Thereafter, the Contractor needs to rectify the deficiencies and return the NCR after due compliance for approval/acceptance of the PIU.

विद्यया ऽमृतमश्नुते



Mukhya Mantri Gram Sampark Yojana

Quality Control Register Part 1 Record of Tests

Section -1 Earth Work

Quality Control Register Part 1
Record of Tests :Section-1 Earthwork

Abstract of tests Conducted

Test No.	Name of Test	Test No.	Date of Test	Result, Qualified (Yes/No)	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7
EW-1	Soil gradation	Test 1		Yes		16
		Test 2		Yes		17
		Test 3		Yes		18
		Test 4		Yes		19
		Test 5		Yes		20
		Test 6				
		Test 7				
		Test 8				
		Test 9				
EW-2	Atterberg limits	Test 1		Yes		25
		Test 2		Yes		27
		Test 3		Yes		29
		Test 4		Yes		31
		Test 5		Yes		32
		Test 6		Yes		35
		Test 7				
		Test 8				
		Test 9				
EW-3	Natural moisture content	Test Table				
EW-4	Proctor density	Test 1		Yes		48
		Test 2		Yes		48
		Test 3		Yes		49
		Test 4		Yes		50
		Test 5		Yes		51
		Test 6		Yes		52
		Test 7				
		Test 8				
		Test 9				
EW-5	CBR	Test 1				
		Test 2				
EW-(A)	Swelling Index	Test 1				
EW-6	Moisture Content at the time of Compaction	Test Table				
EW-7	Thickness	Test Table				
EW-8	Field density	Test 1		Yes		72

Test No.	Name of Test	Test No.	Date of Test	Result, Qualified (Yes/No)	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7
		Test 2		yes		73
		Test 3		u		74
		Test 4		u		75
		Test 5		u		76
		Test 6		u		77
		Test 7				
		Test 8				
ALS-1	Horizontal alignment (Tests as Required)	Test Table				
ALS-2	Surface level (Tests as Required)	Test Table				
ALS-3	Surface regularity (Tests as Required)	Test Table				

Sieve Analysis of Soil (IS:2720 (Part 4)-1985)

Test 1

Road / Section Details CH-0.195km Date of Testing: 12.1.19 (gm)
 Sample No 1 Weight of soil sample taken: 6900 (gm)

Dry Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limits (Percentage of Wt. Passing/ Retained)
40 mm	0	0	0	0	100-10
25 mm	0	0	0	0	
20 mm	0	0	0	0	
10 mm	0	0	0	0	
4.75 mm	0	0	0	0	

Wet Sieving

Weight of Soil Sample taken: 1000 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)
2.36 mm	23	2.3	2.3	97.7
1.18 mm	21	2.1	4.4	95.6
600 μ	42	4.2	8.6	91.4
425 μ	29	2.9	11.5	88.5
75 μ	165	16.5	28.0	72.0

Summary of Results

Clay / silt (-75 micron) percent	<u>28.0-10</u>
Sand (-4.75 mm + 75 micron) percent	<u>72.0-10</u>
Gravel (-40 mm + 4.75 mm) percent	

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
 Page No. Date of issue

Checked by:

PR/Smc
 JE
 RWD
12.1.19

Tested by:

12/1/19
 Executive Engineer
 RWD (w) Division, Baisi

Sieve Analysis of Soil (IS:2720 (Part 4) -1985)

Test 2

Road / Section Details CA-1 0.585 km Date of Testing: 12.1.19

Sample No. 2

Weight of soil sample taken: 7200 (gm)

Dry Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limits (Percentage of Wt. Passing/ Retained)
40 mm	0	0	0	0	100%
25 mm	0	0	0	0	
20 mm	0	0	0	0	
10 mm	0	0	0	0	
4.75 mm	0	0	0	0	

Wet Sieving

Weight of Soil Sample taken: 1000 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)
2.36 mm	34	3.4	3.4	96.6
1.18 mm	42	4.2	7.6	92.4
600 μ	57	5.7	13.3	86.7
425 μ	64	6.4	19.7	80.3
75 μ	135	13.5	33.2	66.8

Summary of Results

Clay / silt (-75 micron) percent	66.8%
Sand (-4.75 mm + 75 micron) percent	33.2%
Gravel (-40 mm + 4.75 mm) percent	—

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Checked by:

Tested by:

JE
RWD
12.1.19

12/01/19
A.E.

Executive Engineer
RWD (w) Division, Baisi

m No. EW-1

Test 3

Road / Section Details Ch: - 1.235 km

Date of Testing: 13.1.19

Sample No. 3

Weight of soil sample taken: 7400 (gm)

Dry Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limits (Percentage of Wt. Passing/ Retained)
40 mm	0	0	0	100	100%
25 mm	0	0	0	100	
20 mm	0	0	0	100	
10 mm	0	0	0	100	
4.75 mm	0	0	0	100	

Weight of Soil Sample taken: 1000 (gm)

Wet Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)
2.36 mm	21	2.1	2.1	97.9
1.18 mm	34	3.4	5.5	94.5
600 μ	52	5.2	10.7	89.3
425 μ	64	6.4	17.1	82.9
75 μ	145	14.5	31.6	68.4

Summary of Results

Clay / silt (-75 micron) percent	68.4%
Sand (-4.75 mm + 75 micron) percent	31.6%
Gravel (-40 mm + 4.75 mm) percent	—

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PJU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Checked by:

JE
RWD
13.1.19

13/01/19
A.E.

Tested by:

Executive Engineer
RWD (w) Division, Baisi
13-01-19

Sieve Analysis of Soil (IS:2720 (Part 4) -1985)

Test 4

Road / Section Details *Ch-1.800 Km*Date of Testing: *13.1.19*Sample No. *4*Weight of soil sample taken: *8200* (gm)

Dry Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limits (Percentage of Wt. Passing/ Retained)
40 mm	0	0	0	100	/
25 mm	0	0	0	100	
20 mm	0	0	0	100	
10 mm	0	0	0	100	
4.75 mm	0	0	0	100	

Wet Sieving

Weight of Soil Sample taken: *1000* (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)
2.36 mm	24	2.4	2.4	97.6
1.18 mm	36	3.6	6.0	94.0
600 μ	47	4.7	10.7	89.3
425 μ	56	5.6	16.3	83.7
75 μ	143	14.3	30.6	69.4

Summary of Results

Clay / silt (-75 micron) percent	<i>69.4</i>
Sand (-4.75 mm + 75 micron) percent	<i>30.6</i>
Gravel (-40 mm + 4.75 mm) percent	

Whether Confirms to the Prescribed Limits (Yes/No) *Yes*

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Checked by:

PA/Smc
JE
RWD
13-1-19

15/01/19
A.E

Tested by:

13-01-19
Executive Engineer
RWD (w) Division, Baisi

Sieve Analysis of Soil (IS: 2720 (Part 4) - 1985)

Test 5

Road / Section Details *Ch-2400 km*

Date of Testing: *14.1.19* (gm)

Weight of soil sample taken: *9000*

Sample No *5*

Dry Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limits (Percentage of Wt. Passing/ Retained)
40 mm	0	0	0	100	<i>100%</i>
25 mm	0	0	0	100	
20 mm	0	0	0	100	
10 mm	0	0	0	100	
4.75 mm	0	0	0	100	

Weight of Soil Sample taken: *1000* (gm)

Wet Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)
2.36 mm	<i>32</i>	<i>3.2</i>	<i>3.2</i>	<i>96.8</i>
1.18 mm	<i>41</i>	<i>4.1</i>	<i>7.3</i>	<i>92.7</i>
600 μ	<i>53</i>	<i>5.3</i>	<i>12.6</i>	<i>87.4</i>
425 μ	<i>62</i>	<i>6.2</i>	<i>18.8</i>	<i>81.2</i>
75 μ	<i>137</i>	<i>13.7</i>	<i>32.5</i>	<i>67.5</i>

Summary of Results

Clay / silt (-75 micron) percent	<i>67.5%</i>
Sand (-4.75 mm) + 75 micron percent	<i>32.5%</i>
Gravel (-40 mm) + 4.75 mm percent	

Whether Confirms to the Prescribed Limits (Yes/No) *Yes*

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the Page No. of this Register on which Non Conformance Reports copy preserved.
 Date of issue:

Checked by:

14.1.19
AE

Tested by:

14.1.19
 Executive Engineer
 RWD (w) Division, Baisi

Sieve Analysis of Soil (IS: 2720 (Part 4) - 1985)

Test 6

Road / Section Details *Chd - 2.950 km* Date of Testing: *14.1.19*Sample No. *6*Weight of soil sample taken: *2000* (gm)

Dry Sieving

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limits (Percentage of Wt. Passing/ Retained)
40 mm	0	0	0	100	
25 mm	0	0	0	100	
20 mm	0	0	0	100	
10 mm	0	0	0	100	
4.75 mm	0	0	0	100	

Wet Sieving

Weight of Soil Sample taken: *1000* (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)
2.36 mm	<i>22</i>	<i>2.2</i>	<i>2.2</i>	<i>97.8</i>
1.18 mm	<i>31</i>	<i>3.1</i>	<i>5.3</i>	<i>94.7</i>
600 μ	<i>45</i>	<i>4.5</i>	<i>9.8</i>	<i>90.2</i>
425 μ	<i>78</i>	<i>7.8</i>	<i>17.6</i>	<i>82.4</i>
75 μ	<i>126</i>	<i>12.6</i>	<i>30.2</i>	<i>69.8</i>

Summary of Results

Clay/silt (-75 micron) percent	
Sand (-4.75 mm + 75 micron) percent	<i>69.8 %</i>
Gravel (-40 mm + 4.75 mm) percent	<i>30.2 %</i>

Whether Confirms to the Prescribed Limits (Yes/No) *Yes*

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Checked by:

PR Simic
14.1.19
JE
RWD

Tested by:

14/1/19
A-2
Executive Engineer
RWD (w) Division, Baisi

Atterberg Limits Test

Test 1

Road/Section Details: CA-0.195km

Date of Testing: 12.1.19

Sample No.: 1

Type of soil: sandy soil

Sample Details:

Determination of Liquid Limit (LL)

	1	2	3	4	5	6	Remarks
Container Number	1	2	3	4			
Weight of container + wet soil	47.26	46.27	46.41	46.85			
Weight of container + dry soil	38.15	37.16	42.67	39.15			
Loss of Moisture	9.11	9.11	5.94	7.70			
Wt. of container	12.52	20.00	17.50	21.00			
Wt. of dry soil	25.63	17.16	25.13	18.15			
Moisture content %	35.54	53.69	23.60	42.42			
Number of blows	24	11	29	19			

Liquid Limit (LL) = $\frac{38.66}{100}$ per cent

Layer	Value	Permissible Value
C/N	LL = 38.66%	Less than 70 per cent

Determination of Plastic Limit (PL)

	1	2	3	Remarks
Container Number	5	6		
Weight of container + wet soil	48.69	45.27		
Weight of container + dry soil	42.67	37.27		
Loss of Moisture	6.02	8.00		
Weight of container	14.29	15.00		
Weight of dry soil	28.38	24.27		
Moisture content %	21.21 (mc ₁)	32.96 (mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{27.68}{3}$ per cent

Plasticity Index (PI) = LL - PL = 11.58 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
E/N	PI = 11.58%	< 45%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
 Page No. Date of issue.

Checked by:

12/01/19
 JE
 RWD

Tested by:

12-01-19
 Executive Engineer
 RWD (w) Division, Baisi

Atterberg Limits Test

Test 2

Road/Section Details: Ch. - 0495 Km

Date of Testing: 12.1.19

Sample No.: 2

Type of soil: sandy soil

Sample Details:

Determination of Liquid Limit (LL) :						Remarks
	1	2	3	4	5	6
Container Number	1	2	3	4		
Weight of container + wet soil	46.51	46.34	47.57	45.68		
Weight of container + dry soil	37.24	39.29	41.62	38.95		
Loss of Moisture	9.27	7.05	5.92	6.73		
Wt. of container	12.57	20.0	17.50	21.00		
Wt. of dry soil	24.72	19.29	24.12	17.95		
Moisture content %	37.50	36.55	24.67	37.49		
Number of blows	20	23	31	21		

Liquid Limit (LL) = $\frac{37.50 + 36.55 + 24.67 + 37.49}{4}$ per cent
34.05

Layer	Value	Permissible Value
C/W	LL - 34.05 %	Less than 70 per cent

Determination of Plastic Limit (PL)				Remarks
	1	2	3	
Container Number	5	6		
Weight of container + wet soil	49.62	48.69		
Weight of container + dry soil	43.67	41.26		
Loss of Moisture	6.01	7.43		
Weight of container	14.29	13.00		
Weight of dry soil	29.38	28.26		
Moisture content %	20.46 (mc ₁)	26.29 (mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3}$ = $\frac{20.46 + 26.29 + 0}{3}$ = 23.37 per cent

Plasticity Index (PI) = LL - PL = 34.05 - 23.37 = 10.67 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
C/W	PI = 10.67 %	45.0	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
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12.1.19
JE
RWD

Tested by:

Executive Engineer
RWD (w) Division, Baisi

Atterberg Limits Test

Test 3

Road/Section Details: CH-1.235km

Date of Testing: 13.1.19

Sample No.: 3

Type of soil: Sandy soil

Sample Details:

Determination of Liquid Limit (LL)

	1	2	3	4	5	6	Remarks
Container Number	1	2	3	4			
Weight of container + wet soil	47.64	45.49	49.58	46.59			
Weight of container + dry soil	39.28	38.67	40.67	39.54			
Loss of Moisture	8.36	6.82	8.91	7.05			
Wt. of container	12.52	20.00	17.50	21.00			
Wt. of dry soil	26.76	18.67	23.17	18.54			
Moisture content %	31.24	36.51	38.45	38.03			
Number of blows	25	21	17	15			

Liquid Limit (LL) = $\frac{36.51}{25-17} \times 20 = 36.06$ per cent

Layer	Value	Permissible Value
E/W	$LL = 36.06\%$	Less than 70 per cent

Determination of Plastic Limit (PL)

	1	2	3	Remarks
Container Number	5	6		
Weight of container + wet soil	44.69	45.28		
Weight of container + dry soil	38.24	37.67		
Loss of Moisture	6.45	7.59		
Weight of container	13.00	13.80		
Weight of dry soil	25.24	23.89		
Moisture content %	25.55 (mc ₁)	31.77 (mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{28.66}{3} = 28.66$ per centPlasticity Index (PI) = LL - PL = $36.06 - 28.66 = 7.4$ per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
E/W	$PI = 7.4\%$	$< 45\%$	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Atterberg Limits Test

Test 4

Road/Section Details: CH-1.800 Km

Date of Testing: 13.1.19

Sample No.: 4

Type of soil: Silty soil

Sample Details:

Determination of Liquid Limit (LL)							Remarks
Container Number	1	2	3	4	5	6	
Weight of container + wet soil	48.69	48.78	45.31	42.28			
Weight of container + dry soil	39.68	41.32	37.20	35.26			
Loss of Moisture	9.01	7.46	8.11	7.02			
Wt. of container	12.52	20.00	17.50	21.00			
Wt. of dry soil	27.16	21.32	19.70	14.26			
Moisture content %	33.17	34.99	41.17	49.23			
Number of blows	32	27	19	13			

Liquid Limit (LL) = 39.64 per cent

Layer	Value	Permissible Value
E/w	LL = 39.64 %	Less than 70 per cent

Determination of Plastic Limit (PL)				Remarks
Container Number	1	2	3	
Weight of container + wet soil	46.67	47.39		
Weight of container + dry soil	40.68	39.97		
Loss of Moisture	5.99	7.42		
Weight of container	14.29	13.00		
Weight of dry soil	26.39	26.97		
Moisture content %	22.70 (mc ₁)	27.51 (mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{25.10}{3} = 25.10$ per cent

Plasticity Index (PI) = LL - PL = 14.53 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
E/w	PI = 14.53 %	< 45 %	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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13.1.19

13/01/19

A.E

Tested by:

Executive Engineer
RWD (w) Division, Baisi

Atterberg Limits Test

Test 5

Road/Section Details: CH-2-400/100

Date of Testing: 14.1.19

Sample No.: 5

Type of soil: sandy soil

Sample Details:

Determination of Liquid Limit (LL)

	1	2	3	4	5	6	Remarks
Container Number	1	2	3	4			
Weight of container + wet soil	45.65	46.39	44.67	48.68			
Weight of container + dry soil	37.26	41.32	37.20	36.95			
Loss of Moisture	8.39	5.65	7.47	6.73			
Wt. of container	12.62	18.68	18.57	19.65			
Wt. of dry soil	24.74	22.64	18.63	17.30			
Moisture content %	33.91	22.31	40.10	38.90			
Number of blows	24	33	13	16			

Liquid Limit (LL) = $\frac{33.91 - 22.31}{33 - 20} \times 100$ per cent

Layer	Value	Permissible Value
E/W	LL = 33.91%	Less than 70 per cent

Determination of Plastic Limit (PL)

	1	2	3	Remarks
Container Number	5	6		
Weight of container + wet soil	46.68	44.67		
Weight of container + dry soil	40.25	39.29		
Loss of Moisture	6.43	5.38		
Weight of container	13.62	14.65		
Weight of dry soil	25.23	24.64		
Moisture content %	25.49	21.83		
	(mc ₁)	(mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{25.49 + 21.83 + 0}{3} = 23.66$ per centPlasticity Index (PI) = LL - PL = $33.91 - 23.66 = 10.25$ per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
E/W	PI = 10.25%	< 45%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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RWD (w) Division, Baisi

Atterberg Limits Test

Test 6

Road/Section Details: Ch: 2:950 km

Date of Testing: 14.1.17

Sample No.: 6

Type of soil: Sandy soil

Sample Details:

Determination of Liquid Limit (LL)

	1	2	3	4	5	6	Remarks
Container Number	1	2	3	4			
Weight of container + wet soil	41.67	42.84	43.65	42.16			
Weight of container + dry soil	36.58	36.95	39.24	39.60			
Loss of Moisture	5.09	5.89	4.41	2.56			
Wt. of container	14.26	19.25	17.50	18.28			
Wt. of dry soil	22.32	17.70	21.74	21.32			
Moisture content %	22.80	30.45	20.26	12.01			
Number of blows	49	40	20	16			

Liquid Limit (LL) = $\frac{34.09}{100}$ per cent

Layer	Value	Permissible Value
E/W	LL = 34.09 %	Less than 70 per cent

Determination of Plastic Limit (PL)

	1	2	3	Remarks
Container Number	5	6	7	
Weight of container + wet soil	42.25	45.29	45.29	
Weight of container + dry soil	37.26	39.28	39.28	
Loss of Moisture	4.99	6.01	6.01	
Weight of container	13.57	12.85	15.34	
Weight of dry soil	23.69	26.43	23.91	
Moisture content %	21.06	22.74	25.14	
	(mc ₁)	(mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{20.41}{3}$ per cent

Plasticity Index (PI) = LL - PL = 13.64 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
E/W	PI = 13.64 %	45 %	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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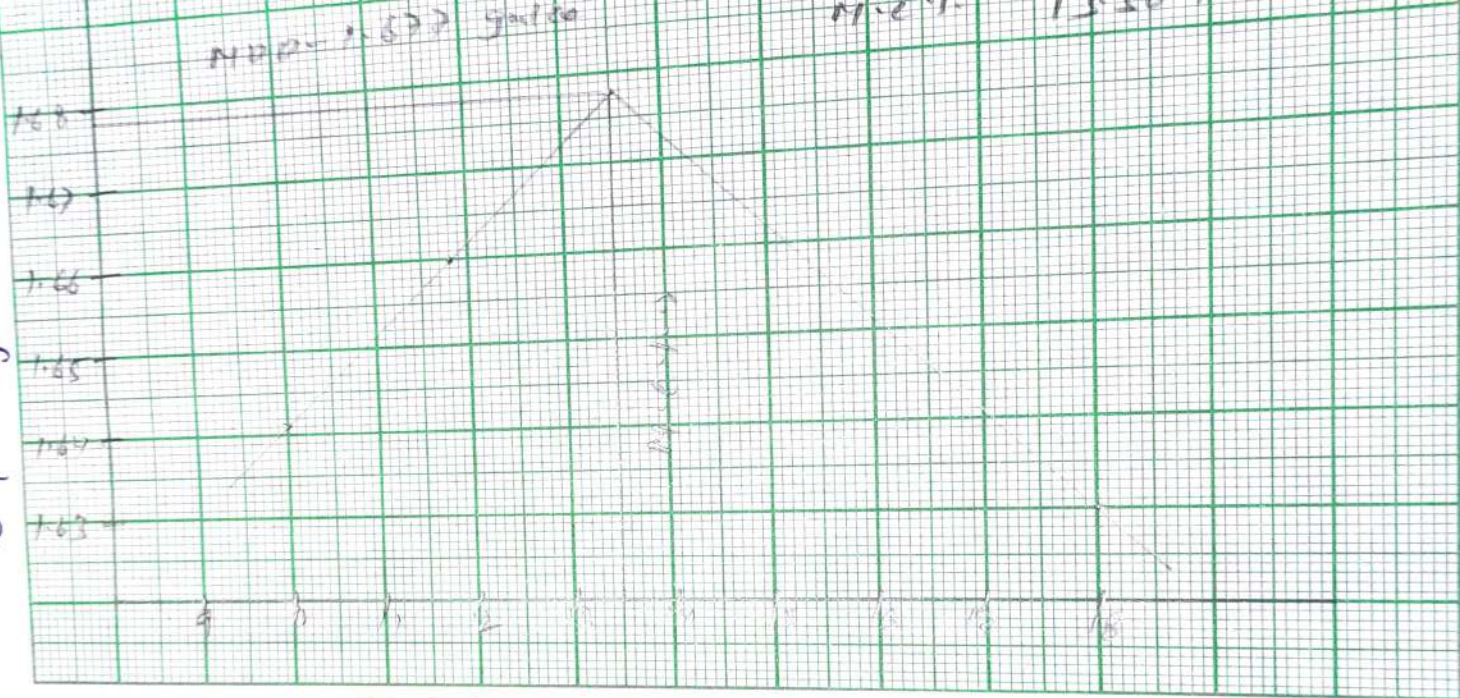
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RWD (w) Division, Baisi

Dry Density gm/cc



Moisture content %

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 1

Road / Section Details: Ch: - 0.195 km

Date of Testing: 16.1.19

Sample No.: J

Weight of Dry Soil: 24496 gm

Description of sample	Soil
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (Ws) (gms)	Moisture content (%) (W)	
1.	4998	1903	1.903	1	20.0	47.24	44.0	3.24	24.07	13.50	1.672
2.	4880	1805	1.805	2	21.0	55.21	52.10	3.11	31.10	10.00	1.641
3.	4735	1660	1.660	3	22.0	60.68	58.66	4.02	24.66	11.60	1.660
4.	4905	1830	1.830	4	21.0	39.92	36.80	3.12	15.80	15.80	1.660
5.	4998	1923	1.923	5	20.0	44.27	40.57	3.70	20.57	18.00	1.630

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
1	4.00 - 1.672 gm/cc	≥ 1.65 gm/cc	Yes

Don't conform to the prescribed Limits, non-conformance Report will be issued by the P.U. The page No. of this Register on which Non Conformance Reports copy preserved.

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Tested by: density of compacted soil $Y_m = \frac{W_2 - W_1}{V_m}$ gm/ccre: W_2 - Weight of mould + soil (gm), W_1 - Weight of mould (gm), V_m - Volume of mould (cc)density of compacted soil $Y_d = \frac{100}{100 + W} \times Y_m$

re W = moisture content

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 2

Road / Section Details: CH-0.585 km

Date of Testing: 16.1.19

Sample No: 2

Weight of Dry Soil: 2462 gm

Description of sample	Soil
Type of test	Standard Proctor
Weight of mould W_1 (gm)	2075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination								Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (W _w) (gms)	Weight of Dry soil (W _s) (gms)	Moisture content (%) (W)		
1.	4823	1948	1.748	1	21.0	55.27	52.23	2.54	31.73	8.00	1.620	
2.	4903	1828	1.828	2	21.57	62.92	59.15	3.77	37.65	10.00	1.662	
3.	4957	1882	1.882	3	22.0	57.09	53.33	3.76	31.23	12.00	1.680	
4.	4973	1898	1.898	4	20.0	46.06	42.66	3.40	22.66	15.00	1.652	
5.	4965	1890	1.890	5	20.30	48.32	44.30	4.02	24.00	16.75	1.620	
6.												

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
B/W	MDD - 1.680 gm/cc	> 1.65 gm/cc	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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Tested by:

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

Where: W_2 - Weight of mould + soil (gm), W_1 - Weight of mould (gm), V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 - W} \times Y_m$$

Where W = moisture content

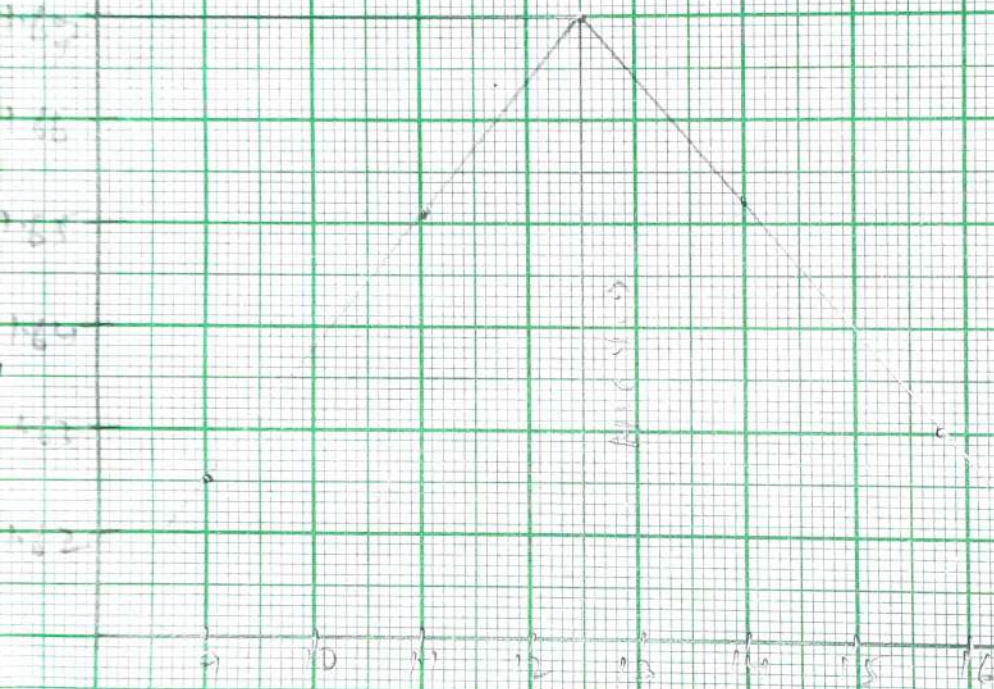
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16/01/19
M-2

Executive Engineer
RWD (w) Division, Baisi
16-01-19

MDD - 1.670 g/ml

M.C.T. - 12.54%



Moisture content % $\rightarrow$

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 3

Road / Section Details: CH-1-1.235 Km

Date of Testing: 17.1.19

Sample No.: 3

Weight of Dry Soil: 24631 gm

Description of sample	Soil
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (Ws) (gms)	Moisture content (%) (W)	
1.	4846	1771	1.771	1	21.22	60.08	56.87	3.21	35.65	9.00	1.625
2.	4909	1834	1.834	2	21.23	53.31	50.14	3.17	28.81	11.00	1.652
3.	4953	1878	1.878	3	21.40	59.20	55.80	4.20	33.60	12.50	1.670
4.	4962	1887	1.887	4	21.22	52.81	48.92	3.88	27.71	14.00	1.655
5.	4961	1886	1.886	5	21.55	48.81	46.40	3.61	22.85	15.80	1.630

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
1.5	1.670 gm/cc	1.65 gm/cc	Yes

Don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The of the page No. of this Register on which Non Conformance Reports copy preserved.

Date of issue:

Tested by: 

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

Where: W_2 - Weight of mould + soil (gm), W_1 - Weight of mould (gm), V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

Where W = moisture content

Signature _____

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 4

Road / Section Details: CH-1.800 Km

Date of Testing: 17.1.19

Sample No.: 4

Weight of Dry Soil: 24610 gm

Description of sample	Soil
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination								Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (Ws) (gms)	Moisture content (%) (W)		
1.	9847	1772	1.772	1	20.10	48.68	46.52	2.36	26.2	9.00		1.625
2.	4904	1829	1.829	2	20.15	57.63	48.57	3.12	28.26	11.00		1.648
3.	4952	1877	1.877	3	20.20	57.85	49.40	3.65	29.20	12.50		1.668
4.	4954	1879	1.879	4	20.13	42.60	39.72	2.88	19.72	14.60		1.640
5.	4953	1878	1.878	5	21.00	57.29	47.27	4.02	26.27	15.30		1.630
6.												

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
8/10	1.668 gm/cc	1.65 gm/cc	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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RWD

Wet density of compacted soil $Y_m = \frac{W_2 - W_1}{V_m}$ gm/ccWhere: W_2 - Weight of mould + soil (gm), W_1 - Weight of mould (gm), V_m - Volume of mould (cc)Dry density of compacted soil $Y_d = \frac{100}{100 + W} \times Y_m$

Where W = moisture content

Tested by:

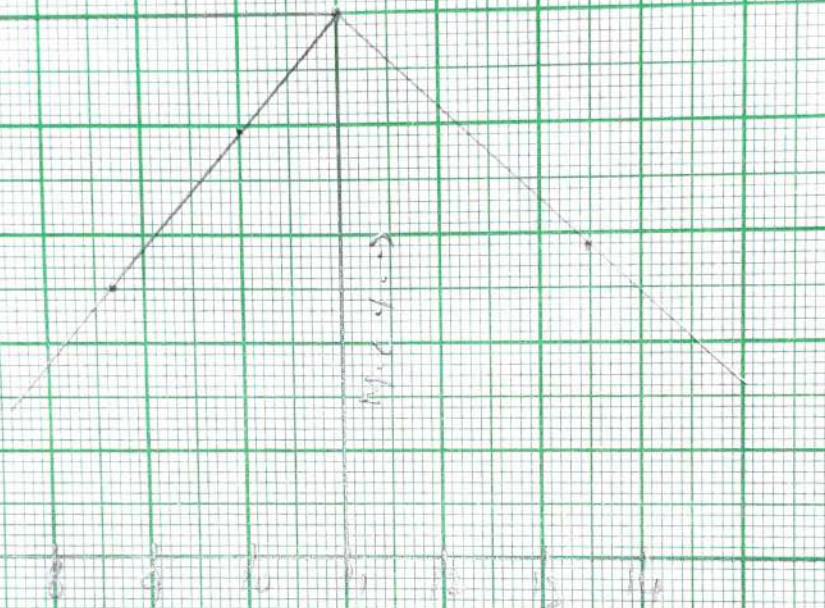
Executive Engineer

RWD (w) Division, Baisi

Dry Density g/mcc $\rightarrow$

MDD - 1.70 g/mcc

M.C.Y. - 11.10 %

Moisture content % $\rightarrow$

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 5

Road / Section Details: CH-2-400 km

Date of Testing: 18.1.19

Sample No.: 5

Weight of Dry Soil: 24468 gm

Description of sample	Soil
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (We) (gms)	Moisture content (%) (W)	
1.	4962	1887	1.887	1	20.15	4205	9078	2027	2062	11.00	1.700
2.	4782	1707	1.707	2	21.57	3342	6927	415	1770	8.70	1.570
3.	4890	1815	1.815	3	20.64	6326	5942	3.86	3878	9.90	1.650
4.	4954	1879	1.879	4	19.87	5962	5526	426	3549	12.00	1.628
5.	4880	1805	1.805	5	21.42	5773	5341	432	3199	12.50	1.590

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
W	MDP-1709 gm/cc	21.65 gm/cc	Yes

don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The of the page No. of this Register on which Non Conformance Reports copy preserved.

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Tested by:

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

here: W_2 - Weight of mould + soil (gm), W_1 - Weight of mould (gm), V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

here W = moisture content

Teacher's Signature

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 6

Road / Section Details: CH-2-2.950 km

Date of Testing: 18.1.19

Sample No.: 6

Weight of Dry Soil: 24537 gm

Description of sample	Soil
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (Ws) (gms)	Moisture content (%) (W)	
1.	4962	1887	1.887	1	22.0	61.20	57.50	4.65	25.50	12.09	1.668
2.	4912	1842	1.842	2	21.0	64.40	58.45	5.95	27.45	15.88	1.589
3.	4829	1754	1.754	3	21.0	55.50	52.57	2.92	21.57	9.30	1.665
4.	4893	1818	1.818	4	20.0	66.91	62.26	4.65	42.26	11.00	1.638
5.	4926	1861	1.861	5	22.0	74.70	68.66	6.84	46.06	14.85	1.620
6.											

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
2/10	1.668 gm/cc	1.659 gm/cc	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Tested by:

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RWD (w) Division, Baisi

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

Where: W_2 - Weight of mould + soil (gm), W_1 - Weight of mould (gm), V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

Where W = moisture content

Field Density of Soil (Sand replacement method)

Test 1

Road/Section Details: CH-0.195km

Date of Testing: 16.1.19

Location of test point: 0/1

Thickness of layer: 30 mm

Observation Tables

(a)	Calibration	
(i)	Mean weight of sand in cone (of pouring cylinder) (W_1) in gm.	386
(ii)	Volume of calibrating cylinder (V) in cc.	1183
(iii)	Weight of sand (+ cylinder) before pouring (W_2) in gm.	6080
(iv)	Mean weight of sand (+cylinder) after pouring (W_3) in gm.	4035
(v)	Weight of sand to fill calibrating cylinder. ($W_s = W_2 - W_3$) in gm.	1579
(vi)	Bulk density of sand $Y_s = (W_s/V)$ gm/cc	1.335
(b)	Determination of soil density	
(i)	Determination number	2452
(ii)	Weight of wet soil from hole (W_w) in gm.	6080
(iii)	Weight of sand (+ cylinder) before pouring (W_1) in gm.	3869
(iv)	Weight of sand (+ cylinder) after pouring (W_2) in gm.	1745
(v)	Weight of sand in hole, in gm. $W_s = (W_1 - W_2 - W_3)$	1876
(vi)	Bulk density $Y_b = (W_s/W_b) \times Y_s$ gm/cc	11.574
(vii)	Moisture content container number	2198
(viii)	Moisture content (W) percent	1.681
(ix)	Weight of dry soil from the hole in gm. (W_d)	
(x)	Dry density $Y_d = (W_d/W_b) \times Y_s$ gm/cc	

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Subgrade	100.24.1	100.1	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Field density as per cent of Maximum Dry Density at OMC.

Checked by: JE RWD
16.1.19

Tested by: Executive Engineer
RWD (w) Division, Baisi
16.1.19

Field Density of Soil (Sand replacement method)

Test 2

Road/Section Details: CHA - 0.585 Km

Date of Testing: 16.1.19

Location of test point: C/S

Thickness of layer: 200 mm

Observation Tables

(a)	Calibration	
(i)	Mean weight of sand in cone (of pouring cylinder) (W_2) in gm.	389
(ii)	Volume of calibrating cylinder (V) in cc.	1189
(iii)	Weight of sand (+ cylinder) before pouring (W_1) in gm.	6000
(iv)	Mean weight of sand (+cylinder) after pouring (W_3) in gm.	4294
(v)	Weight of sand to fill calibrating cylinder. ($W_s = W_1 - W_2 - W_3$) in gm.	1517
(vi)	Bulk density of sand $Y_s = (W_s/V)$ gm/cc	1.276
(b)	Determination of soil density	
(i)	Determination number	2546
(ii)	Weight of wet soil from hole (W_w) in gm.	6000
(iii)	Weight of sand (+ cylinder) before pouring (W_1) in gm.	3896
(iv)	Weight of sand (+ cylinder) after pouring (W_2) in gm.	1715
(v)	Weight of sand in hole, in gm. $W_b = (W_1 - W_2 - W_3)$	1.894
(vi)	Bulk density $Y_b = (W_w/W_b) \times Y_s$ gm/cc	12.591
(vii)	Moisture content container number	2261
(viii)	Moisture content (W) percent	1.682
(ix)	Weight of dry soil from the hole in gm. (W_d)	
(x)	Dry density $Y_d = (W_d/W_b) \times Y_b$ gm/cc	

MDD - 1.680 gm/cc

Comp. - 100.11%

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Subgrade	100.11%	100%	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved. Page No. Date of issue			

* Field density as per cent of Maximum Dry Density at OMC.

Checked by:

JE
RWD

Tested by:

Executive Engineer
RWD (w) Division, Baisi

Field Density of Soil
(Sand replacement method)

Test 3

Road/Section Details: CH-1736 Km

Date of Testing: 17.1.19

Location of test point: R/c

Thickness of layer: 30 mm

Observation Tables

(a)	Calibration (i) Mean weight of sand in cone (of pouring cylinder) (W_2) in gm. 369 (ii) Volume of calibrating cylinder (V) in cc. 1189 (iii) Weight of sand (+ cylinder) before pouring (W_1) in gm. 600 (iv) Mean weight of sand (+cylinder) after pouring (W_3) in gm. 494 (v) Weight of sand to fill calibrating cylinder. ($W_s = W_1 - W_2 - W_3$) in gm. 1537 (vi) Bulk density of sand $Y_s = (W_s/V)$ gm/cc 1.293
(b)	Determination of soil density (i) Determination number 2560 (ii) Weight of wet soil from hole (W_w) in gm. 600 (iii) Weight of sand (+ cylinder) before pouring (W_1) in gm. 3871 (iv) Weight of sand (+ cylinder) after pouring (W_4) in gm. 1760 (v) Weight of sand in hole, in gm. $W_b = (W_1 - W_4 - W_2)$ 1880 (vi) Bulk density $Y_b = (W_w/W_b) \times Y_s$ gm/cc 1.241 (vii) Moisture content container number 2281 (viii) Moisture content (W) percent 22.81 (ix) Weight of dry soil from the hole in gm. (W_d) 1675 (x) Dry density $Y_d = (W_d/W_b) \times Y_s$ gm/cc 1.670

MDD: 1.670 gm/cc

Comp. No. 170304

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Subgrade	1.670	1.670	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved. Page No. Date of issue.....			

• Field density as per cent of Maximum Dry Density at OMC

Checked by:

JE
RWD

Tested by:

Executive Engineer,
RWD (w) Division, Baisi

Field Density of Soil
(Sand replacement method)

Test 4

Road/Section Details: CH-1.800 Km

Date of Testing: 17.1.19

Location of test point: C/S

Thickness of layer: 300 mm

Observation Tables

(a)	Calibration (i) Mean weight of sand in cone (of pouring cylinder) (W_2) in gm. 386 (ii) Volume of calibrating cylinder (V) in cc. 1183 (iii) Weight of sand (+ cylinder) before pouring (W_1) in gm. 6080 (iv) Mean weight of sand (+cylinder) after pouring (W_3) in gm. 4035 (v) Weight of sand to fill calibrating cylinder. ($W_s = W_1 - W_2 - W_3$) in gm. 1579 (vi) Bulk density of sand $Y_s = (W_s/V)$ gm/cc 1.335
(b)	Determination of soil density (i) Determination number - (ii) Weight of wet soil from hole (W_w) in gm. 2461 (iii) Weight of sand (+ cylinder) before pouring (W_1) in gm. 6080 (iv) Weight of sand (+ cylinder) after pouring (W_4) in gm. 3869 (v) Weight of sand in hole, in gm. $W_b = (W_1 - W_4 - W_2)$ 1745 (vi) Bulk density $Y_b = (W_w / W_b) \times Y_s$ gm/cc 1.882 (vii) Moisture content container number - (viii) Moisture content (W) percent 12.20% (ix) Weight of dry soil from the hole in gm. (W_d) 2193 (x) Dry density $Y_d = (W_d / W_b) \times Y_s$ gm/cc 1.677 MDD $\rightarrow 1.668$ gm/cc Comp. $\rightarrow 100.54\%$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Sub grade	100.54%	100%	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
Page No.	Date of issue.		

* Field density as per cent of Maximum Dry Density at OMC.

Checked by:

JE
RWD

Tested by:

Executive Engineer
RWD (w) Division, Baisi

Field Density of Soil (Sand replacement method)

Test 5

Road/Section Details: CH-2 - 2.400 Km

Date of Testing: 18.1.19

Location of test point.: U/s

Thickness of layer: 30mm

Observation Tables

(a)	Calibration (i) Mean weight of sand in cone (of pouring cylinder) (W_2) in gm. 375 (ii) Volume of calibrating cylinder (V) in cc. 1175 (iii) Weight of sand (+ cylinder) before pouring (W_1) in gm. 6000 (iv) Mean weight of sand (+cylinder) after pouring (W_3) in gm. 4020 (v) Weight of sand to fill calibrating cylinder. ($W_s = W_1 - W_2 - W_3$) in gm. 1605 (vi) Bulk density of sand $Y_s = (W_s/V)$ gm/cc 1.364
(b)	Determination of soil density (i) Determination number 2575 (ii) Weight of wet soil from hole (W_w) in gm. 6000 (iii) Weight of sand (+ cylinder) before pouring (W_1) in gm. 3810 (iv) Weight of sand (+ cylinder) after pouring (W_4) in gm. 1815 (v) Weight of sand in hole, in gm. $W_s = (W_1 - W_4 - W_2)$ 10938 (vi) Bulk density $Y_b = (W_w/W_s) \times Y_s$ gm/cc 1.745 (vii) Moisture content container number 1545-1 (viii) Moisture content (W) percent 22.70 (ix) Weight of dry soil from the hole in gm. (W_d) 1708 (x) Dry density $Y_d = (W_d/W_s) \times Y_s$ gm/cc 1.708

MOP - 1.70 g/cc

Compd - 1.00 - 47.1

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Subgrade	1.70 g/cc	1.00 g/cc	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved. Page No. Date of issue.			

* Field density as per cent of Maximum Dry Density at OMC.

Checked by:

JE
RWD

Tested by:

Executive Engineer
RWD (w) Division, Baisi

Field Density of Soil (Sand replacement method)

Test 6

Road/Section Details: CH-2.950/10m

Date of Testing: 18.1.19

Location of test point: c/c

Thickness of layer: 30 mm

Observation Tables

(a) Calibration	
(i)	Mean weight of sand in cone (of pouring cylinder) (W_2) in gm. 372
(ii)	Volume of calibrating cylinder (V) in cc. 1168
(iii)	Weight of sand (+ cylinder) before pouring (W_1) in gm. 6600
(iv)	Mean weight of sand (+cylinder) after pouring (W_3) in gm. 4020
(v)	Weight of sand to fill calibrating cylinder. ($W_s = W_1 - W_2 - W_3$) in gm. 1608
(vi)	Bulk density of sand $Y_s = (W_s/V)$ gm/cc 1.377
(b) Determination of soil density	
(i)	Determination number —
(ii)	Weight of wet soil from hole (W_w) in gm. 2565
(iii)	Weight of sand (+ cylinder) before pouring (W_1) in gm. 6600
(iv)	Weight of sand (+ cylinder) after pouring (W_4) in gm. 3770
(v)	Weight of sand in hole, in gm. $W_s = (W_1 - W_4 - W_2)$ 1858
(vi)	Bulk density $Y_b = (W_w/W_s) \times Y_s$ gm/cc 1.901
(vii)	Moisture content container number —
(viii)	Moisture content (W) percent 22.53
(ix)	Weight of dry soil from the hole in gm. (W_d) 13.857
(x)	Dry density $Y_d = (W_d/W_s) \times Y_s$ gm/cc 1.668

MDD - 1.668 gm/cc

Comp. - 100.5%

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Subgrade	100.5%	100%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue:

* Field density as per cent of Maximum Dry Density at OMC.

Checked by:

JE
RWD

Tested by:

Executive Engineer
RWD (w) Division, Baisi



Mukhya Mantri Gram Sampark Yojana

Quality Control Register Part 1

Record of Tests

Section-2 Granular Construction

Quality Control Register Part 1
Record of Tests Section 2 Granular Construction
Abstract of tests Conducted

Test No.	Name of Test	Test No.	Date of Test	Result Qualified/ Not Qualified	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7
Drainage Layer						
SB-1	Gradation Drainage Layer	Test 1				
		Test 2				
		Test 3				
		Test 4				
		Test 5				
		Test 6				
		Test 7				
		Test 8				
		Test 9				
		Test 10				
		Test 11				
		Test 12				
Granular Sub Base						
SB-1	Gradation G S B	Test 1		qualified		109
		Test 2		11		110
		Test 3		11		111
		Test 4		11		112
		Test 5		11		113
		Test 6		11		114
		Test 7		11		115
		Test 8				
		Test 9				
		Test 10				
		Test 11				
		Test 12				
		Test 13				
		Test 14				
		Test 15				
		Test 16				
SB-2	Atterberg limits G S B	Test 1		qualified		125
		Test 2		11		127
		Test 3		11		129

Test No.	Name of Test	Test No.	Date of Test	Result Qualified/ Not Qualified	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7
		Test 4		Qualified		131
		Test 5		11		133
		Test 6				
		Test 7				
		Test 8				
		Test 9				
		Test 10				
		Test 11				
		Test 12				
		Test 13				
		Test 14				
		Test 15				
		Test 16				
SB-3	Moisture content	Test Table				
SB-4	Density of Compacted Layer	MOD		Qualified		158
		11		11		159
		11		11		160
		11		11		161
		POD		4		158 (A)
SB-8	CBR Test G S B					
		Test 2				
SB-5	Thickness of Layer G S B					
Base Course Water Bond Macadam						
GB-1	Aggregate Impact Value Grading-2	Test 1				
		Test 2				
		Test 3				
		Test 4				
		Test 5				
		Test 6				
		Test 7				
GB-2	Gradation WBM Grading-2	Test 1				
		Test 2				
		Test 3				
		Test 4				

Test No.	Name of Test	Test No.	Date of Test	Result Qualified/ Not Qualified	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7
		Test 5				
		Test 6				
		Test 7				
		Test 8				
		Test 9				
		Test 10				
		Test 11				
		Test 12				
		Test 13				
		Test 14				
GB 3	Flakiness Index WBM Grading-2	Test 1				
		Test 2				
		Test 3				
		Test 4				
		Test 5				
		Test 6				
		Test 7				
GB-4	Atterberg Limits Binding Material Grading 2	Test 1				
GB-6	Thickness of Layer	Test Table				
GB-1	Aggregate Impact Value Grading-3	Test 1		11		208
		Test 2		11		209
		Test 3				
		Test 4				
GB-2	Gradation WBM Grading-3	Test 1		Qualified		209
		Test 2		11		210
		Test 3				
		Test 4				
		Test 5				
		Test 6				
		Test 7				
		Test 8				
GB 3	Flakiness Index WBM Grading-3	Test 1		Qualified		213
		Test 2				
		Test 3				
		Test 4				

Tests for Granular Sub Base

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 1

Road / Section Details CH- 0.220km

Date of Testing: 28.01.19

Sample No. 1

Weight of soil sample taken: 83068 (gm)

Dry Sieving Gr-1

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
75 mm	0	0	0	100	100
26.5 mm	22517	27.11	27.11	72.89	85-75
4.75 mm	40235	48.44	75.54	24.46	10-30
75 μ	20316	24.46	100.00	0.00	0-10

Wet Sieving

Weight of Soil Sample taken: (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of Issue

Checked by:

JE
RWD

Instruction for Blending

Tested by:

Executive Engineer
RWD (w) Division, Baisi

(Date & Signature)
Officer in charge

Tests for Granular Sub Base

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 2

Road / Section Details CH- 0.720 km Date of Testing: 29/11/19
 Sample No. 2 Weight of soil sample taken: 8118 (gm)

Dry Sieving: 68-1

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
75 mm	0	0	0	100	100
26.5 mm	2166	26.71	26.71	73.29	55-75
4.75 mm	3923	48.36	75.07	24.93	10-30
75 μ	2022	24.93	100.00	0.00	0-10

Wet Sieving

Weight of Soil Sample taken: (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
 Page No. Date of issue.....

Checked by:

JE
RWD

Instruction for Blending

Tested by:

Executive Engineer
 RWD (w) Division, Baisi

(Date & Signature)
 Officer in charge

Tests for Granular Sub Base

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 3

Road / Section Details CH-1.220 Km-

Date of Testing: 30.01.19

Sample No. 3

Weight of soil sample taken: 81676 (gm)

Dry Sieving G.S-1

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
75 mm	0	0	0	100	100
2.5 mm	21550	26.38	26.38	73.62	55-75
4.75 mm	39414	48.26	74.64	25.36	10-30
75 μ	20712	25.26	100.00	0.00	0-10

Wet Sieving

Weight of Soil Sample taken: (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Checked by:

RB
JE
RWD
30.1.19

Instruction for Blending

Tested by:

Executive Engineer
RWD (w) Division, Baisi
30.01.19

(Date & Signature)
Officer in charge

Tests for Granular Sub Base

Sieve Analysis (IS: 2720 (Part 4) - 1985)

Test 4

Road / Section Details Ch 2 - 1.850 km Date of Testing: 3.02.2019Sample No. 4 Weight of soil sample taken: 81594 (gm)Dry Sieving Gp - I

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
75 mm	0	0	0	100	100
26.5 mm	21228	26.02	26.02	73.98	95-75
4.75 mm	39722	48.68	74.70	25.30	10-30
75 μ	20644	25.30	100.00	0.00	0-10

Wet Sieving

Weight of Soil Sample taken: (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) yesIf Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
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Checked by:

JE
RWD

Instruction for Blending

Tested by:

Executive Engineer
RWD (w) Division, Baisi(Date & Signature)
Officer in charge

Tests for Granular Sub Base

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 5

Road / Section Details CH- 2.250 km Date of Testing: 5.02.2019

Sample No. 5

Weight of soil sample taken: 85087 (gm)

Dry Sieving G₂-L

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
75 mm	0	0	0	100	100
26.5 mm	22568	26.52	26.52	73.48	55-75
4.75 mm	45268	53.20	79.73	20.27	10-30
75 μ	17251	20.27	100.00	0.00	0-10

Wet Sieving

Weight of Soil Sample taken: (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Checked by:

05/02/19
A-4
JE
RWD

Instruction for Blending

Tested by:

05/02/19
Executive Engineer
RWD (w) Division, Baisi

(Date & Signature)
Officer in charge

Tests for Granular Sub Base
Sieve Analysis (IS:2720 (Part 4) -1985)

Test 6

Road / Section Details

CH-2.730km

Date of Testing: 7.02.2019

Sample No. 6

Weight of soil sample taken: 82210 (gm)

Dry Sieving 60-1

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
75mm	0	0	0	100	100
26.5mm	22153	26.95	26.95	72.65	55-75
4.75 mm	43201	52.55	79.50	20.50	10-30
75µ	16856	20.50	100.00	0.00	0-10

Wet Sieving

Weight of Soil Sample taken:

(gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page, No. of this Register on which Non Conformance Reports copy preserved.
Page No. Date of issue:

Checked by:

[Signature]
JE
RWD

Instruction for Blending

Tested by:

[Signature]
Executive Engineer
RWD (w) Division, Baisi

(Date & Signature)
Officer in charge

Tests for Granular Sub Base

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 7

Road / Section Details Chd - 3.150km Date of Testing: 10.02.2019Sample No. 7Weight of soil sample taken: 81899 (gm)Dry Sieving G.D-L

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing	Prescribed Limit % Wt. Passing/Retained
<u>75mm</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>100</u>
<u>250mm</u>	<u>21325</u>	<u>26.04</u>	<u>26.04</u>	<u>73.96</u>	<u>55-75</u>
<u>4.75mm</u>	<u>44260</u>	<u>54.16</u>	<u>80.20</u>	<u>19.80</u>	<u>10-30</u>
<u>75mm</u>	<u>16214</u>	<u>19.80</u>	<u>100.00</u>	<u>0.00</u>	<u>0-10</u>

Wet Sieving

Weight of Soil Sample taken: (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Prescribed Limit % Wt. Passing/Retained

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Page No. Date of issue

Checked by:

JE
RWD

Instruction for Blending

Tested by:

Executive Engineer
RWD (w) Division, Baisi(Date & Signature)
Officer in charge

Test for Granular Sub Base

Atterberg Limits Test

Road/Section Details: CH-0.220 km

Test 1

Date of Testing: 28.01.19

Sample No.: 1

Type of soil: GSB

Sample Details:

Determination of Liquid Limit (LL)						
Container Number	1	2	3	4	5	6
Weight of container + wet soil	62.81	36.37	57.21			
Weight of container + dry soil	32.84	34.41	46.21			
Loss of Moisture	29.97	1.96	11.0			
Wt. of container	24.1	20.0	21.0			
Moisture content %	29.84	14.41	25.21			
Number of blows	17	27	15			

Liquid Limit (LL) = 23.7 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSB	LL = 23.7	< 25	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
Page No. Date of issue			

Determination of Plastic Limit (PL)			
Container Number	1	2	3
Weight of container + wet soil	56.11	57.92	
Weight of container + dry soil	30.36	32.12	
Loss of Moisture	25.75	25.8	
Weight of container	20.0	21.4	
Moisture content %	20.36	20.42	
	18.94 (mc ₁)	19.02 (mc ₂)	

Plasticity Index (PI) = LL - PL = 4.7 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSB	PI = 4.7	< 6	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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JE

RWD

Tested by:

Executive Engineer

RWD (w) Division, Baisi

Test for Granular Sub Base

Atterberg Limits Test

Test 2

Road/Section Details: CH - 0.62 km

Date of Testing: 29.1.19

Sample No.: 2

Type of soil: GSA

Sample Details:

Determination of Liquid Limit (LL)							Remarks
Container Number	1	2	3	4	5	6	
Weight of container + wet soil	39.21	38.65	66.68				
Weight of container + dry soil	37.29	36.14	61.80				
Loss of Moisture	1.92	2.51	15.88				
Wt. of container	12.2	16.8	22.0				
Wt. of dry soil	25.09	19.3	29.8				
Moisture content %	9.55	12.92	49.93				
Number of blows	24	27	12				

$$\text{Liquid Limit (LL)} = \frac{24.1}{24} \text{ per cent}$$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSA	LL = 24.1%	< 25%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Determination of Plastic Limit (PL)				Remarks
Container Number	1	2	3	
Weight of container + wet soil	39.96	25.24		
Weight of container + dry soil	37.12	23.21		
Loss of Moisture	2.84	2.03		
Weight of container	21.7	7.53		
Weight of dry soil	16.42	2.6		
Moisture content %	17.02	18.28		
	(mc ₁)	(mc ₂)	(mc ₃)	

$$\text{Plastic Limit (PL)} = \frac{mc_1 + mc_2 + mc_3}{3} = \frac{18.9}{3} \text{ per cent}$$

$$\text{Plasticity Index (PI)} = \text{LL} - \text{PL} = 5.1 \text{ per cent}$$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSA	PI = 5.1%	< 6%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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RWD (w) Division, Baisi

Test for Granular Sub Base

Atterberg Limits Test

Test 3

Road/Section Details:

Sample No.: 2

CH-1.220 Km

Date of Testing: 30.01.19

Sample Details:

Type of soil: GSA

Determination of Liquid Limit (LL)							Remarks
Container Number	1	2	3	4	5	6	
Weight of container + wet soil	45.27	39.24	32.17				
Weight of container + dry soil	43.26	35.45	41.75				
Loss of Moisture	1.91	1.79	10.42				
Wt. of container	10.1	18.9	22.3				
Wt. of dry soil	26.16	16.5	19.45				
Moisture content %	7.30	10.8	53.5				
Number of blows	32	27	13				

Liquid Limit (LL) = 23.8 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSA	LL = 23.8%	6.25%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Determination of Plastic Limit (PL)				Remarks
Container Number	1	2	3	
Weight of container + wet soil	24.52	26.59		
Weight of container + dry soil	23.11	24.31		
Loss of Moisture	1.56	1.88		
Weight of container	14.5	11.8		
Weight of dry soil	8.51	9.41		
Moisture content %	18.33 (mc ₁)	18.97 (mc ₂)	(mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{18.65}{3}$ per cent

Plasticity Index (PI) = LL - PL = 5.15 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSA	PI = 5.15%	6.1%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Test for Granular Sub Base

Atterberg Limits Test

Test 4

Road/Section Details: CH-1-1.850 Km

Date of Testing: 3.02.2019

Sample No.: 4

Type of soil: GSB

Sample Details:

Determination of Liquid Limit (LL)

	1	2	3	4	5	6	Remarks
Container Number	1	2	3	4			
Weight of container + wet soil	41.29	40.39	39.46	37.49			
Weight of container + dry soil	37.64	36.68	35.28	34.11			
Loss of Moisture	5.65	3.71	4.18	3.38			
WL of container	14.26	14.25	17.50	18.28			
WL of dry soil	23.38	17.43	17.78	15.83			
Moisture content %	15.61	21.24	23.51	21.35			
Number of blows	25	28	26	28			

$$\text{Liquid Limit (LL)} = \frac{20.44}{20.44} \text{ per cent}$$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSB	LL = 20.44%	25%	
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved. Page No. Date of issue.			

Determination of Plastic Limit (PL)

	1	2	3	Remarks
Container Number	5	6	7	
Weight of container + wet soil	37.49	37.27	25.23	
Weight of container + dry soil	35.46	33.68	24.26	
Loss of Moisture	2.03	3.61	0.97	
Weight of container	15.04	13.00	15.34	
Weight of dry soil	20.42	20.68	13.92	
Moisture content %	9.94 (mc ₁)	17.46 (mc ₂)	20.98 (mc ₃)	

$$\text{Plastic Limit (PL)} = \frac{mc_1 + mc_2 + mc_3}{3} = \frac{16.13}{3} \text{ per cent}$$

$$\text{Plasticity Index (PI)} = \text{LL} - \text{PL} = 4.31 \text{ per cent}$$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSB	PI = 4.31%	6%	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved. Page No. Date of issue.			

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Test for Granular Sub Base

Atterberg Limits Test

Test 5

Road/Section Details: CH: - 2.250 Km

Date of Testing: 01.02.19

Sample No.: 5

Type of soil: GSB

Sample Details:

Determination of Liquid Limit (LL)							Remarks
Container Number	1	2	3	4	5	6	
Weight of container + wet soil.	40.28	40.39	38.26	36.29			
Weight of container + dry soil	36.57	34.68	35.32	33.26			
Loss of Moisture	3.71	5.71	2.94	3.03			
Wt. of container	14.26	14.25	17.50	18.28			
Wt. of dry soil	22.31	15.43	17.82	14.98			
Moisture content %	16.65	37.01	16.50	20.23			
Number of blows	32	14	34	29			

Liquid Limit (LL) = 22.59 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSB	LL = 22.59%	25%	
If Results don't conform to the prescribed Limits; non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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Determination of Plastic Limit (PL)					Remarks
Container Number	1	2	3		
Weight of container + wet soil	39.62	38.29	39.62		
Weight of container + dry soil	35.12	35.69	33.29		
Loss of Moisture	4.50	2.58	4.33		
Weight of container	15.57	12.35	13.84		
Weight of dry soil	21.55	23.34	17.90		
Moisture content %	20.88 (mc ₁)	11.05 (mc ₂)	24.43 (mc ₃)		

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = 18.80$ per cent

Plasticity Index (PI) = LL - PL = 3.79 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSB	PI = 3.79%	6%	Yes
If Results don't conform to the prescribed Limits; non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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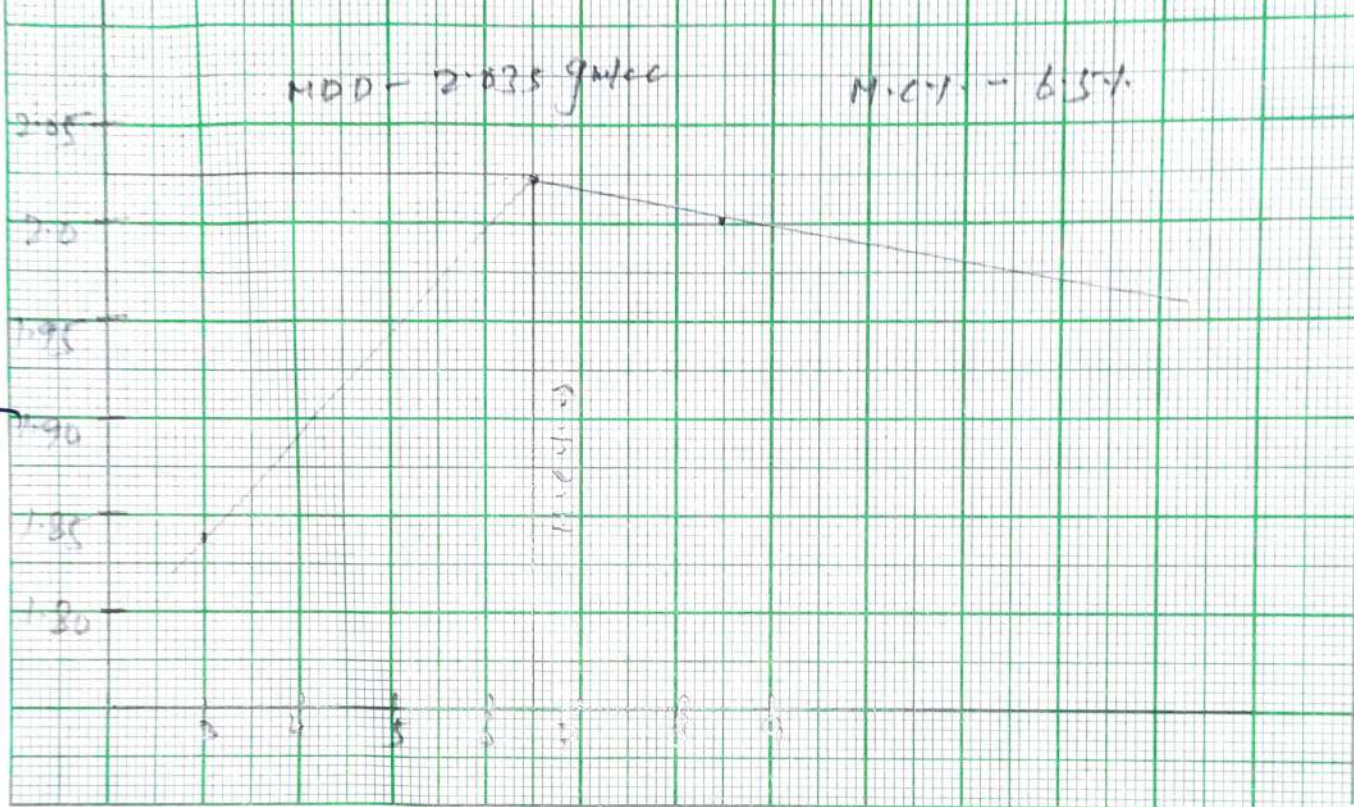
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Dry Density $\text{g/cc} \rightarrow$



Moisture Content % $\rightarrow$

Test for Granular Sub Base **Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)**

Test 1

Road / Section Details: Ch: 0.220 km

Date of Testing: 12-02-19

Sample No.: 1

Weight of Dry Soil: 25768 gm

Description of sample	G.S.B
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (Ws) (gms)	Moisture content (%) (W)	
1.	4970	1895	1.895	1	20.0	57.08	56.0	1.08	36.0	3.0	1.840
2.	5072	2002	2.002	2	20.0	53.28	52.0	1.28	32.0	4.0	1.925
3.	5229	2154	2.154	3	31.41	186.17	184.49	6.63	142.08	4.70	2.051
4.	5250	2175	2.175	4	21.0	62.23	59.0	3.23	38.0	8.50	2.005
5.	5242	2167	2.167	5	22.0	64.60	62.0	2.60	40.0	6.50	2.035

Parameter	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
	Moist - 2.035 %	2.0 - 2.4	Yes

It conform to the prescribed Limits, non conformance Report will be issued by the PIU. The page No. of this Register on which Non Conformance Reports copy preserved.

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 Tested by:

$$\text{density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

- re
- Weight of mould + soil (gm)
 - Weight of mould (gm)
 - Volume of mould (cc)

$$\text{density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

re W = moisture content

Teacher's Signature

OBSERVATION SHEET FOR FIELD DENSITY OF GSB-II
(By Sand Replacement Method)

Name of Work: Chalsa village to Dargah chow Mandi

Date of Testing: 15.02.19

(a) Calibration:

i) Mean weight of sand in cone of pouring cylinder (W₂) in gm. 364
 ii) Volume of calibrating cylinder (V) in cc 1155
 iii) Weight of (Sand+cylinder) before pouring (W₁) in gm. 6000
 iv) Mean weight of (Sand+cylinder) after pouring (W₃) in gm. 4032
 v) Weight of sand to fill calibrating cylinder. (W_a = W₁ - W₂ - W₃) in gm 1604
 vi) Bulk density of Sand Y_s = (W_a/V) in gm/cc 1.389

(b) Determination of Soil Density:

SLNo	Description	Location : CH MDP- 2033	Location : CH 205	Location : CV 203
1	Weight of wet GSB from wale (W _w) in gm	2621	2627	2578
2	Weight of Sand (+ cylinder) before pouring (W ₁) in gm.	6000	6000	6000
3	Mean weight of Sand (+ cylinder) after pouring (W ₄) in gm.	3958	3946	3940
4	Weight of Sand in hole, in gm (W _b = W ₁ - W ₄ - W ₂)	1678	1690	1696
5	Bulk Density, Y _b = (W _w /W _b) x Y _s , gm/cc	2.177	2.169	2.111
6	Moisture content (W) percent (Rapid Moisture Metre)	6.96%	5.11	3.69%
7	Weight of dry soil from the hole in gm. (W _d = W _w - W _w x 10%)	2460	2589	2486
8	Dry Density, Y _d = (100/100+m) x Y _b , gm/cc	2.036	2.062	2.084
9	Degree of compaction = Dry Density/Max Dry Density x 100	100.15%	100.57%	100.29%

Checked by

JE
RWD

Tested by

Executive Engineer
RWD (w) Division, Baisi

158(A)

Test 2

Road / Section Details: C.A. : 0.62211

Date of Testing: 13/2/19

Sample No.: 2.

Weight of Dry Soil: 2444.5 gm

Description of sample	GSA
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3075 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (W _w) (gms)	Weight of Dry soil (W _s) (gms)	Moisture content (%) (W)	
1.	5226	2157	2.157	1	20.0	54.71	52.10	1.61	33.1	4.86	2.05
2.	4764	1689	1.689	2	22.0	46.82	45.52	1.30	22.52	5.52	1.63
3.	4974	1899	1.899	3	22.0	45.62	44.18	1.44	22.18	6.49	1.75
4.	4810	1735	1.735	4	20.0	46.78	45.63	1.15	25.63	4.49	1.65
5.	4671	1596	1.596	5	21.0	46.61	45.10	1.51	24.10	6.25	1.49
6.											

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
GSA	1.00 - 2.05 gm/cc	2.0 - 2.4	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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JE
RWD

Tested by: [Signature]
Executive Engineer
RWD (w) Division, Baisi

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

Where

 W_2 - Weight of mould + soil (gm) W_1 - Weight of mould (gm) V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

Where W = moisture content.

Test for Granular Sub Base

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 3

Road / Section Details: Ch. - 1.220 KmDate of Testing: 14.02.19Sample No.: 3Weight of Dry Soil: 25487 gm

Description of sample	<u>G.S.B</u>
Type of test	Standard Proctor
Weight of mould W_1 (gm)	<u>3075 gm</u>
Volume of mould V_m (cc)	<u>1000 cc</u>
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (Ww) (gms)	Weight of Dry soil (W_s) (gms)	Moisture content (%) (W)	
1.	5215	2140	2.140	1	20.0	256.21	251.0	5.21	31.00	1.58	1.92
2.	5045	1970	1.970	2	22.0	114.35	110.0	4.35	88.00	4.95	1.87
3.	4955	1880	1.880	3	25.00	276.2	290.0	6.20	260.0	2.35	1.82
4.	5077	2002	2.002	4	21.00	142.95	138.0	4.95	117.0	4.22	1.92
5.	5125	2120	2.120	5	20.0	121.50	118.0	3.50	90.00	3.56	2.03
6.											

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
<u>G.S.B</u>	<u>1000-2039246</u>	<u>2.0 - 2.4</u>	<u>Yes</u>

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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RWD (w) Division, Baisi

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

Where

 W_2 - Weight of mould + soil (gm) W_1 - Weight of mould (gm) V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

Where W = moisture content

Dry Density gm/cc

2.10

MDD = 2.0 gm/cc

W.C. = 5.17%

2.0

1.90

1.80

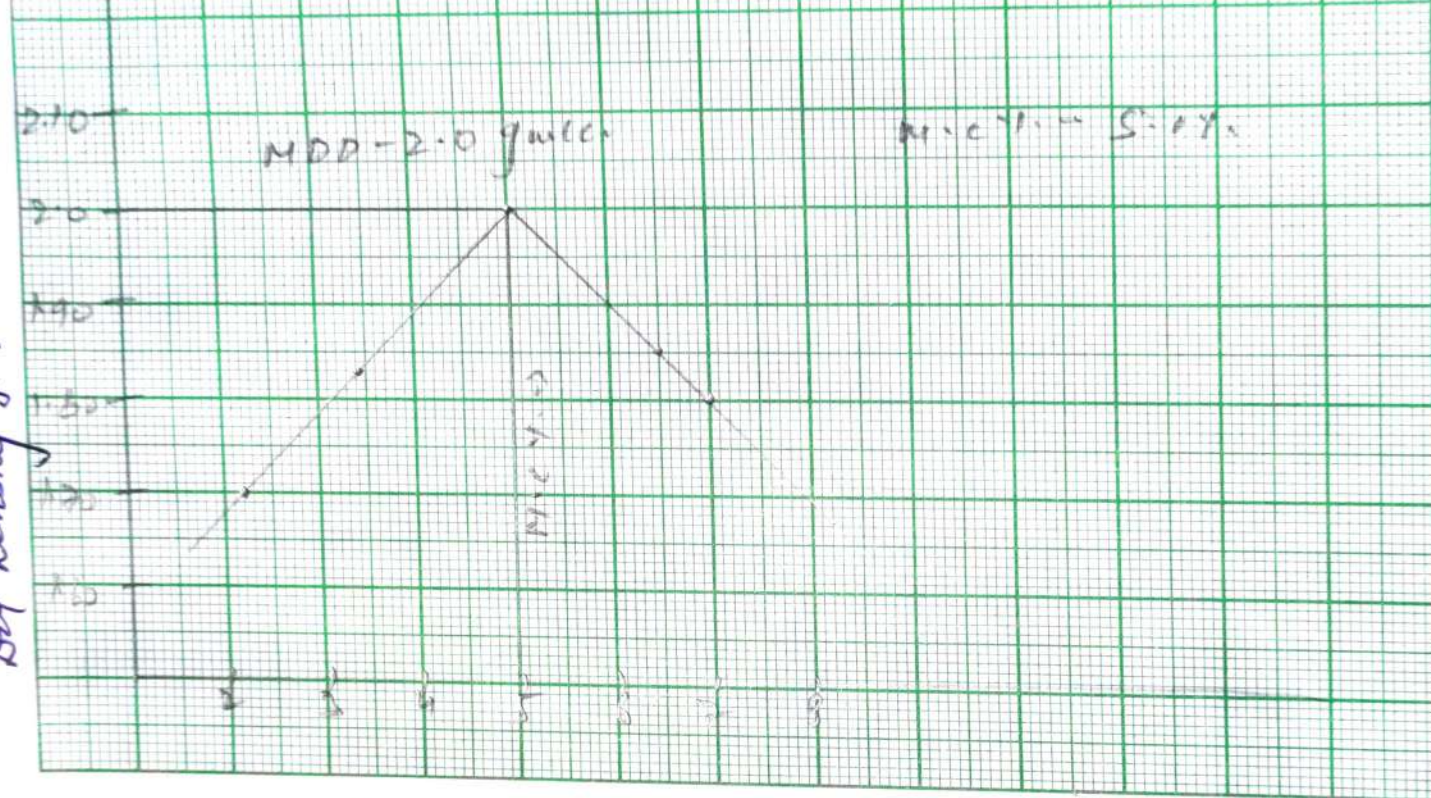
1.70

1.60

W.C. = 5.17%

2 3 4 5 6 7 8

Moisture content (%)



Test for Granular Sub Base

Data Sheet for Compaction Test of Soil (IS:2720 (Part 7) -1983)

Test 4

Road / Section Details: CH - 2.7804

Date of Testing: 15.02.19

Sample No.: 4

Weight of Dry Soil: 27865 gm

Description of sample	C7SB
Type of test	Standard Proctor
Weight of mould W_1 (gm)	3.645 gm
Volume of mould V_m (cc)	1000 cc
Per cent retained on 20 mm IS sieve	—

S. No.	Weight of mould + compacted soil (gms) W_2	Weight of wet soil (gms) $W_2 - W_1$	Wet density (gm/cc)	Moisture content determination							Dry density (gm/cc)
				Container No.	Weight of container (gms)	Weight of container + wet soil (gms)	Weight of container + dry soil (gms)	Weight of water (W _w) (gms)	Weight of Dry soil (W _s) (gms)	Moisture content (%) (W)	
1.	5383	1738	1.738	1	18.36	94.99	93.34	1.65	74.98	2.20	1.70
2.	5549	1904	1.904	2	20.42	99.05	96.40	2.65	75.98	3.48	1.84
3.	5746	2101	2.101	3	21.35	77.37	70.89	2.48	49.54	5.00	2.00
4.	5616	1971	1.971	4	19.37	57.71	55.37	2.34	36.00	6.50	1.85
5.	5571	1926	1.926	5	22.12	58.94	56.53	2.41	34.41	7.00	1.80

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
C7SB	HDD-2.000 gm/cc	2.0 - 2.4	Yes

It's don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The ce of the page No. of this Register on which Non Conformance Reports copy preserved.

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Tested by:

$$\text{Wet density of compacted soil } Y_m = \frac{W_2 - W_1}{V_m} \text{ gm/cc}$$

Where

 W_2 - Weight of mould + soil (gm) W_1 - Weight of mould (gm) V_m - Volume of mould (cc)

$$\text{Dry density of compacted soil } Y_d = \frac{100}{100 + W} \times Y_m$$

Where W = moisture content

Test for Water Bond Macadam Base

Form No. GB-1

Aggregate Impact Value of Aggregate (IS: 2386 - Part 4)

WBM Grade 3 Test 1

Sample No.:

1

Date of Testing: 29.7.20

Name of Quarry / Location: CH-12206

Weight of Sample taken: 1500 gm

Observations	Test Nos.			Average
	1	2	3	
Weight of aggregate sample filling in the cylinder = W_1 (gm)	364	372	367	
Weight of aggregate passing 2.36 mm sieve after the test = W_2 (gm)	42	47	44	
A.I.V = $(W_2 / W_1) \times 100$	11.53	12.63	11.98	12.04

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Base	12.64%	40%	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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Tested by:

Test for Water Bond Macadam Base

Form No. GB-1

Aggregate Impact Value of Aggregate (IS: 2386 - Part 4)

WBM Grade 3 Test 2

Sample No.:

2

Date of Testing: 31.7.20

Name of Quarry / Location: CH-22730

Weight of Sample taken: 1500 gm

Observations	Test Nos.			Average
	1	2	3	
Weight of aggregate sample filling in the cylinder = W_1 (gm)	339	346	352	
Weight of aggregate passing 2.36 mm sieve after the test = W_2 (gm)	37	39	43	
A.I.V = $(W_2 / W_1) \times 100$	10.91	11.27	12.22	11.47

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
WBM	11.47%	40%	Yes
If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.			
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Tested by:

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Test for Water Bond Macadam Base

Sieve Analysis of Aggregate (IS: 2386 Part-1)

WBM Grade 3 Test 1

Road / Section Details: CH-0.620 Km Date of Testing: 2.8.20

Sample No.: 1

Weight of Sample taken: 41388 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
63 mm	0	0	0	100	100
53 mm	1358	3.28	3.28	96.72	95-100
45 mm	9587	23.16	26.44	73.56	65-90
22.4 mm	26584	64.25	90.68	9.32	0-10
11.2 mm	3859	9.32	100.0	0.66	0-5

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

Checked by: *[Signature]*
JE
RWD

Tested by: *[Signature]*
Executive Engineer
RWD (w) Division, Baisi

Instruction for Blending

(Date & Signature)
Officer in charge

Test for Water Bond Macadam Base Sieve Analysis of Aggregate (IS: 2386 Part-I) WBM Grade 3 Test 2

Road / Section Details: Ch: - 1.85 km

Date of Testing: 3-8-20

Sample No.: 2

Weight of Sample taken: 37768 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
68 mm	0	0	0	100	100
55 mm	1452	3.85	3.85	96.35	95-100
45 mm	9984	25.11	28.96	71.24	65-90
22.4 mm	24587	61.83	90.50	9.42	0-10
11.2 mm	8745	9.42	100.00	0.00	0-5

Whether Confirms to the Prescribed Limits (Yes/No) Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Tested by:

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RWD (w) Division, Baisi(Date & Signature)
Officer in charge

Test for Water Bond Macadam Base

Sieve Analysis of Aggregate (IS: 2386 Part-1)

WBM Grade 3 Test 3

Road / Section Details: CH-2 - 2.780 Km Date of Testing: 4.8.20

Sample No.: 5

Weight of Sample taken: 41210 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
63 mm	0	0	0	100	100
53 mm	1137	2.76	2.76	97.24	95-100
45 mm	10966	26.61	29.37	70.63	65-90
22.4 mm	27932	67.78	97.15	2.85	0-10
11.2 mm	1113	2.70	99.85	0.15	0-5

Whether Confirms to the Prescribed Limits (Yes/No) 'yes'

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4.8.20
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RWD (w) Division, Baisi

(Date & Signature)
Officer in charge

Test for Water Bond Macadam Base

Flakiness Index of Aggregate

WBM Grade 3 Test I

Sample No: 1

Name of Quarry / Location: Ch. - 2.250 km

Date of Sampling:

Date of Testing: 5/8/20

Size of aggregate		Wt. of the fraction consisting of at least 200 pieces (gm)	Thickness gauge size, (0.6 times the mean sieve) (mm)	Weight of aggregate in each fraction passing thickness gauge, (gm)
Passing through I.S. Sieve, (mm)	Retained on I.S. Sieve (mm)			
63	50	$W_1 = -$	23.90	$w_1 = -$
50	40	$W_2 = 3125$	27.00	$w_2 = 425$
40	31.5	$W_3 = 2624$	19.50	$w_3 = 365$
31.5	25	$W_4 = 2215$	16.95	$w_4 = 327$
25	20	$W_5 = 2019$	13.50	$w_5 = 248$
20	16	$W_6 = 1829$	10.80	$w_6 = 274$
16	12.5	$W_7 = 7532$	8.55	$w_7 = 195$
12.5	10	$W_8 = 1260$	6.75	$w_8 = 178$
10	6.3	$W_9 = 922$	4.89	$w_9 = 127$
Total		$W = 15526$		$w = 2199$

$$\text{Flakiness Index (F.I.)} = \frac{w}{W} \times 100 = (\%) \frac{2199}{15526} \times 100 = 14.16\%$$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Base	$FI = 14.16\%$	30%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.

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Test for Water Bond Macadam

Atterberg Limits Test for Binding Material
WBM Grade 3 Test 1

Road/Section Details:

Date of Testing: 8.8.20

Sample No.: J

Type of soil: A5B17

Sample Details: Ch. - 5.150 Km

Determination of Liquid Limit (LL)

	1	2	3	4	5	6	Remarks
Container Number	1	2	3	4			
Weight of container + wet soil	45.91	45.36	45.63	46.25			
Weight of container + dry soil	40.46	40.52	40.48	41.67			
Loss of Moisture	5.45	4.84	4.95	5.08			
Wt. of container	13.85	12.50	12.50	12.50			
Wt. of dry soil	22.61	22.52	22.98	22.67			
Moisture content %	24.10	21.49	21.54	22.41			
Number of blows							

Liquid Limit (LL) = $\frac{22.49}{100} \times 100 = 22.49$ per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
A5B17	LL = 22.49%	< 25%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
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Determination of Plastic Limit (PL)

	1	2	3	Remarks
Container Number	5	6	7	
Weight of container + wet soil	35.42	24.71	35.49	
Weight of container + dry soil	31.24	21.52	21.69	
Loss of Moisture	2.67	2.14	2.20	
Weight of container	14.50	13.52	12.80	
Weight of dry soil	17.74	18.52	19.89	
Moisture content %	20.80 (mc ₁)	16.91 (mc ₂)	21.24 (mc ₃)	

Plastic Limit (PL) = $\frac{mc_1 + mc_2 + mc_3}{3} = \frac{20.80 + 16.91 + 21.24}{3} = 19.65$ per cent

Plasticity Index (PI) = LL - PL = 2.74 per cent

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
A5B17	PI = 2.74%	< 6%	Yes

If Results don't conform to the prescribed Limits, non conformance Report will be issued by the PIU. The reference of the page No. of this Register on which Non Conformance Reports copy preserved.
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Mukhya Mantri Gram Sampark Yojana

Quality Control Register Part 1

Record of Tests

Section 3 Bituminous Construction

Quality Control Register Part 1
Record of Tests Section 3 Bituminous Construction
Abstract of tests Conducted

Test No.	Name of Test	Conducted Test No.	Date of Test	Result, Qualified (Yes/No)	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7

Tests for Priming and Tack Coats

BL-1	Quality of bitumen	Test 1				
BL-1 (J)	Sieve Test for Bitumen Emulsions	Test 1		Yes		232
BL-1 (K)	Stability to Mixing with Course Aggregates on Bitumen Emulsions	Test 1		11		233
BL-1 (L)	Viscosity of Bitumen Emulsions by Standard Saybolt-Furol Viscometer	Test 1				
BL-1 (M)	Storage Stability Test on Bitumen Emulsions	Test 1				
BL-1 (N)	Particle Charge of Bitumen Emulsions	Test 1				
BL-1 (O)	Miscibility of Bitumen Emulsions with Water	Test 1				
BL-1 (P)	Stability of Bitumen Emulsions with Cement	Test 1				

Tests for Premix Carpet, Surface Dressing and Modified Penetration Macadam

BL-1	Quality of bitumen					
BL-1(A)	Penetration	Test 1				
		Test 2				
		Test 3				
BL-1(B)	Ductility	Test 1				
		Test 2				
		Test 3				
BL-1(C)	Softening point	Test 1				
		Test 2				
		Test 3				
BL-1(D)	Specific gravity	Test 1				
		Test 2				
		Test 3				
BL-1(E)	Water content	Test 1		Yes		243
		Test 2				
		Test 3				
BL-1(F)	Flash point	Test 1		Yes		243

Test No.	Name of Test	Conducted Test No.	Date of Test	Result, Qualified (Yes/No)	If No, Page No and Date of NCR	Page No & Date on which Test Qualified
1	2	3	4	5	6	7
		Test 2				
		Test 3				
BL-1(G)	Viscosity	Test 1				
		Test 2				
		Test 3				
BL-1(H)	Loss on heating	Test 1				
		Test 2				
		Test 3				
BL-1(I)	Solubility (Trichloroethylene)	Test 1		Yes		245
		Test 2				
		Test 3				
BL-1(Q)	Wax content	Test 1				
		Test 2				
		Test 3				
BL-2	Temperature of binder	Test 1				
		Test 2				
		Test 3				
BL-4	Aggregate Impact Value	Test 1		Yes		258
		Test 2				
		Test 3				
BL-5	Flakiness Index	Test 1		Yes		260
		Test 2				
BL-6	Stripping of Aggregate	Test 1				
BL-7	Water Absorption	Test 1				
Tests for Premix Carpet						
BL-10	Thickness	Test Table.				
BL-8	Grading of Aggregate	Test 1		Yes		262
		Test 2		11		263
		Test 3		11		264
		Test 4				
		Test 5				
		Test 6				
		Test 7				
		Test 8				
BL-13	Soundness	Test 1				
BL-14	Binder Content	Test 1				

Tests of Bitumen Emulsions for Prime Coat and other Surfaces

Form No. BL-1(J)

Sieve Test for Bitumen Emulsions

Test 1

Sample Ref. : J
 Tanker No. :
 Type of Emulsion : SS-1

Date: 10/12/20

Sample No.	Wt. of sieve (w1)	Wt. of sieve + sample (w2)	Wt. of sieve + sample after heating (w3)	Sample wt. retained after heating (w3-w1)	Percentage $\{(w3-w1)/(w2-w1)\} \times 100$	Acceptable Limit
1	647.09	931.34	647.14	0.05	0.01%	As per IS:8887-1 995

Layer	Value	Permissible Limit
Bitumen Emulsion	0.01%	Max. 0.05%

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Stability to Mixing with Coarse Aggregate on Bitumen EmulsionTest1

Date: 10/12/20

Sample Ref.

Tanker No.

Aggregate

: 1

:

: Wet/dry

Sample No.	Coating of the total aggregate surface area by the emulsion	
Good	Good/Fair/Poor	Good

Good = Fully Coated

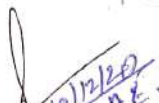
Fair = Coating applies to the condition of an excess of coated area over on coated area,

Poor = Applies to the condition of an excess of uncoated area over coated area.

Layer	Value	Permissible Limit As per specification
Mixing with Agg.	Good	

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Bitumen for Premix Carpet/ Surface Dressing/ Modified Penetration Macadam
IS 73 - 1992
Test 1

Sample Ref.: 1

Date of Testing: 11.12.20

Tanker No.:

Bitumen grade: Cold mix binder, S-65

Sample No.	Wt. of sample before heating (w_1)	Wt. of sample after heating (w_2)	Water loss ($w_1 - w_2$)	Percentage Water content
01	364.61	364.28	0.33	0.09%

Layer	Value	Permissible Limit
MSS	0.09%	Max. 0.2%

Checked by:

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Bitumen for Premix Carpet/ Surface Dressing/ Modified Penetration Macadam
Flash Point of Bitumen
Test 1

Sample Ref.: 1

Date of Testing:

Tanker No.:

Barometric pressure: mm 685 mm

Bitumen grade: Cold mix binder, S-65

Sample No.	Flash point °C	Corrected flash point
01	275°C	275°C

Layer	Value	Permissible Limit
MSS	275°C	Min. 220°C

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Bitumen for Premix Carpet/ Surface Dressing/ Modified Penetration Macadam

Form No. BL-1(I)

Solubility of Bitumen in Trichloroethylene
Test 1

Sample Ref.: 1

Date of Testing : 11.12.20

Tanker No.:

Bitumen grade: S-65

Sample No.	WL of Sample (w_1)	Wt. of Insoluble material (w_2)	Percentage of soluble material $\frac{w_1 - w_2}{w_1} \times 100$
01	94.26	0.34	99.63%

Layer	Value	Permissible Limit
MS	99.63%	Min. 99%

Checked by:

Tested by:

Form No. BL-1(Q)

Bitumen for Premix Carpet/ Surface Dressing/ Modified Penetration Macadam

Wax Content of Bituminous Material
Test 1

Sample Ref.:

Date of Testing :

Tanker No.:

Bitumen grade:

Sample No.	Mass of weighing flask in gm (w_1)	Mass of weighing flask plus wax gm (w_2)	Mass of sample in gm (s)	Wax % $\frac{w_2 - w_1}{s} \times 100$

Layer	Value	Permissible Limit
		Min. 4.5%

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Bitumen for Premix Carpet/ Surface Dressing/ Modified Penetration Macadam

Aggregate Impact Value of Aggregate (IS: 2386 - Part 4)

Test 1

Sample No.: 1

Date of Testing: 12.12.20

Name of Quarry / Location: Ch. - 1.850 km

Weight of Sample taken: 1600 gm

Observations	Test Nos.			Average
	1	2	3	
Weight of aggregate sample filling in the cylinder = W_1 (gm)	349	343	347	-
Weight of aggregate passing 2.36 mm sieve after the test = W_2 (gm)	46	39	45	-
A.I.V. = $(W_2/W_1) \times 100$	13.18	11.37	12.96	12.50

Layer	Value	Permissible Limit
Sub-base course		Not more than 50
Base course		Not more than 40
Wearing course	12.50 %	Not more than 30

Checked by:

Tested by:

Form BL-4

Bitumen for Premix Carpet/ Surface Dressing/ Modified Penetration Macadam

Aggregate Impact Value of Aggregate (IS: 2386 - Part 4)

Test 2

Sample No.: 2

Date of Testing: 12.12.20

Name of Quarry / Location: Ch. - 2.780 km

Weight of Sample taken: 1500 gm

Observations	Test Nos.			Average
	1	2	3	
Weight of aggregate sample filling in the cylinder = W_1 (gm)	324	334	342	-
Weight of aggregate passing 2.36 mm sieve after the test = W_2 (gm)	24	28	32	-
A.I.V. = $(W_2/W_1) \times 100$	7.41	8.38	9.36	8.38

Layer	Value	Permissible Limit
Sub-base course		Not more than 50
Base course		Not more than 40
Wearing course	8.38 %	Not more than 30

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Test for Aggregate for Bituminous construction

Flakiness Index of Aggregate

Sample No: 1

Name of Quarry / Location: CH. - 3.1 to 10 km

Date of Sampling:

Date of Testing: 13.12.20

Size of aggregate		Wt. of the fraction consisting of at least 200 pieces (gm)	Thickness gauge size, (0.6 times the mean sieve) (mm)	Weight of aggregate in each fraction passing thickness gauge, (gm)
Passing through I.S. Sieve, (mm)	Retained on I.S. Sieve (mm)			
63	50	$W_1 =$	23.90	$w_1 =$
50	40	$W_2 =$	27.00	$w_2 =$
40	31.5	$W_3 =$	19.50	$w_3 =$
31.5	25	$W_4 =$	16.95	$w_4 =$
25	20	$W_5 =$	13.50	$w_5 =$
20	16	$W_6 = 1720$	10.80	$w_6 = 235$
16	12.5	$W_7 = 1439$	8.55	$w_7 = 185$
12.5	10	$W_8 = 1265$	6.75	$w_8 = 154$
10	6.3	$W_9 = 935$	4.89	$w_9 = 124$
Total		$W = 5359$		$w = 101$

$$\text{Flakiness Index (F.I.)} = \frac{w}{W} \times 100 = (\%) \quad \frac{701}{5359} \times 100 = 13.08\%$$

Layer	Value	Permissible Limit	Whether Confirms to the Prescribed Limits (Yes/No)
Bitumen	FT = 13.08%	< 30%	Yes

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Aggregate for Premix Carpet

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 1

Ror 1 / Section Details: Ch-0.620 KmDate of Testing: 14.12.20Sample No.: 2Weight of Sample taken: 79558 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
13.2 mm	0	0	0	100	100
11.2 mm	4172	5.24	5.24	94.76	88-100
5.6 mm	40145	50.42	55.66	44.34	31-52
2.80 mm	17644	22.16	77.82	22.18	5-25
90.6	1615	2.02	98.11	1.89	0-5
pan	1505	1.89	100.00	0.00	

Whether Confirms to the Prescribed Limits (Yes/No) Yes

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(Date & Signature)
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Aggregate for Pre-nix Carpet

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 2

Road / Section Details: CH 2/1.222 Kw

Date of Testing: 14.12.20

Sample No.: 2

Weight of Sample taken: 78154 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
3.2 mm	0	0	0	100	100
11.2 mm	5310	6.79	6.79	93.20	88-100
5.6 mm	36290	46.39	53.15	46.84	31-52
2.80 mm	17395	22.25	75.40	24.59	5-25
90.4	17364	22.21	97.61	2.38	0-5
Pan	1845	2.36	100.00	0.00	

Whether Confirms to the Prescribed Limits (Yes/No) Yes

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(Date & Signature)
Officer in charge

Msc

Aggregate for Premix Carpet

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 3

Road / Section Details: Ch: 1.85 km

Date of Testing: 15.12.20

Sample No.: 3

Weight of Sample taken: 75263 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
18.2 mm	0	0	0	100	100
11.2 mm	4528	6.01	6.01	93.98	88-100
5.6 mm	39586	52.60	58.60	41.40	31-52
2.80 mm	15364	20.41	79.01	20.98	5-25
90 μ	15701	20.86	99.87	0.13	0-5
75 μ	84	0.11	99.98	0.02	

Whether Confirms to the Prescribed Limits (Yes/No) yes

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MIS
Aggregate for Premix Carpet

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 4

Road / Section Details: CH-2.250Km

Date of Testing: 15.12.20

Sample No.: 6

Weight of Sample taken: 73600 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
15.2 mm	0	0	0	100	100
11.2 mm	4328	5.88	5.88	94.12	88-100
5.6 mm	38242	57.46	57.84	42.16	31-52
2.80 mm	15174	20.62	78.46	21.54	5-25
90 μ	14288	19.41	97.87	2.13	0-5
Pan	1568	2.13	100.00	0.00	

Whether Confirms to the Prescribed Limits (Yes/No) yes

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Aggregate for Premix Carpet

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 5

Road / Section Details: 1st - 2.780 km

Date of Testing: 16.12.20

Sample No.: 5

Weight of Sample taken: 75575 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
75 mm	0	0	0	100	100
150 mm	4420	5.85	5.85	94.15	88-100
300 mm	36668	57.17	57.02	42.98	31-52
475 mm	15447	20.44	77.46	22.54	5-25
75 mm	15683	20.75	98.21	1.79	0-5
Pass	1357	1.79	100.00	0.00	

Whether Confirms to the Prescribed Limits (Yes/No) yes

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Aggregate for Premix Carpet

Sieve Analysis (IS:2720 (Part 4) -1985)

Test 6

Road / Section Details: CH-2-3.150 Km

Date of Testing: 16.12.20

Sample No.: 6

Weight of Sample taken: 75319 (gm)

I. S. Sieve designation	Weight of sample retained (gm)	Percent of Wt. retained (%)	Cumulative percent of Wt. retained (%)	Percentage of Wt. Passing (%)	Permissible Value
75 mm	0	0	0	100	100
150 mm	4463	5.93	5.93	94.07	88-100
300 mm	38662	51.23	57.26	42.74	31-52
475 mm	15442	20.50	77.76	22.24	5-25
75 μ	15467	20.54	98.30	1.70	0-5
Pass	1285	1.70	100.0	0.00	

Whether Confirms to the Prescribed Limits (Yes/No) Yes

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