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Government of Jammu and Kashmir
Public Works(R&B) Department
Civil Secretariat Srinagar/Jammu

Subject: Two Tier Quality Control Mechanism in PW (R&B) Department (Rollout of 3rd Party Inspection-reg).

Reference: Administrative Council Decision No:105/15/2021 Dated:19.10.2021.

Govt. Order No. 40 -PW(R&B) of 2022
Dated: 01 -02-2022

Sanction is hereby accorded to the implementation of Two Tier Quality Control Mechanism in PW (R&B) Department appended as **Annexure-I** to this Government Order.

By order of the Government of Jammu & Kashmir.

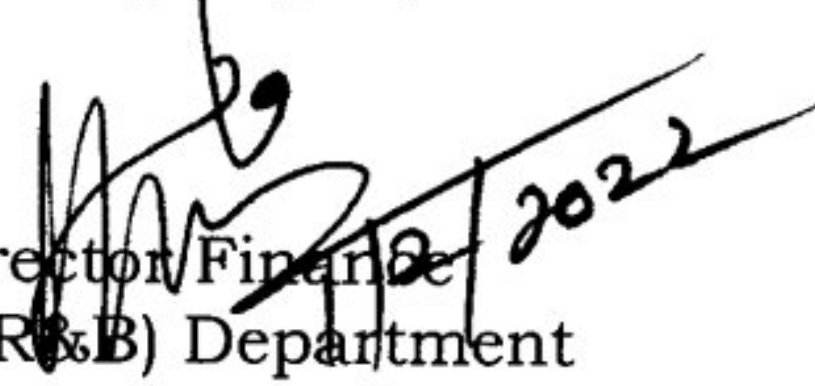
Sd/-
(Shailendra Kumar) IAS
Principal Secretary to Government,
PW (R&B) Department

No:- PWD-ACCT/97/2021-05-Department of PWD R&B

Dated:- 01 -02-2022.

Copy to the:-

1. Joint Secretary (J&K), Ministry of Home Affairs, Govt. of India.
2. Development Commissioner (Works).
3. Director Archives, Archeology & Museum J&K, Srinagar.
4. Chief Engineer PW(R&B) Kashmir/Jammu.
5. Chief Engineer DIQC, J&K.
6. All Superintending Engineer of PW(R&B) Department.
7. OSD to Advisor (B) for information.
8. All Executive Engineers of PW(R&B) Department.
9. Private Secretary to Principal Secretary to Government PW(R&B) Department.
10. Govt. Order file. (w.2.s.c).


Director Finance
PW (R&B) Department

Public Works (R&B) Department

J&K PWD Quality Control Mechanism (QCM) Guidelines

1. Public Work (R&B) Department is the premier Agency of Government of Jammu & Kashmir engaged in Planning, Designing, Construction and Maintenance of Government assets like Roads, Bridges, Flyovers and Buildings. It is also responsibility of department for ensuring the quality of the infrastructure created by it. Quality management covers management responsibilities, internal and external control, tests, acceptance criteria, corrective actions, documentations, transparency etc.
2. Following framework shall be implemented for quality monitoring of project implemented by the Department:
 - i **Tier-I** Quality control shall be conducted by the in-house departmental engineers at various levels.
 - ii **Tier-II** Quality control shall be conducted by the consultant /Quality Monitors (QMs) of higher stature to be empanelled by DIQC.

2.1 First -tier

The Executive Engineer of the concerned Division is envisaged as a first tier of quality management with the primary function of construction supervision and quality control. The quality management functions of the Executive Engineer shall include the following:

- (i) Preparation of realistic detailed project report (DPR) on the basis of detailed drawings and design, with adequate attention to investigations and pre-construction activities which are essential for proper design and estimation of the

project as per standard IS, IRC codes of practice and as per JKPWD Engineering Manual 2021 and other guidelines issued by the department for time to time.

- (ii) Preparation of bid documents and effective selection process for procurement of works, based on proven capacity and ability of the contractors in accordance with the relevant guidelines.
- (iii) Ensuring that:
 - (a) Contractors have brought the necessary machinery and equipment to site.
 - (b) Field laboratory/testing Equipment has been established at the site.
 - (c) A comprehensive CPM/PERT charts/Bar charts reflecting all the activities of the work along with their critical time of completion shall be prepared by the contractor and approved by the engineer in charge.
 - (d) The work programme has been approved.
 - (iv) Supervising Site/off Site, Quality Control arrangements including materials and workmanship, primarily through testing.
 - (v) The following frequency of inspection visits to site by Executive Engineer staff is recommended while the work is in progress:
 - (a) Junior Engineer – Daily
 - (b) Assistant Engineer /Assistant Executive Engineer – Twice a week
 - (c) Executive Engineer – Once a week
- (vi) Taking timely action to ensure replacement of defective material and rectification of defective workmanship.

2.1.1 To ensure effective Quality Control on materials and workmanship, the following SoP shall be followed:

- a. A monthly return of the tests is to be submitted in the prescribed Performa by the AEE to the EE in the first week of every month. The EE will review this return regularly to see that the Quality Control tests are being performed at the desired frequency and with the desired accuracy. The EE

will also verify that the Non-Conformance Reports (NCR) are being issued by the AEE whenever non-conformance occurs and the Contractor is taking action promptly on the NCR. Payment to the Contractor shall be regulated by the EE as per the returns of the Quality Control tests. Any deviation will be the personal responsibility of the EE.

- b. Quality Control Registers are to be maintained for all works issued by the divisional office for recording of test results and Non conformity of quality in the work. The NCR, (Non-Conformance Report) are to be submitted to the executive engineer within 3 working days.
- c. The SE in charge of the circle and the Chief Engineer having jurisdiction are responsible for the proper functioning of the Executive Engineer as part of their normal administrative duties. Their inspection and quality testing supervision will therefore be counted as part of effective supervision of the first tier of quality management (and not as a second tier of quality management). The SE/CE are to:
 - (i) During his/her visits to the work, oversee the operations of the quality control testing procedure and record his observations in the Quality Control Register. The SE/ CE are also to verify that the Non-Conformance Reports are issued in time and action is being taken by Contractor promptly.
 - (ii) Prepare Inspection Reports which are to be sent to the Executive Engineer for taking remedial action.
- d. For above SoPs there would be requirement of IT/computer knowing personnel/Data Entry Operators which shall be hired as per Circular issued by Finance Department vide A/51/(2016)-B-301 dt.15.03.2021.

2.2 Second -Tier

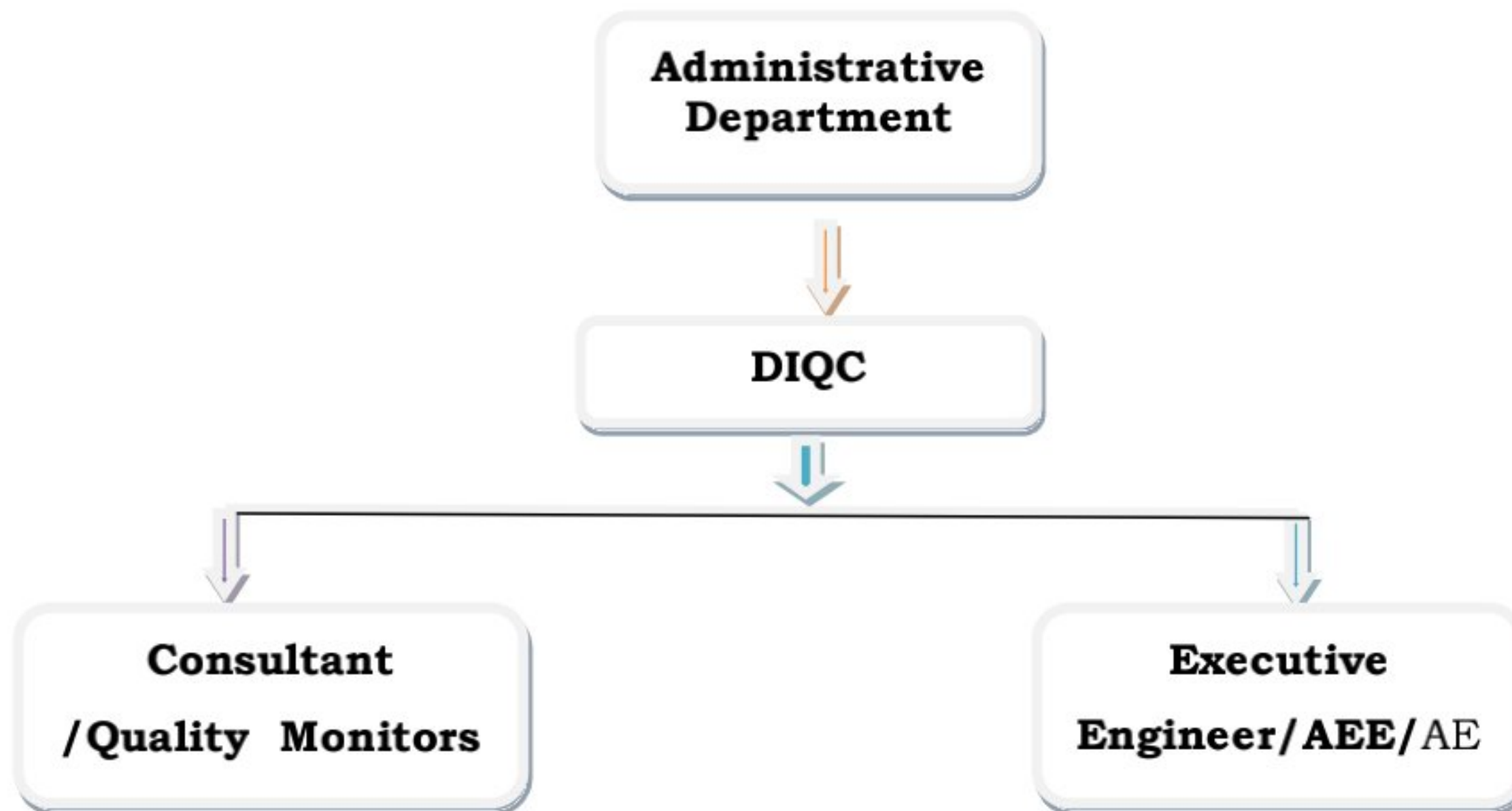
The **First- tier** of quality management has the primary functions of quality control through enforcement of technical standards and quality control requirements through regular testing, close supervision and inspection. While as the function of the **Second - tier** quality management is to inspect the works and ensure that the Quality Management System at the site is functioning

satisfactorily and suggest possible improvements where required. For this, they are required to carry out and report:

- i. To monitor the quality of works executed by the department to ensure that the works conform to standards and to see whether the quality management mechanism in place is effective.
- ii. To conduct audit and inspect the works and provide guidance to the field engineers. Consultants/QMs will also help in developing a systemic and scientific working environment in the department besides identifying the shortcomings in the system and provide a feedback to the department for rectification of the same. The role of Consultant is to be more of a teacher than that of an examiner which is as under:
 - a. Conduct Independent quality tests in accordance with the standard codal requirements and to verify that the quality management system is achieving its intended objectives.
 - b. Carry out inspections at appropriate stages of work under progress.
 - c. Help the field engineers in developing scientific working environment in execution of the works.
 - d. Observations of Consultants/QMs are to be placed on JKPWDOMS website so that these are available for viewing by the stakeholders.
 - e. While deciding upon the stages of inspection by Consultants all Executive Engineers and Assistant executive engineer will be responsible for getting the works inspected as per the schedule during the progress of work.
 - f. All works are to be inspected by the Consultants/QMs as per the prescribed table. In addition, the Consultants/QMs can request for an out of plan

inspection depending upon the requirement of work at site.

3. Mechanism



4. Nodal Agency

Directorate of Designed, Quality Control and Inspection has the mandate for designing and quality control, is the Nodal Agency for implementation of Quality Control Mechanism independently under overall supervision of PW(R&B) Department as Quality Control Unit.

- 4.1 The Nodal Agency shall empanel Consultants /Quality Monitors for Tier –II as per the requirements of PW(R&B) Department in different fields such as Roads, Buildings & Bridges on the pattern of PMGSY. The agency shall depute **Quality Monitors (QMs)** / Consultant to various works sites for monitoring of quality control of works as per the Standard Operating Procedures (SoPs). The Nodal Agency to be strengthen as per its requirement in view of new assignment both in terms of man power and infrastructure viz., testing lab at District level with full fledged testing equipments.

4.2 Empanelment procedure

The procedure for empanelment/engagement of Quality Monitors/Consultants is to be in a transparent manner by inviting application through open advertisement as under:

- i. The Consultants/Quality Monitors to be empanelled by DIQC are to be retired Civil Engineers who have not attained the age of 65 years with varied experience and qualifications through notification.
- ii. The retired Chief Engineers interested for being empanelled as Consultants/QMs are required to submit their application as per the format prescribed by DIQC along with detailed posting from the last 15 years and vigilance clearance to the DIQC.
- iii. A committee is to be constituted headed by Development Commissioner Works and comprising of Chief Engineer DIQC, SE DIQC and SQC PMGSY to scrutinize the applications received.
- iv. Upon recommendation of the Selection committee the Consultants/QMs are engaged/ empanelled by DIQC for six months period till their "Performance Evaluation".
- v. The newly empanelled Consultants/QMs are to be registered by DIQC and after attending Orientation Programme/ Training are deputed to the sites with senior Consultants as Trainees initially for conducting the inspections.

5. Honorarium.

- i. A separate Head of Account provided by the Finance Department under Revenue Expenditure Budget for meeting the expenditure is to be available for implementation of Quality Monitoring Mechanism by DIQC.
- ii. The Quality Monitors shall be paid with Honorarium and Travel Allowance as per following till are revised:

S. No.	Item	Rates
1.	Honorarium	5000/- per visit
2.	Taxi Charges	As per approved rates by Transport Department
3.	Daily Allowance	Rs.500/- per day
4.	Lodging Charges	Rs.3500/- in cities of Jammu & Srinagar and Rs.2500/- in other cities/Towns subject to production of receipts

5. Formats for Inspection, Grading and Reporting of ongoing/completed works by the Quality Monitors/Consultants are appended.

Sd/-
Principal Secretary to Govt.,
PW (R&B) Department

Format for Inspection of Ongoing/Completed Work
PART I- Work Information (To be filled-up by Executive engineer)

Work is

Ongoing **Completed**

GENERAL:

1.1. Date of Inspection:

1.2. Name of SQM:

1.3. State:

District:

Block:

1.4. Name of Road:

From

to

1.5. Package No.:

1.6. Length:Km Flexible Pavement, ___Km. CC/other Pavement =Total
.....Km.

1.7. Estimated Cost (As cleared by UT:

Rs.

Lakh

1.8. Technical Sanction Cost:

Rs.

Lakh

1.9. The Work is a Case of:

New connectivity

Up gradation

1.10. Terrain

Plain

Rolling

Hilly

1.11. Date of Start of the Work:

1.12. Stipulated Date of Completion:

1.13. Actual Date of Completion (if work completed):

2. **PHYSICAL PROGRESS: (In case of Ongoing works only)** Construction

Programme and Physical Progress:

Item	Completed percentage of Item	Dates for completion	Start Date	Completion Date	Delay in Months
Preparatory Work		Due			
		Actual			
Earth Work		Due			
		Actual			
CD Works		Due			
		Actual			
Sub base i/c Shoulders		Due			
		Actual			
Base Course (Non Bitu.)		Due			
		Actual			
Base /Wearing Course (Bitu.)		Due			
		Actual			
CC Pavement		Due			
		Actual			
Signage etc		Due			
		Actual			

3. QUALITYCONTROL:

3.1. Location of Field Laboratory:

3.2. Quality Control Register Part-I (QC-1) is maintained by:

3.3. Quality Control Register Part-II (NCR) is maintained by:

4. INSPECTIONS BY QM, SQM or SENIOR OFFICERS AND ACTION TAKEN:

Inspection by QMs, SQMs and senior (i.e. SE or CE) departmental officers and action taken statement:

Date of Visit	Inspected By	Observations	Action Taken by PIU with Date

Name and Signature of the Head of PIU,
Date:.....

Report of Quality Monitor (QM)/Consultants
Observations of OM for Ongoing/Completed Work

(To be filled-up by QM, use additional sheets, if required.)

1. QUALITY ARRANGEMENTS-OBSERVATIONS (In Case of ongoing works only):

Observations:

#	Weather Filed Laboratory required (Y/N)	Whether Field laboratory Established (Y/N)	Whether necessary Equipments available (Y/N)	Whether Equipment have been used(Y/N)

Grading: Grade: If this item is graded RI/U, write clear reasons and suggestions for improvement:

2. ATTENTION TO QUALITY: (In Case of ongoing works only): Observations – Item 2a: Maintenance of QCR registers:

#	Based on executed quantities whether all mandatory tests conducted. <input type="text" value="Yes"/> <input type="text" value="Partly"/> <input type="text" value="No"/>	Whether QC Register Part I maintained as per provisions. <input type="text" value="Yes"/> <input type="text" value="Partly"/> <input type="text" value="No"/>	Whether QC Register Part II maintained and test results monitored as per provisions. <input type="text" value="Yes"/> <input type="text" value="Partly"/> <input type="text" value="No"/>

Observations – Item 2b: Verification of Test Results (P – conforms, F – does not conform):

#	Name of Test	Results of the test conducted by QM at a defined location.(P/F)	Test result as per QC Register at the same location. (Mention the Page No. of QC Register also)(P/F)	Whether the test results recorded in QC register found correct? (Y/N)

Grade	S	RI	U	If this item is graded RI/U, write clear reasons and suggestions for improvement:

3. GEOMETRICS: The QM should take at-least two measurements in 1 Km length and if it is found that the roadway and carriageway is inadequate QM may take more observations:

Observations – Item 3 a, b and c: Road way width, Carriage way and Camber.

Ref. RD	Roadway Width (m)	Carriageway Width (m)	Ref. RD	Roadway Width (m)	Carriageway Width (m)

Observations – Item 3 d: Super elevation and Extra Widening at curves.

Ref. RD	Super Elevation	Extra Widening provided(Y/N)	Ref. RD	Super Elevation	Extra Widening provided (Y/N)

Observations – Item 3 e: Longitudinal Gradient in case of road in hilly/rolling terrain:

Ref. Between RD... & RD...	Longitudinal Gradient	S/U	Ref. Between RD... & RD...	Longitudinal Gradient	S/U

Grade:	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

OBSERVATIONS REGARDING THE QUALITY OF ITEMS OF WORK:

4 Earthwork:

Observations – Item 4 a Quality of Material for Embankment/ Sub-grade:

#	Location (RD)	On Visual Classification identify the Group Symbol and write	Quality of material is acceptable. (Y/N)

Grade:	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

Observation – Item No. 4 b: Workmanship for Embankment and Sub-grade Construction:

#	Location (RD)	MDD kN/m ³ (As per record)	Field Moisture Content	Degree of Compaction		
				Field Density kN/m ³	Dry Density kN/m ³	Compaction adequate. (Y/N)

Grade	<input type="checkbox"/> S	<input type="checkbox"/> U	If this item is graded U, write clear reasons and suggestions for improvement:

Observation – Item No. 4 c, Side slopes and profile:

#	Location (RD)	Whether Side Slopes Satisfactory (Y/N)	Whether profile is Satisfactory (Y/N)

Observations- Item No. 4 d and e, Earth work in Hilly/Rolling terrain or high Embankments:

#	Location (RD)	Cut Slopes & Profile whether appears to be stable. (Y/N)	Adequate slope protection work executed. (Y/N)	Formation is properly dressed and traffic worthy. (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

5. Sub-Base:

Observations- Item No. 5 a, b, c and d, Quality of Material and Workmanship:

#	Location (RD)	Confirms to Grading. (Y/N)	Suitable from plasticity angle. (Y/N)	Whether compaction is adequate. (Y/N)	Observed Thickness of Layer (in mm)	Prescribed Thickness provided (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

6. Base Course:

Observations- Item No. 6 a, b, c and d, Quality of Material and Workmanship of WBM:

#	Location (RD)	Thickness of each layer of WBM (mm)	Thickness is adequate. (Y/N)	Aggregate confirms to Grading (Y/N)	Filler material is non-plastic to desired extent. (Y/N)	Volume of filler material percent of course aggregate	Whether adequate compaction is done. (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

7. Bituminous Course: Premix Carpet/Surface Dressing/ BM/ MPM etc including Seal Coat: Observations- Item No. 7 a, b, and c, Quality of Material and Workmanship of BT Layer (in case of ongoing works):

#	Location (RD)	Whether Course Aggregate confirms to grading. (Y/N)	Whether the binder is of approved grade. (Y/N)	Write Mixing Temperature and whether it is in permissible limits.(Y/N)	Write Laying Temperature and whether it is in permissible limits. (Y/N)

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

Observations- Item No. 7 d and e, Workmanship of BT layer (*in case of completed works*):

#	Location (RD)	Thickness		Whether surface evenness is within acceptable limits. (Y/N)
		Thickness in mm	Whether thickness is adequate. (Y/N)	

Grade:	S	U	If this item is graded U, write clear reasons and suggestions for improvement:

8. Observations- Item No. 8 a and b, Quality of Shoulders (*in case of completed works*):

#	RD of observation	Whether general quality of the material is acceptable. (Y/N)	Whether general quality of workmanship is acceptable.(Y/N)	Whether Camber in Shoulders is adequate (Y/N)

9. Cross Drainage Works: Observations Item No. 9 a and b, Quality of CDs:

#	RD at which CD is located	Type of CD	Whether general quality of the material is acceptable.(Y/N)	Whether general quality of workmanship is acceptable.(Y/N)

Grade: <input type="checkbox"/> S <input type="checkbox"/> RI <input type="checkbox"/> U	If this item is graded RI/U, write clear reasons and suggestions for improvement:

10. Side Drains and Catch water Drains: Observations:

#	Reference of RDs where side drain constructed.	RD at which observation made.	Whether general quality of the side drains/ catch water drains is acceptable (Y/N)	Whether side drain are integrated to cross drains. (Y/N)

Grade: <input type="checkbox"/> S <input type="checkbox"/> RI <input type="checkbox"/> U	If this item is graded RI/U, write clear reasons and suggestions for improvement:

11. CC/ Semi-Rigid (SR) Pavements and Associated Pucca Side Drains: Item No. 11 a, b, c and d:

#	Reference of RDs, CC/SR Pavements provided.	RD at which observation made.	Thickness		General quality of material is acceptable. (Y/N)	General quality of workmanship acceptable(Y/N)
			Thickness in mm	Acceptable (Y/N)		

Grade: ☐ S ☐ U If this item is graded U, write clear reasons and suggestions for improvement:

12. Road Furniture and Markings

Observations - Item No. 12 a: Quality Road Furniture and Markings (*in case of ongoing/completed works*):

Main Informatory Board Fixed:

Yes	No
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Citizen Information Board Fixed:

Yes	No
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Grade: ☐ S ☐ U If this item is graded U, write clear reasons and suggestions for improvement:

Observations - Item No. 12 b: Quality Road Furniture and Markings (*in case of completed works*):

i. Logo Boards Fixed:

Yes	No
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ii. 200m. Stones fixed:

Yes	No
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iii. 1 Km. Stone fixed:

Yes	No
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iv. Guard Stones fixed on Curves:

Yes	No
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v. Mandatory and Cautionary Signage

Yes	No
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Grade:

S	U
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If this item is graded U, write clear reasons and suggestions for improvement:

13. General Observations of QM, (including the observations made during the interaction with PIU staff and Contractor/ Consultant Engineers):

a. Observations about deficiency in project preparation (Give detailed observations about deficiencies in general and items which have been left but are required as per site conditions):

b. Whether the work has been completed/is in progress as per work programme or the delay has occurred. If delay has occurred, whether the liquidated damages have been withhold or recovered.

c. Whether the work has been completed within the sanctioned cost, if not, what is the action taken by the PIU (*in case of complete works*):

d Observations about the action taken by the PIU on the observations of inspecting officers including QMs. (Clearly offer comments about the action taken on the observations of Departmental Officers, QM/Consultants).

e. Comments about difference in observations made by QMs/SQMs in earlier inspections (the QM shall study the earlier inspection reports of QMs / SQMs, if any and offer his clear comments about the differences in observations, if any).

14. Other observations, if any:

15. Quality Grading of items and sub-items of work: The grading of every sub-item and item of work is given below.

#	Sub item for observation	In case of work	Awardable Grades	Awarded Grade
1	2	3	4	5
Item 1 - Quality Arrangements				
	Quality Arrangements	On-going	S/RI/U	
	Item Grading		S/RI/U	
Item 2 - Attention to Quality				
a	Maintenance of QC Registers	On-going	S/RI/U	
b	Verification of test results	On-going/ Complete	S/U	
	Item Grading		S/RI/U	
Item 3 – Geometrics				
a	Road way width	Ongoing or complete	S/U	
b	Carriageway width		S/U	
c	Camber		S/U	
d	Super elevation & Extra Widening at Curves		S/U	
e	Longitudinal Gradient in case of road in hilly/ rolling terrain.	Ongoing/ complete	S/U	
	Item Grading		S/U	
Item 4 - Earth Work and Sub-grade in Embankment/ Cutting				
a	Quality of Material for Embankment/ Sub-grade	Ongoing or complete	S/U	
b	Compaction		S/U	
c	Side Slopes and Profile	Complete	S/U	
d	Stability and Workmanship of Cut Slopes (in case of hilly/ rolling terrain)	Ongoing or complete	S/U	
e	Adequacy of Slope Protection (in case of high embankments/hilly/ rolling terrain)		S/U	
	Item Grading		S/U	
Item 5 - Sub-Base				
a	Grain Size	Ongoing or complete	S/U	
b	Plasticity		S/U	
c	Compaction	Ongoing or complete	S/U	
d	Total Thickness of Layer	Ongoing or complete	S/U	
	Item Grading		S/U	

Item 6 - Base Course – Water Bound Macadam				
a	Grain Size of Course Aggregate	Ongoing or complete	S/U	
b	Plasticity of Crushable Aggregate used as fillers		S/U	
c	Adequacy of Compaction through volumetric analysis.		S/U	
d	Thickness of every layer of WBM.		S/U	
	Item Grading		S/U	
Item 7 - Bituminous Layer – Premix Carpet (PMC)/ Surface Dressing (SD)				
a	Gradation of Aggregate	Ongoing	S/U	
b	Mixing Temperature of Mix.	Ongoing	S/U	
c	Laying Temperature of Mix.	Ongoing	S/U	
d	Thickness of layer	Ongoing or complete	S/U	
e	Surface Evenness	Ongoing or complete	S/U	
	Item Grading		S/U	
Item 8 – Shoulders				
a	Quality of material for shoulders	Complete	S/RI/U	
b	Degree of compaction	Complete	S/RI/U	
c	Camber.	Complete	S/RI/U	
	Item Grading		S/RI/U	
Item 9 - Cross Drainage Works				
a	Quality of Material – Concrete, Stone/ brick masonry, Hume pipes including size etc.	Ongoing or complete	S/RI/U	
b	Quality of Workmanship such as positioning of pipes, wing walls cushion over H Pipes etc.		S/RI/U	
	Item Grading		S/RI/U	
Item 10 - Side Drain and Catch Water Drain				
	General quality of Side Drains/ Catch Water Drains and their integration with CDs.	Ongoing or complete	S/RI/U	
	Item Grading		S/RI/U	
Item 11 - CC/ Semi Rigid Pavements and Associated Pukka Drains				
a	Quality of Material – Concrete, Stone/ Concrete Block Pavement etc.	Ongoing or complete	S/U	
b	Strength of CC in Concrete Pavement/ Concrete Block Pavement		S/U	

c	Quality of Workmanship – Wearing surface texture, Adequacy of setting of concrete, Joints, Edges etc.		S/U	
d	Thickness of Layer		S/U	
	Item Grading		S/U	
Item 12 - Road Furniture and Markings				
a	Citizen Information Board, Main Informatory Board, Quality and whether fixed during construction.	Ongoing	S/U	
b	Logo boards, 200 m stones and Km stones, quality and whether fixed after completion.	Complete	S/U	
c	Whether the information in boards is given in local language.	Complete/ Ongoing	S/U	
	Item Grading		S/U	

16. Overall Grading of Work: The overall grading calculated on the basis of item and sub-item wise grading is given below:

#	Item	Awarded Grade
1	Quality Control Arrangements	
2	Attention to Quality	
3	Geometrics	
4	Earthwork and Sub-grade in Embankment/Cutting	
5	Granular Sub-base	
6	Base Course Non-Bituminous and shoulders	
7	Bituminous Surfacing	
8	Shoulders	
9	CD Works	
10	Side Drains and Catch Water Drains	
11	CC/Semi-Rigid Pavement and Associated Pukka Drains	
12	Road Furniture and Markings	
	Overall Grading	

Signature:

Name: _____ Date: