

## 10.7. Suggested Check list for Inspection of works

## Office and Field Inspection

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10.	Time Schedule for the Completion of Compound Wall / Retaining Wall
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## 10. MISCELLANEOUS

### I . OFFICE INSPECTION

1. Name of the Block / Panchayat Office inspected
2. Date of Inspection
3. Officials present during inspection
4. Name of the Registers/ Documents inspected
5. Name of the staff who maintain the Register / Document
6. Details of entries made in the document
7. Difference between entries in the document and the report submitted to District Rural Development Agency
8. Findings
9. Notes for rectification- Deadline for rectification
10. If there is gross violation, Point out them and recommend for specific action
11. Fix responsibility on the misreporting
12. If any irregularity is found out like misappropriation, loss to Government, take immediate action.
13. Scrutiny of Estimate and Allotment Register
14. If any Record/ Register is not maintained properly ask the official concerned to rectify them and show it to Inspecting Officer in person
15. Give Targets for various staff in their areas; Follow it up
16. Agreement should be executed with contractor at block level works and should be verified by the District level officers
17. Scrutiny of the material stock register

### MAINTENANCE OF ESTIMATES AND ALLOTMENTS REGISTER

1. Three sets of Estimates and Allotment Registers should be maintained separately. One for the Regular side, another one for the Scheme side and the third one exclusively for NREG Scheme so as to avoid mixing up of Schemes.
2. Details pertaining to each column should be filled.
3. In most of the cases details of technical sanction like UER (Union Engineer Register) Number, SDR (Subdivision Register) Number, EER (Executive Engineer Register) Number etc. are not at all given. These details should be furnished in the appropriate columns. The Assistant in charge of works/schemes should obtain this detail from the Engineering wing and enter in the Register.
4. Details of Administrative Sanction should be furnished
5. Name of the contractor/Department Person, date of issue of work order and the contract (work) period within which the work is to be completed must be furnished under " Name of the work" (column No 2) as this would enable to know as to how long the work is pending and who is the defaulting contractor/Department.
6. In many of the cases, cancelled works are not updated in the Estimates and Allotment Register. Works for which Revised Administrative Sanction (R.A.S) have been accorded are not entered in the Estimates and Allotment Register resulting in discrepancy between the Register and RAPID figures. In order to avoid this, the originally sanctioned work should be scored out and the details of the new work may be entered just below the original work in

the same page of the Estimate and Allotment Register. In cases, where R.A.S. has been given only for Estimate cost or location of works without change in the name of the work, the R.A.S details should be written by rounding off the corresponding previous entry in the relevant columns.

7. During the inspection of Blocks, it has been observed that Block Development Officers have not put their initials in the Estimates and Allotment Register even after the details of final payments are entered. This is either because of laziness and callous attitude or because the bills are prepared with back-date and the then Block Development Officer might have been transferred to some other station. It is highly irregular in either case.
8. It is also observed that most of the entries in this register are filled in only after the receipt of Bills from the Engineering wing. This is a very bad practice should be stopped forthwith.
9. In cases where spill over works are carried over to next financial year, first, the spill over works should be entered. The expenditure incurred in the previous financial year as a total shall be noted in the relevant column of the new register, so that the total expenditure incurred for the work in both the years could be checked.
10. At the beginning of the financial year (April), New Estimate Allotment Register to be opened, first incorporating spill over works.
11. Sl. No. should be given continuously beginning with spill over work.
12. Separate folio should be opened for different schemes like MP, MLA, GF, E & I etc. for Block Panchayat and IAY/ Kutcha /XII FC etc. for Village Panchayats.
13. At the time of issue of materials for the works, the requirement calculation has not been done, but the tentative requirement is issued. Hence, the actual requirement of materials may be calculated by the Block Engineer and entered in the prescribed form and BDO shall authenticate the same before issue. Stock position and availability of materials like cement, steel etc., should be verified.
14. In some cases, the contractor's signatures have not been obtained in the stock register for the issue of materials. Therefore, these registers should be scrutinized once in a month by the Block Development Officer.

## **II . FIELD INSPECTION**

General

Officials Present during inspection: -

1. Name of District
2. Name of the Block
3. Name of Village Panchayat
4. Name of the Work
5. Name and Year of Scheme
6. Administrative Sanction reference
7. Technical sanction reference
8. Date of Work Order
9. Name of Contractor
10. Period of Completion as per the agreement
11. Date of Commencement of work.
12. Stage of the work during inspection

## 10. MISCELLANEOUS

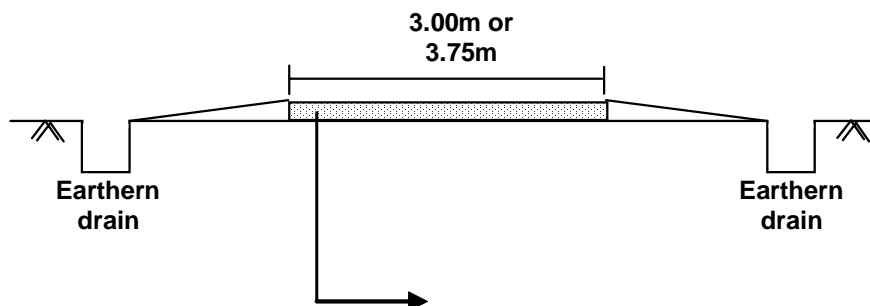
13. Specify whether the work is in progress, if so stage of progress
14. Reason of Non progress of works to assess the probable date of completion.
15. Solution for the problems if any
16. Quality aspect of materials
17. Quality aspect of works
18. If any substandard quality noticed on materials and works, specify the same
19. Fix responsibility on the concerned contractor for substandard quality
20. Programme schedule for the completion of balance works and rectification of the defects.
21. Random verification of completed / ongoing works with reference to M. Book and subsequently with E & A Register.
22. Checking of photographs taken before, during, after execution of works.
23. To examine the Billing aspects in proportion with physical progress of works so far achieved on the date of inspection.

### a) Road Works:

#### I. FORMATION OF ROADS

- Name board indicating the scheme details to be placed at starting point of the road
- To check whether proper drainage facility / Cross drainage is provided to the road
- Both sides of the drains should be uniform and parallel
- Whether the required land width is available
- Whether proper camber and Super elevation is provided in the road
- Whether proper compaction is provided for earth work
- Location of the CD works may be justified in the site
- To check no silting is accumulated in the culvert
- To check undulations in the road surface
- Rocky outcrops and uprooting for the trees should be checked.
- HM and KM stone should be verified
- Top level of the formation should be 0.75 m above adjacent ground level
- Alignment of the road as far as possible should be straight according to site conditions
- Photographs (before formation stage) may be compared to determine the new formation.

**Cross Section of Formation Road**



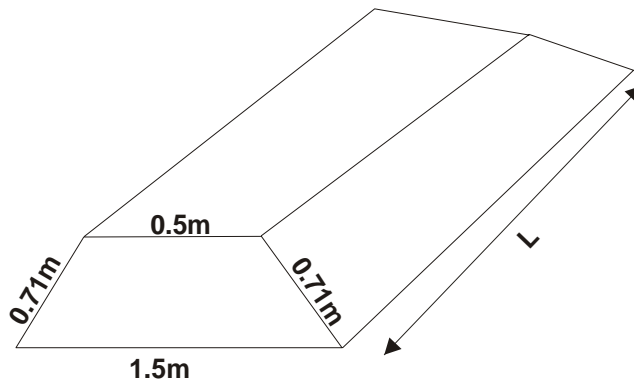
**TIME SCHEDULE FOR THE COMPLETION OF FORMATION OF ROADS**

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Jungle Clearance, Earth work and Improving Berms, Formation work	15 days	30 days
3.	Collection & spreading gravel	15 days	45 days

**II. WBM ROADS**

- Name board indicating the scheme details to be placed at starting point of the road
- Check the width of the road at random interval.
  
- The metal collected should be of the following size.
  - ☞ Ist Layer WBM - 90mm to 22.40mm size metal
  - ☞ IInd Layer WBM - 63mm to 11.20mm size metal
- Sieve test may be conducted at site to determine the size and distribution of the metal.
- The metal should be in good quality, free from dust and it should not be flaky, soft and rounded.
- The requirement of metal for roads are
  - ☞ for 3.75m width - 375.00m<sup>3</sup> per Km
  - ☞ for 3.00m width - 300.00m<sup>3</sup> per Km
- The metal to be stacked at the site for pre measurement with specified dimensions.
- The dimension of the each stack must be like this



$$\text{Volume of Stack per meter run} = \frac{1.5}{2} \times 1.00 \times 0.50 = 0.5 \text{ Cum}$$

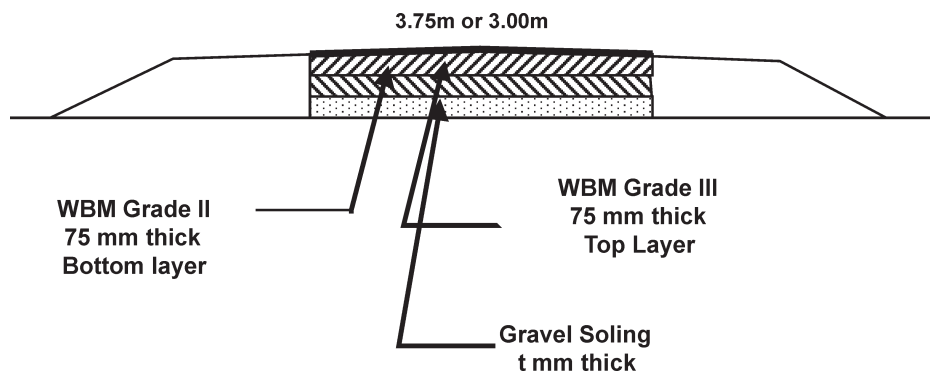
## 10. MISCELLANEOUS

- ❑ Camber to be provided. (Camber is nothing but the centre portion of the road raised with respect to edges).
- ❑ Camber portion raised 4 to 5 cm with edges. We can see the camber by naked eye as follows.



- ❑ At curves super elevation is to be provided. Super elevation is nothing but to avoid the over turning moment due to centrifugal force, the outer edge of the road is raised with respect to inner edge.
- ❑ The Unscreened gravel is also simultaneously collected with metal for blindage. The required quantities of the gravel are as follows.
  - a. for 3.75 m width - 90 m<sup>3</sup> per Km
  - b. for 3.00 m width - 72 m<sup>3</sup> per Km
- ❑ The WBM surface should be rolled with 8 - 10 tonnes power roller for proper consolidation with water.
- ❑ Berms may be strengthened with Earth or Gravel for the specified thickness as in the estimate. Simultaneous compaction should be done along with the pavement.
- ❑ The WBM surface should be good without undulations.
- ❑ For each layer the compacted thickness of the WBM road must be 75mm.
- ❑ Culverts should be completed before laying WBM
- ❑ The thickness of the WBM layer may be verified by digging the pavement at a particular location.

### Cross Section Details



**TIME SCHEDULE FOR THE COMPLETION OF WBM ROADS**

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Gravel and WBM I layer completion	55 days	70 days
3.	WBM II layer Collection	15 days	85 days
4.	Spreading	15 days	100 days

**III BT ROADS**

- Name board indicating the scheme details to be placed at starting point of the road
- For Premix Carpet the metal size should be 13.20mm and 11.20mm.
- For seal coat size of the metal should be 6.70mm.
- Sieve test may be conducted to check the metal size.
- Hard Broken Granite crusher metal to be used for Bitumen roads. It should be free from dust and other foreign materials.
- Metal to be stacked for pre measurement.
- Metal requirement
  - a. for 3.75 m width  $\xrightarrow{13.20 \text{ and } 11.20\text{mm metal}}$  101.25 m<sup>3</sup> per Km
  - b. for 3.00 m width  $\xrightarrow{13.20 \text{ and } 11.20\text{mm metal}}$  81.00 m<sup>3</sup> per Km
- Metal requirement for seal coat.
  - a. for 3.75 m width  $\xrightarrow{6.70 \text{ mm metal}}$  33.75 m<sup>3</sup> per Km
  - b. for 3.00 m width  $\xrightarrow{6.70 \text{ mm metal}}$  27.00 m<sup>3</sup> per Km
- Width and length of the road may be checked with reference to relevant records.
- Emulsion bitumen should be used for tack coat
- Emulsion requirement (200 Kg / Drum)
  - Over WBM surface
    - 3.75 m width : 1500 Kg per Km
    - 3.00 m width : 1200 Kg per Km
  - Over BT surface
    - 3.75 m width : 1125 Kg per Km
    - 3.00 m width : 900 Kg per Km
- Bitumen requirement ( 156 Kg / Drum) or (161.8 Kg / Drum)
  - 3.75 m width : 9150 Kg per Km
  - 3.00 m width : 7320 Kg per Km

## 10. MISCELLANEOUS

- The finished compacted thickness of the BT surface should be 20mm.
- Specified Bitumen grade should be used at site 60/70 (or) 80/100. Grade of bitumen may be checked with the purchase invoice.
- The BT surface rolled with 8-10 tonnes power roller for proper consolidation.
- The final product of the BT surface will be good without undulations.
- Edge packing of the road edges should be done with earth.

### TIME SCHEDULE FOR THE COMPLETION OF DIRECT BT

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Collection of chips & completion of BT	15 days	30 days

### TIME SCHEDULE FOR THE COMPLETION OF WBM WITH BT ROADS

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

#### SINGLE LAYER WBM + BT

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Jungle Clearance, Earth work and Improving Berms	15 days	30 days
3.	Collection & spreading gravel	15 days	45 days
4.	WBM I Layer collection	15 days	60 days
5.	WBM- spreading	10 days	70 days
6.	Collection of chips and completion of BT	15 days	85 days

#### TWO LAYERS OF WBM + BT

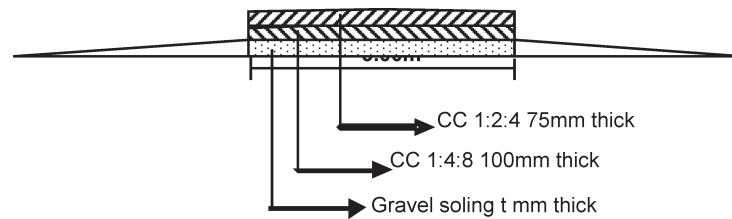
Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Gravel and WBM I layer completion	55 days	70 days
3.	WBM II layer Collection	15 days	85 days
4.	Spreading	15 days	100 days
5.	Collection of chips & completion of BT	15 days	115 days



**B. CC ROADS**

- ❑ Name board indicating the scheme details to be placed at starting point of the road
- ❑ The riding surface of CC pavement should be laid by taking in to account the floor levels of the houses in order to ensure that the surface run off does not entered in to the residential unit.
- ❑ The surface of the street (or) lane should levelled with gravel (or) carted earth wherever necessary according to the estimate provision.
- ❑ The CC pavement should be associated with proper drains.

**Cross Section of CC Road**



- ❑ The Base course (Bottom layer) of CC Road to be laid with 1:4:8 cement concrete (1 Part cement, 4 parts sand, 8 parts metal) for 100 mm thick.
- ❑ The top of CC road to be finished with 1:2:4 cement concrete for 75mm thick.
- ❑ The width and length of the CC Road may be verified with M.Books. For ongoing works the estimate may be verified.
- ❑ While concreting, the compaction is to be done with rammer.
- ❑ The camber is to be provided at the center of road for proper drainage of water.
- ❑ Minimum longitudinal slope should be provided.
- ❑ Bituminous expansion joint pad should be provided for every 4.50m interval while doing 1:2:4 top layer concrete to avoid forming cracks due to temperature changes.
- ❑ Curing is very essential for every stage of concreting to attain the original strength of concrete.
- ❑ The thickness of the Concrete layer may be verified by digging the pavement at a particular location.

**TIME SCHEDULE FOR THE COMPLETION OF CC ROADS**

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Leveling and Earth work	3 days	18 days
3.	Collection of all materials	7 days	25 days
4.	Construction of side wall and sand filling	5 days	30 days
5.	Laying of 1:4:8	5 days	35 days
6.	Laying 1:2:4 concrete	5 days	40 days
7.	Curing	10 days	50 days

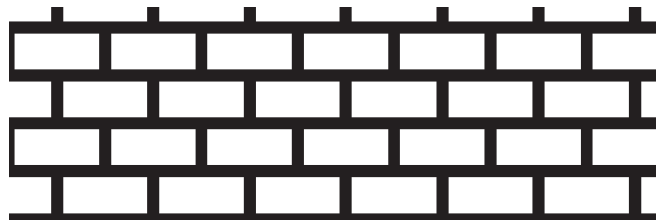
## 10. MISCELLANEOUS

### C. GROUP HOUSES

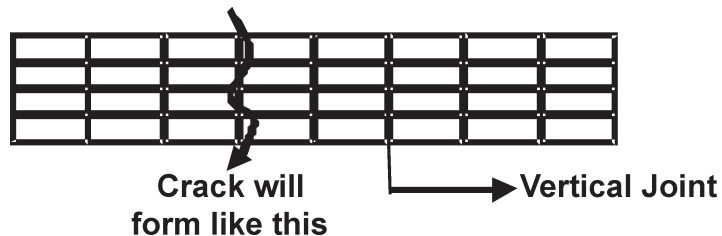
- The minimum plinth area of 20.26M<sup>2</sup> (218 Sq.Ft.) is to be provided for one Group House.
- The roof height will be 2.70m at the centre of the gable wall for sloped roof and 3.05m for flat roof.
- Cupboard shelves may be provided in every group house.
- Minimum 0.90m x 1.00 m inner size of toilet room to be provided in every house.
- A rural sanitary pan to be fixed for toilet.
- The leach pits to be provided for toilet, should be properly connected with water closet.
- A raised slab (pial) may be provided in front of the building.
- The smokeless chula to be provided inside the house including smoke outlet pipe with cowl.
- After completion of work, the name board should be written in the house which indicates Name of the scheme, Name of the beneficiary, etc.

### D. BUILDING WORKS

- The building should be as per type design.
- For all construction works, the river sand should be used.
- Bond Stones to be used at every 1.50 m interval for RR Masonry works.
- The good quality brick gives clear ringing sound when struck with two bricks.
- The good quality brick will not break, when you drop it from above 3 feet high vertically.
- During the Brick wall construction, the joints will be Like this



- Continuous vertical joints should be avoided; it leads to the formation of cracks in walls.



- Racking should be done at the joints
- Before construction the bricks will be soaked with water otherwise the dry bricks will absorb the water from cement mortar, subsequently the strength of mortar will be reduced
- While concreting, the cover block is to be used. If proper cover is not provided, the reinforced concrete loses its strength.
- Roof top of the building is to be properly sloped for draining of rain water with weathering course as per the estimate provisions.

- The rainwater down fall pipe is to be fixed properly. Bottom of pipe should not be above slab level.
- Minimum 28 days of curing is required for concrete

**TIME SCHEDULE FOR THE COMPLETION OF BUILDING WORKS**

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Levelling and marking	7 days	22 days
3.	Basement	15 days	37 days
4.	Lintel level	15 days	52 days
5.	Roof level	8 days	60 days
6.	Centering and Steel fabrication	10 days	70 days
7.	Roofing and removal of centering	21 days	91 days
8.	Plastering and Flooring	16 days	107 days
9.	White washing and colour washing	8 days	115 days

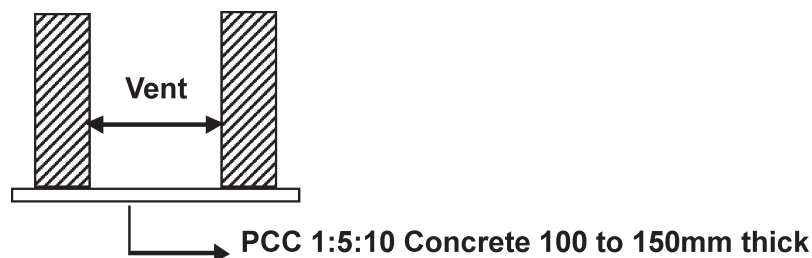
**E. OTHER WORKS**

**i) PONDS**

- The information Board which indicates the scheme details should be placed
- Before execution of old ponds, pre measurement should be taken.
- For SGRY works, the machineries should not be used.
- Bunds provisions length may be checked with estimates.
- After forming the Bund, sectioning should be done properly (surface levelling of earth).
- Verify whether inlet supply channel works are included in the estimate.
- Whether the weir construction is provided in the estimate.
- For deepening of pond, the earthwork may be verified by measuring the Dead man (Thandus, Muttus).
- Supply channel should be free from vegetation and debris

**ii) DRAINS**

1. Measure the width, length, height and vent portion of the drain with M.Books (or) Estimates.



## 10. MISCELLANEOUS

2. Adequate slope to be provided for bottom of drain.
- 2a. For masonry construction works appropriate cement mortar to be used.
3. The top and bottom surface to be plastered with cement mortar
4. Whether it is a RR masonry (or) Brickwork good quality of stones (or) Bricks to be used. (See Buildings)
5. The Drain top should not be raised above the road level.

### TIME SCHEDULE FOR THE COMPLETION OF DRAINS (In a length of 100m)

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Earth work and collection of all materials	8 days	23 days
3.	PCC	5 days	28 days
4.	RR / Brick work	10 days	38 days
5.	Plastering & Curing	12 days	50 days

### iii). TIME SCHEDULE FOR THE COMPLETION OF WATER HARVESTING STRUCTURES

The tender process should be completed within 15 days from the date of receipt of Administrative Sanction.

#### WATER HARVESTING STRUCTURES

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Surveying the boundary, jungle clearance and Earth work for deepening of Pond and supply channel	15 days	30 days
3.	Sectioning and consolidation of sides	15 days	45 days
4.	Construction of rough stone dry packing for revetment and constructing inlet and outlet arrangements	20 days	65 days
5.	Completion of works in all respects including Tree Plantation	5 days	70 days

**iv). TIME SCHEDULE FOR THE COMPLETION OF  
COMPOUND WALL / RETAINING WALL**

Sl.No	Item of Work	Days Required	Cumulative Days
1.	Tender Processing & issue of work order	15 Days	15 Days
2.	Levelling and marking	5 days	20 days
3.	Basement	10 days	30 days
4.	Super structure	10 days	40 days
5.	Plastering	10 days	50 days
6.	White washing and colour washing	5 days	55 days

**ANNEXURE - I**

**F. CHECK SLIP FOR FINDING QUALITY OF THE MATERIALS**

**I. FORMATION OF ROADS**

Sl. No	Name of the Material	Test to be conducted	
		Visual	Experiment / Lab
1.	Earthwork	1. Undulations	1. Field Density for compaction 2. Moisture content
		2. Slope of Embankment	
		3. Both sides Drain	
		4. Width of Shoulders	
		5. Compaction	
		6. Culvert Locations	
2.	Gravel	1. Thickness	1. Field Density
		2. Width of road	2. Atterberg limits for Plasticity Index
3.	CD works	1. Location	
		2. Sill Level	
		3. Flow of Water	
		4. Vent size	

**10. MISCELLANEOUS****II. WBM ROADS**

<b>Sl. No</b>	<b>Name of the Material</b>	<b>Test to be conducted</b>	
		<b>Visual</b>	<b>Experiment / Lab</b>
1.	Hard Broken Granite metal (Aggregate for WBM)	1. Free from Dust	1. Impact value
		2. Angular in shape	2. Sieve Analysis
		3. Size of Aggregate	3. Flakiness
		4. Thickness 75mm each layer	
		5. Consolidation	
		6. Camber & Super elevation	
		7. Standard gauge (stack)	
		8. Undulations	
		9. Blindage – Use of excess gravel should be avoided	
		10. Simultaneous compaction of shoulders with pavement	

## III.BT ROADS

Sl. No	Name of the Material	Test to be conducted	
		Visual	Experiment / Lab
1	Hard Broken Granite metal (Premix Carpet with Seal coat)	1. Free from foreign materials	1. Impact value 30% maximum
		2. Angular in shape	2. Sieve analysis
		3. Size of Aggregate	3. Flakiness and Elongation Index – 35 % maximum
		4. Thickness 20 mm (PC with Seal coat)	
		5. Surface Undulations	
		6. Bitumen & Emulsion Qty. placed at site with reference to requirement	
		7. Cleaning of WBM surface	
		1. Temperature Bitumen 150 to 163 ° C Metal 155 to 163° C during mixing Mixture 130 to 160 ° C at the time of discharge	
		2. Rolling operations should be completed before the temperature of the mix falls below 100° C	
		3. Km and Hm stones	

## 10. MISCELLANEOUS

### IV. BUILDINGS

1. Location of the Building
2. Orientation of the Building
3. Nature of Soil

Sl. No	Name of the Material	Test to be conducted	
		Visual	Experiment / Lab
1	Brick work	1. Reddish Orange in colour	1. Compressive Strength
		2. Cannot make scratch by nail	2. Water absorption
		3. Straight edges	
		4. It gives a clear ringing sound when struck with each other	
		5. Brick should be soaked with water before construction	
		6. Brick should not be broken when falls from 1m height	
		7. Thickness of mortar joint and racking of joints	
		8. Mix proportion and sand used	
		9. Sieved sand should be used	
		10. Verticality should be verified in construction	
		11. Curing	
2	RR Masonry work	1. Uniform Surface	
		2. Bond stone should be provided every 1.50m interval and should be marked with paint	
		3. Edge stone should be a Bond stone	
		4. Proper packing with mortar and stone spalls	
		5. Simultaneous pointing	
		6. Verticality	
		7. Curing	
	Concrete	1. Size of aggregate	
		2. Mix Proportion	
		3. Quality of sand	
		4. Line and level	
		5. Proper compaction	
		6. Curing	



<b>4</b>	Reinforced Cement Concrete	1. Size of aggregate	Compressive strength of concrete
		2. Mix Proportion	
		3. Quality of sand	
		4. Line and level	
		5. Proper compaction	
		6. Curing should be done with partitioning the surface by lean mix	
		7. Centering and Strutting	
		8. Water Cement ratio	
		9. Ensuring cover for RCC	
		10. Top surface should be leveled and drain surface water	
		11. Alignment of the bar should be uniform.	