

Section Officer _____

Data Sheet of SQM/IQM

Online: Grade Awarded Photos Uploaded IR Uploaded

General	District		Mandal	
Package No			Dol/Time	
Name of the Work				
Length (Km)	Estimate Cost (Rs. Lakhs)	Chainage of Inspection [5 km]	From	To
Status: NS/Prog/Comp	Progress Stage: I / II / III	Chainage of Detailed Inspection [3 km]	From	To

DPR Parameters

Terrain	Rainfall (mm)	Design Speed (KMPH)	Roadway (M)	Carriageway (M)	Camber (%)
Cross Slope of Shoulders (%)	Soil Classification	Embankment Side Slopes (%)			

Items for Inspection

Layer	Type	DPR Provision (Inspection Reach)						
		No	L	B	D	Quantity		Units
						Sanction	Executed	
Embankment								
Subgrade								
Sub-Base								
Base – L1								
Base – L2								
BT								
CC Pavement								
CC Side Drains								
Earthen Drains	Side / Catch							
Shoulders								
Protection Works								
CD Works	Pipe Culverts							No
	Slab Culverts							No
Signages								

Documents Submitted

IR Part-I	Previous QM Reports	QC Registers	Lab Equipment Details	List of TBMs
DPR (Design of BT Pavement, Design of CC Pavement, Design of CD works)			Invoices (BT/ New Technology Materials ...)	
Details of New Technologies				
Lab Reports				
Item	Parameter(s)			Remarks
Concrete Design Mix	M15/M20/M25/M30/M35/M40			EE's Approval:
Cement				
BT	% Content:			Bulk Density of CA for BT (kg/cum)
Layer	MDD (gm/cc)	UCS(MPa)	OMC (%)	
Embankment				
Subgrade				
Shoulders				
Subbase:				
Base-L1:				
Base-L2:				
BT:	Grade: VG-30 / VG-40		Brand: HPCL / OIC/ _____	
Calibration of Field Equipment and Materials				
Core Cutter Equipment	Empty Weight (gm)		Volume (CC)	
Sand Replacement Equipment	Dia (cm)	Cone Weight (gm)	Bulk Density (gm/cc)	

Certificates of Manufacturer/ Supplier			
Item	Manufacturer/Supplier	Parameter(s)	Remarks
BT			
Cement			
Steel			
RCC Pipe_____mm Dia			
RCC Pipe_____mm Dia			
RCC Pipe_____mm Dia			

Notes on Previous DO/QM Inspections – Observations and Action taken by PIU

Date of Inspection	Name of inspection Authority	Designation of Inspection Authority	Reach of Inspection	Stage of Inspection

Progress (Physical & Financial) of Work, adherence to Work Program, EoAT & LDs:

BT(OGPS-20mm/ MSS-20mm/ Surface Dressing/SDBC/_____

Reach	Chainage	L/R	Gradation of Coarse Aggregate**(S/U)	Mixing Temperature (°C)**	Cleanliness / Compaction of Base Course (Y/N)*	Surface Evenness* (S/U)	
						1/km	P
1 st KM							
2 nd KM							
3 rd KM							

* Completed; **Ongoing

CC Pavement

[illegible]

CC (Pucca)Drains

[illegible]

CD Works (Pipe Culverts)

[illegible]

CD Works (Slab Culverts)

Chainage	Span (M)	Vents (No)	Grade of Concrete	Slab Thickness (mm)			Strength of Slab/Head walls (N/mm ²)			Quality of Material (Y/N)	Quantity of Material (Y/N)	Slope / Bed Protection Provided (Y/N/NA)	Numbering of CD works (Y/N)	Span >5M Water spouts provided in parapets (Y/N)	Provision of Clear Vents (Y/N)		P
				As per DPR	Field Measurement	Grading (S/U)	As per DPR	As per Field Test	Grading (S/U)						U/S	D/S	

Earthen Side Drains/ Catchwater Drains

Chainage	L/R	Quality of Material	Quality of Workmanship	Stability of Section	Integration with CD works	Remarks

Protection Works

Type (Retaining wall/Breast wall/ Parapet Wall etc.)	Category (CC/ Masonry/ Gabion)	Chainage	L/R	Average Measurements (mm)		Quality (Y/N)		Compressive Strength of Concrete (N/mm ²)		Weep Holes spacing (mm)		If top Level below shoulders to facilitate drainage of water (Y/N)	P
				Width	Height	Material	Workmanship	QCR	Field Test	Drawing	Field		

Recommended Road Furniture /Road Safety Interventions

(General: Road Markings be provided throughout the road; Mandatory/Caution/Information boards to be used liberally)

Chainage	L/R	Road Furniture/ Safety Intervention	Justification / Remarks

Space for Random Notes

Compaction by Sand Replacement Method (Specific Gravity of Calibrated Sand: S_{sg} _____)

Chainage						
Layer (Subgrade/Shoulders/GSB/WMM/BM/SDBC/....):						
L/R						
Dia of pouring Cylinder (mm):						
Cone Weight of Sand W_c (gm):						
Weight of Sample in the Pit W_s (gm)						
Moisture Content of the Sample 'w' (%)						
Weight of Sand + Weight of pouring cylinder before pouring sand in the pit W_1 (gm)						
Weight of Sand + Weight of pouring cylinder after pouring sand in the pit W_2 (gm)						
Weight of Sand in the pit + Cone Weight W_3 (gm) = $W_2 - W_1$						
Weight of Sand in the pit W_4 (gm) = $W_3 - W_c$						
Volume of Sand (Soil/Aggregate) in the pit V_s = Weight of Sand in the pit / Specific Gravity of Sand = W_4 / S_g						
Bulk Density of Sample γ_b = Weight of Sample in the Pit / Volume of soil in the pit = W_s / V_s						
FDD = $\gamma_d = 100 \times \gamma_b / (100 + w)$	/					
Design MDD of Sample Material γ_s						
$\therefore$ Degree of Compaction = $\gamma_d \times \frac{100}{\gamma_s}$						
Photo						

Compaction by Core Cutter Method: Empty Weight of Core W_0 = _____ gm; Volume of Core V_0 = _____ cc

Chainage						
Layer (Embankment/Subgrade/Shoulders)						
L/R						
W_1 = Weight of Soil Sample + Core (gm)						
M = Moisture Content (%)						
FDD						
γ_d						
Design MDD (gm/cc)						
% Compaction $FDD \times 100 / MDD$						
Permissible Compaction						
Compaction Satisfactory (Y/N)						
Photo						

Concrete Strength by Rebound Hammer Test

Item/Layer					
Impact Direction (H/VU/VD)					
Chainage					
L/R					
Rebound Hammer Readings	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	10				
Average Reading					
Extreme values ($A_v \pm 3$)					
Average after exclusion of extreme values					
Compressive Strength (N/mm ²) from Calibration Graph					
Photo					

Package No: _____

Gradation / Sieve Analysis for Layers: GSB/WMM/WBM/Screenings/BT Carpet ...

Chainage									
Layer									
L/R									
Sample Weight (gm)									
Weight of Sample Retained on Sieve (gm)	125 mm								
	90 mm								
	75 mm								
	63 mm								
	53 mm								
	45 mm								
	37.5 mm								
	26.5 mm								
	22.4 mm								
	19 mm								
	13.2 mm								
	11.2 mm								
	5.6 mm								
	4.75 mm								
	2.36 mm								
	600 μ								
	300 μ								
	180 μ								
	75 μ								
Pan									
Photo									

BT Extraction Test (Design BT Content %)

Chainage	Weight of Sample before extraction (gm) – W1	Weight of Sample after extraction (gm) – W2	Weight of fines recovered from extract (gm) – W3	Weight of Filter Papers (gm)		BT Content (%) = $\frac{W_1 - [W_2 + W_3 + (W_4 - W_5)]}{W_1} \times 100$	P
				Before Extraction – W4	After Extraction – W5		

Mandatory Photos: Start Point, Information/Citizen/Maintenance/Logo Boards, Site Laboratory, Geometrics, General View, Surface Evenness , TBM , KM /HM stone, End Point

Photos: Description/Chainage/S.No.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
Main Information Board/Citizen Board/Maintenance Board/Direction-cum-Logo Board														A General View of the Road									
Main Information Board/Citizen Board/Maintenance Board/Direction-cum-Logo Board														Intermediate Logo Board									
End Information Board/Direction-cum-Logo Board												End Information Board/Direction-cum-Logo Board											
Site Laboratory						TBM				Temporary KM Stone								Temporary HM Stone					
Road Signages:																							
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40				

List of Site Laboratory Equipment

Package No _____

Description	Status				Remarks	
	Available		Not Available	Not Required		
	Working	Not Working				
General Equipment						
Depth Gauge						
Steel Scale (30 cm)						
Measuring Tapes (Plastic) – 15 M/30 M						
Measuring Tapes (Steel) – 3M/5M						
Spirit Level						
Straight Edge – 3M						
Surface Evenness Measuring Bar						
Camber Board/Straight Edge with Spirit Level						
IS Sieves [GI-450 mm Dia]: sieve size in mm						
90 75 63 53 50 45 40 31.5 26.5 25 22.4 20						
16 13.2 12.5 11.2 10 6.3 4.75 2.36						
IS Sieves [Brass-200 mm Dia]: sieve size in microns (μ)						
1000/1180 600 425 300 150 75						
Iron Frames (500 mm x 500 mm and 150 mm x 150 mm)						
Levelling Instrument with Staff (5M/6M)						
Electronic/Digital Weighing Balance	15/30 kg (1 gm accuracy)				General weighments	
	1 kg (0.10 gm accuracy)				For BT / Sensitive weighments	
Atterberg Limits: Casagrande/ Liquid Limit/Plastic Limit apparatus						
Oven (200 °C – thermostatically/ digitally controlled)						
Compaction Testing						
Sand Replacement Testing: Pouring cylinder, Calibrating Cylinder, and Tray complete (10 cm/15 cm/20 cm)					For Subgrade/GSB 10 cm apparatus is sufficient; for WMM etc 15/20 cm apparatus required	
Core Cutter with dolly and hammer					For compaction testing of clayey embankments	
Rapid Moisture Meter					Digital Moisture meter can be used as stand by	
Calibrated Sand (-1 mm / + 600 μ for non-BT layers and - 600 μ / + 300 μ for BT layers)					With Bulk density and Cone Weights calibrated in advance	
BT Extraction Apparatus					Plastic bags for sample collection, Plastic (thick) Containers for soaking	
Filter Papers, BT solvent (commercial grade trichloroethylene), Digital thermometers (ongoing works)						
Coarse Aggregate						
Aggregate Impact Test Apparatus					With IS sieves (mm) – 12.5,10, 2.36	
Flakiness gauge					With IS sieves (mm) – 63, 50, 40, 31.5, 25, 20, 16, 12.5, 10, 6.3	
Elongation gauge						
Concrete						
Slump Cone						
Cube Compressive Strength Testing Machine						
Concrete cube moulds (150 mm x 150 mm x 150 mm) – 24 No						
Mortar Moulds (70.6 mm x 70.6 mm x 70.6 mm) – 24 No						
Rebound Hammer						
Others						
Lab CBR Equipment (5 T capacity)			✓		Tests conducted in consultant Laboratories	
Standard Proctor Density apparatus with rammer			✓			
Miscellaneous: Digging/Cutting Tools, Tarpaulin sheets, Enamel/Iron/Plastic trays, Plastic/gunny bags, Mason's thread, Paint – 100 ml (black/red) with brush, Display boards with marker pens / Large Slate with chalk pieces, Lime Powder						

Name of the Work: _____

Checklist for Inspection Report

S.No.	Description	P.No.
1	Part-I (To be Submitted by PIU)	
2	Part-II (Inspection Format)	
3	List of TBMs (With Chainages, RLs, and Staff Positions)	
4	List of Equipment of Site Laboratory	
5	Laboratory Reports	
	A Design Mix of Concrete (M15/M20/M25/M30/M35) & EE's Approval	
	B Subgrade (MDD/OMC)	
	C Subbase (MDD/OMC/UCS)	
	D Base (MDD/OMC/UCS)	
	E Shoulders (MDD/OMC)	
	F BT (Content/Unit Weight of Coarse Aggregate/Compaction)	
6	Manufacture Test Certificates	
	A RCC Hume Pipes (600mm/750 mm/1000 mm/1200 mm/)	
	B BT	
	C Cement	
	D Steel	
7	Invoices	
	BT	
	Admixtures of New Technology Works	
8	Calibration of Field Equipment	
	A Core Cutter (Empty Weight, Dia, Height, ...)	
	B Sand Replacement Equipment (Diameters, Heights, Specific Gravity of Calibrated Sand, Cone Weights of Calibrated Sand, ...)	
9	Test Reports	Chainages
	A Embankment/Subgrade (FDD)	
	B Subbase: FDD	
	Gradation	
	Base- L1: Volumetric Analysis/FDD	
	Gradation	
	Filler Content	
	Base- L2: Volumetric Analysis/FDD	
	Gradation	
	Filler Content	
	D Shoulders: FDD	
	E BT: Content	
	Compaction	
	Gradation	
	F CC Pavement: Rebound Hammer Test	
	Cube Compressive Strength	
	G CD work: Rebound Hammer Test	
	Cube Compressive Strength	
	H Protection work: Rebound Hammer Test	
	Cube Compressive Strength	
10	QC Register (Part-I & II) Abstract Reports	
11	Photos	

Package No _____

Name of the Work _____

Photo Captions

S.No	Description	Chainage
1		
2		
3		
4		
5		
6		
7		
8		
9		
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11		
12		
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15		
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21		
22		
23		
24		
25		

Attachment - Adequacy of quality Control Tests:

[illegible]

Item 3-II (C) Package No _____
Attachment – Verification of Test Results

[illegible]