ASPHALT PAVING WORK - CHECKLIST

*This **Checklist** shall be read in conjunction with:*
1. *JKR Specification For Road Works JKR/SPJ/2008-S4 (JKR/SPJ)*
2. *JKR Guidelines For Inspection And Testing Of Road Works (JKR Guidelines)*

Comply

PRIME COAT *Clause 4.3.1 JKR/SPJ*

Purpose:
- To waterproof the surface of roadbase.
- To plug capillary voids.
- To coat and bond loose particles.
- To harden the surface of roadbase.
- To promote adhesion between roadbase and binder course.

Material: SS-1K conforming to MS 161 (refer to **Attachment 1**) or MC-70 conforming to MS 159. Yes ☐ No ☐

Rate of application: 0.5 – 1.0 litre/m^2, uniformly distributed.
A tray test in which the ratio of the different in weight of the tray before and after spray (in g) to the area of the tray (in m^2) is calculated, shall be carried out at random. Yes ☐ No ☐

Surface preparation and protection: The surface to be primed shall be clean and dry. The primed surface shall be left undisturbed, normally for at least 24 hours after application, until the prime coat has penetrated the roadbase and cured sufficiently. Yes ☐ No ☐

TACK COAT *Clause 4.3.2 JKR/SPJ*

Purpose: To promote adhesion between binder course and wearing course.

Material: RS-1K conforming to MS 161 (refer to **Attachment 1**). Yes ☐ No ☐

Rate of application: 0.25 – 0.55 litre/m^2, uniformly distributed.
A tray test shall be carried out at random. Excess tack coat shall be removed while areas with insufficient tack coat shall be resprayed. Yes ☐ No ☐

Surface preparation and protection: The surface to be tack-coated shall be clean and dry. Traffic shall be kept off the tack coat at all times. The placement of asphalt shall only proceed after the tack coat has cured sufficiently as may be indicated by the change in colour from brown to black. Yes ☐ No ☐

Comply

COARSE AGGREGATES *Clause 4.3.3.2 (a) JKR/SPJ*

Material: Crushed hard rock. Yes ☐ No ☐

Quality requirements (refer to **Attachment 2**):
- Los Angeles abrasion value (ASTM C 131) < 25%
- Loss of weight in magnesium sulfate soundness test (AASHTO T 104) < 18%
- Flakiness index (MS 30) < 25%
- Water absorption (MS 30) < 2%
- Polished stone value (MS 30) > 40 (wearing course only)
  Note: Limestone aggregates shall not be used in wearing course. Yes ☐ No ☐

Test frequency: One test per stockpile for every 2,500 tons of premix produced (JKR Guidelines). Yes ☐ No ☐

FINE AGGREGATES *Clause 4.3.3.2 (a) JKR/SPJ*

Material: Screened quarry dust. Yes ☐ No ☐

Quality requirements (refer to **Attachment 2**):
- Sand equivalent of aggregate fraction passing No.4 (4.75 mm) sieve (ASTM D 2419) > 45%
- Fine aggregate angularity (ASTM C 1252) > 45%
- Methylene Blue value (Ohio DOT test method) < 10 mg/g
- Loss of weight in magnesium sulfate soundness test (AASHTO T 104) < 20%
- Water absorption (MS 30) < 2% Yes ☐ No ☐

Test frequency: One test per stockpile for every 2,500 tons of premix produced (JKR Guidelines). Yes ☐ No ☐

MINERAL FILLER *Clause 4.3.3.2 (b) JKR/SPJ*

Material: Hydrated lime or ordinary Portland cement (cum anti-stripping agent). Yes ☐ No ☐

Grading: Not less than 70% by weight shall pass 75 um sieve. Yes ☐ No ☐

Quantity: 2% by weight of combined aggregates. Yes ☐ No ☐

Test frequency: One gradation analysis per day of production (JKR Guidelines). Yes ☐ No ☐

BITUMINOUS MATERIAL *Clause 4.3.3.2 (c) JKR/SPJ*

Material: Bitumen of penetration grade 60 – 70 conforming to MS 124 (refer to **Attachment 3**).

Note: The test frequency is not stipulated in JKR Guidelines or JKR/SPJ. Preferably one set of test for every delivery of bitumen to the asphalt mixing plant. Yes ☐ No ☐

Comply

ANTI-STRIPPING AGENT ***Clause 4.2.4.2 (d) JKR/SPJ***

Material: Ordinary Portland cement conforming to MS 522. Yes ☐ No ☐

Quantity: 2% by weight of combined aggregates. Yes ☐ No ☐

Note: The quantity of mineral filler and anti-stripping agent to be added in shall be limited such that the ratio of combined material passing 75 um sieve to bitumen by weight shall be in the range 0.6 – 1.2 (not stipulated in JKR/SPJ). Yes ☐ No ☐

GRADATION OF COMBINED AGGREGATES
Clause 4.3.3.2 (a) JKR/SPJ

The gradation of the combined coarse and fine aggregates, together with mineral filler, for use in mix design shall conform to gradation limits (percentage passing) as given in Table 4.3.3 JKR/SPJ. Yes ☐ No ☐

SIEVE SIZE mm	AC 10	AC 14	AC 28
28	-	-	100
20	-	100	72-90
14	100	90-100	58-76
10	90-100	76-86	48-64
5	58-72	50-62	30-46
3.35	48-64	40-54	24-40
1.18	22-40	18-34	14-28
0.425	12-26	12-24	8-20
0.150	6-14	6-14	4-10
0.075	4-8	4-8	3-7

BITUMEN CONTENT ***Clause 4.3.3.3 JKR/SPJ***

Table 4.3.4 JKR/SPJ gives the normal range of bitumen content for use in mix design. Yes ☐ No ☐

MIX	BITUMEN CONTENT by weight of mix
AC 10	5.0 – 7.0 %
AC 14	4.0 – 6.0 %
AC 28	3.5 – 5.5 %

Comply

JOB MIX FORMULA *Clause 4.3.3.3 (a) JKR/SPJ*

The job mix formula shall be established by testing several trial gradation within the limits in Table 4.3.3 at an appropriate range of bitumen content as given in Table 4.3.4. For each trial mix, the parameters given in Table 4.3.5 JKR/SPJ shall be met. Yes ☐ No ☐

PARAMETER	WEARING	BINDER
Stability, N	> 8000	> 8000
Flow, mm	2.0 – 4.0	2.0 – 4.0
Stiffness, N/mm	> 2000 N/mm	> 2000 N/mm
Air voids in mix, %	3.0 – 5.0	3.0 – 7.0
Air voids in aggregate filled with bitumen, %	70 – 80	65 – 75

MARSHALL METHOD OF MIX DESIGN
Clause 4.3.3.3 JKR/SPJ

Purpose: To establish an economical blend of aggregates and bitumen that produces a mix having adequate durability and stability.

Procedure:

- Prepare a series of Marshall specimens for a range of bitumen content as given in Table 4.3.4.
- Bitumen content should vary by 0.5% increments with at least two bitumen contents above the expected design value and at least two below this value.
- Prepare at least three Marshall specimens for each bitumen content selected.
- Determine bulk specific gravity of the specimens.
- Determine Marshall stability and flow.
- Carry out voids analysis on the specimens (ie. voids filled with bitumen VFB and voids in mix VIM).

- Plot the following graphs;
  - Stability vs Bitumen Content
  - Flow vs Bitumen Content
  - Bulk specific gravity vs Bitumen Content
  - VFB vs Bitumen Content
  - VIM vs Bitumen Content

Yes ☐ No ☐

The design bitumen content is usually determined by taking the mean of bitumen contents that give an optimum value of each five properties considered. Asphalt Institute, on the other hand, recommends choosing the bitumen content at the median of VIM limits (which is 4% for AC 10 and AC 14, and 5% for AC 28). All other mix properties at this bitumen content should then be evaluated by comparing them to the mix design criteria as given in Table 4.3.5. If the design criteria are not met, then some adjustment or compromise is necessary or the mix may need to be redesigned. Yes ☐ No ☐

Comply

PLANT TRIAL ***Clause 4.3.3.3 (b) JKR/SPJ***

Purpose: To demonstrate to the satisfaction of the S.O. that mixing, laying and compacting equipment conform to the requirements of the specification, and that the proposed mix is satisfactory.

Quantity of asphalt: Minimum 20 tons. Yes ☐ No ☐

Tests: As directed by the S.O., comprehensive sampling and testing of asphalt shall be carried out to check for satisfactory compliance with job mix formula and satisfactory degree of compaction. It is recommended that the following inspection and tests be carried out:

- Record the type and weight of rollers. Check the tyre pressure of the pneumatic tyre roller. (Clause 4.3.3.4 (e) JKR/SPJ stipulates that one number pneumatic tyre roller and two numbers steel wheel rollers shall be provided. The operating weight of steel wheel rollers shall be in the range 8 – 10 tonnes and its driven roller drum shall exert a rolling force of not less than 3.5 tonnes per metre width of the drum. The operating weight of pneumatic roller shall be not less than 15 tonnes as per Clause 4.3.3.5 (i) JKR/SPJ. All tyres must be inflated to an equal pressure of not less than 0.7 MPa.)
- Record the type of paver (shall conform to Clause 4.3.3.4 (d) JKR/SPJ).
- Check that the trial site is suitable.
- Take sample of the premix and carry out the following tests;
  - Bitumen content and aggregate grading.

  Test results shall comply with the design bitumen content and aggregate grading within the tolerances as in Table 4.3.6 JKR/SPJ. Yes ☐ No ☐

  - Theoretical maximum specific gravity.
  - Preparation of Marshall specimens.
  - Bulk specific gravity of Marshall specimens.
  - Volumetric properties of Marshall specimens.
  - Marshall stability and flow.

  Test results shall comply with Table 4.3.5 JKR/SPJ. Yes ☐ No ☐

- Record temperatures of premix on the lorry, at plant and site. Refer to Clause ‘Temperature of Asphalt’ in this Checklist. Yes ☐ No ☐
- Record laying temperatures.
- Record laying (uncompacted) thickness.
- Check texture of paved surface before rolling.
- Record temperatures immediately before rolling (rolling temperatures).
- Record rolling pattern.
- Check texture of compacted surface.
- Cut core samples after the laid material has sufficiently hardened.
- Record compacted thickness and density from core samples. Compacted thickness and density shall comply with Clause 4.3.3.5 (i) and (j) JKR/SPJ. Yes ☐ No ☐

Comply

COMPLIANCE WITH JOB MIX FORMULA
Clause 4.3.3.3 (c) JKR/SPJ

Once the job mix formula is approved by the S.O., the contractor is bound to produce asphalt which precisely meet the bitumen content and grading as specified in this formula within the tolerances set forth in Table 4.3.6 JKR/SPJ. Yes ☐ No ☐

PARAMETER	PERMISSIBLE VARIATION
Bitumen content.	+/- 0.2%
Fractions of combined aggregate;	
i. passing 5.0 mm and larger sieves.	+/- 5.0%
ii. passing 3.35 mm and 1.18 mm sieves.	+/- 4.0%
iii. passing 425 um and 150 um sieves.	+/- 3.0%
iv. passing 75 um sieve.	+/- 2.0%

PRODUCTION OF ASPHALT

Gradation analysis of aggregates:
- Batch plant – 1 test per hot bin per day of production (JKR Guidelines). Yes ☐ No ☐
- Drum mix plant – 1 test per cold bin per day of production (JKR Guidelines). Yes ☐ No ☐

The following tests shall be carried out for every 200 tons of premix produced (JKR Guidelines);
- Bitumen content and aggregate grading (ASTM D 2172 or BS 598).
- Theoretical maximum specific gravity (ASTM D 2041).
- Preparation of Marshall specimens (ASTM D 1559 or AASHTO T 245).
- Bulk specific gravity of Marshall specimens (ASTM 2726 or AASHTO T 166).
- Calculation of voids filled with bitumen (VFB).
- Voids in mix (VIM) (ASTM D 3023).
- Marshall stability and flow (ASTM D 1559 or AASHTO T 245). Yes ☐ No ☐

SAMPLING OF ASPHALT *BS 598*

Sample quantity:
- Nominal size larger than 20 mm (eg. AC 28) – minimum 24 kg.
- Nominal size 20 mm and smaller (eg. AC 14) – minimum 16 kg. Yes ☐ No ☐

Sampling from lorry (the most usual and acceptable practice):
- Nominal size larger than 20 mm – take 4 increments.
- Nominal size 20 mm and smaller – take 3 increments.
- One increment weighs approximately 7 kg.
- Use size 2 square-mouth shovel (an average size 2 shoveful weighs approx. 7 kg).
- Increments shall be widely spaced but not closer than 300 mm from the edge of lorry.
- Scoop 100 mm below surface. Yes ☐ No ☐

Comply

TEMPERATURE OF BITUMEN *Clause 4.3.3.5 (d) JKR/SPJ*

The temperature of bitumen when delivered to pugmill: 140 – 160 °C

Note: ASTM D 3515 recommends that bitumen should not be exposed, during storage and mix production, to temperatures of higher than 177 °C (350 °F). Yes ☐ No ☐

TEMPERATURE OF ASPHALT *Clause 4.3.3.5 (f), (g), (i) JKR/SPJ*

The temperature of asphalt immediately before unloading from the lorry into the paver hopper shall be not less than 140 °C. Yes ☐ No ☐

The temperature of asphalt at the start of rolling shall be not less than 130 °C. Yes ☐ No ☐

Note 1: On the upper limit, Asphalt Institute recommends that the temperature of asphalt shall be not more than 163 °C (325 °F). Yes ☐ No ☐

Note 2: The asphalt shall comply with the laying and rolling temperatures as established during the plant trial. Yes ☐ No ☐

*Note 3: Use Check Card (as per **Attachment 4** or equivalent) to monitor the temperatures of asphalt at plant and site, and during laying and rolling, as well as the movement of the lorries and laying chainages.* Yes ☐ No ☐

LAYING OF ASPHALT *Clause 4.3.3.5 (g) JKR/SPJ*

Range of allowable compacted thickness:
2 x nominal maximum aggregate size < thickness < 100 mm Yes ☐ No ☐

On superelevated sections, laying shall start along the lower side of the carriageway and progress to the higher side. Yes ☐ No ☐

On gradients in excess of 4%, laying shall not be carried out in downhill direction. Yes ☐ No ☐

COMPACTION OF ASPHALT *Clause 4.3.3.5 (i), (j) JKR/SPJ*

Rolling temperatures and pattern shall be as established during the plant trial. Yes ☐ No ☐

If there are joints, roll the joints first. Yes ☐ No ☐

Speed of rollers: Maximum 5 km/h steel wheel roller, maximum 8 km/h pneumatic tyre roller. Yes ☐ No ☐

Rate of cutting core samples: One core for every 500 m^2 (but not less than 2 for each paving session). Yes ☐ No ☐

Compacted density requirements: Yes ☐ No ☐
- Wearing course, 98% – 100% of Marshall density.
- Binder course, 95% – 100% of Marshall density.

	Comply
Compacted thickness requirements: The average thickness shall be not less than the required thickness, and the minimum thickness at any point shall be not less than the required thickness minus 5 mm.	Yes ☐ No ☐

CONSTRUCTION JOINTS *Clause 4.3.3.5 (h) JKR/SPJ*

Cold longitudinal or transverse joints shall be cut before the adjacent area is paved. Cut joint faces, contact surfaces of kerbs, manholes etc shall be brushed with RS-1K to ensure good bonding.	Yes ☐ No ☐
Construction joints should be offset from those in underlying layer by at least 100 mm for longitudinal joints and 500 mm for transverse joints.	Yes ☐ No ☐
Avoid having longitudinal joints in wheelpaths.	Yes ☐ No ☐

OPENING TO TRAFFIC *Clause 4.3.3.5 (k) JKR/SPJ*

Usually not less than 4 hours after the start of rolling. Restrict vehicle speed to 30 km/h or less if earlier opening is necessary.	Yes ☐ No ☐

SURFACE REGULARITY *Clause 4.5.3 JKR/SPJ*

The regularity of the completed pavement surface shall be measured before traffic is allowed on it and is measured in terms of its lane International Roughness Index (IRI). Lane IRI shall be measured using the ARRB Walking Profiler. Other types of equipment may be used provided that the output from the equipment correlate strongly with the output from the Walking Profiler.	Yes ☐ No ☐
The lane International Roughness Index (IRI) measured for the whole road length and each 100 meter section shall be less than 2.0 m/km.	Yes ☐ No ☐
In case of non-compliance, the Contractor shall carry out rectification works on any part of the completed pavement surface so that the lane IRI for the whole road length and for each 100 meter section are less than 2.0 m/km.	Yes ☐ No ☐

Attachment 1

1.0 BITUMEN EMULSION TESTS

1.1 Saybolt Furol Viscosity (ASTM D 244)

The Saybolt Furol viscosity test measures and specifies the consistency of bitumen emulsion. For SS-1K and RS-1K, the test is carried out at 25 °C. In the test, the time required for 60 ml of sample to flow through an orifice is determined and is termed Saybolt Furol viscosity in seconds.

Requirement: SS-1K min 20 s, max 100 s, RS-1K min 20 s, max 50 s

1.2 Storage Stability (ASTM D 244)

The storage stability test is used to determine the ability of bitumen emulsion to remain as a uniform dispersion during storage. In the test, the difference in percent residue of sample taken from the top and bottom of material placed in undisturbed simulated storage for 24 hours is determined.

Requirement: SS-1K max 1%, RS-1K max 1%

1.3 Sieve (ASTM D 244)

The sieve test is used to determine quantitatively the percent of bitumen present in the form of relatively large globules. Such globules do not provide thin and uniform coatings of bitumen on aggregates. In the test, a sample is poured through a 850 um sieve and the amount of retained bitumen is determined.

Requirement: SS-1K max 0.10%, RS-1K max 0.10%

1.4 Cement Mixing (ASTM D 244)

The cement mixing test indicates the relative rate at which the colloidal bitumen globules will 'break' when spread in thin films. In the test, a sample is mixed with finely-ground Portland cement and the mixture washed over a 1.40 mm sieve. The amount of material that is retained on the sieve is expressed as the percentage by weight.

Requirement: SS-1K max 2%, RS-1K NA

1.5 Particle Charge (ASTM D 244)

The particle charge test is made to identify cationic emulsions. It is performed by immersing a positive electrode (anode) and a negative electrode (cathode) into a sample. Cationic bitumen emulsion will migrate toward the cathode.

Requirement: SS-1K Positive, RS-1K Positive

1.6 Residue From Distillation (ASTM D 244)

The distillation test provides a means for determining the relative proportion of bitumen and water in bitumen emulsion and the amount of oil distillate which is contained in some grades of bitumen emulsion. The test also provides a bitumen residue on which additional tests may be made. The residue from distillation is expressed as the percentage by weight whereas the oil distillate by volume.

Requirement: **Bitumen** ***SS-1K min 57%, RS-1K min 50%,*** **Oil** ***SS-1K NA, RS-1K max 3%***

1.7 Test on Residue From Distillation

1.7.1 Penetration (ASTM D 5)

Refer to **Attachment 3.**

Requirement: SS-1K 60-200 x0.1mm, RS-1K 60-200 x0.1mm

1.7.2 Solubility in Trichloroethylene (ASTM D 2042)

Refer to **Attachment 3.**

Requirement: SS-1K min 97.5%, RS-1K min 97.5%

Attachment 2

2.0 AGGREGATE TESTS

2.1 Los Angeles Abrasion Value (ASTM C 131))

The Los Angeles abrasion value is a measure of degradation of aggregates resulting from a combination of actions including abrasion, impact and grinding in a rotating steel drum containing steel spheres. After 500 revolutions, the aggregates are sieved to measure the degradation as percent loss, which is the weight percentage of coarse material lost during the test as a result of the mechanical degradation.

Requirement: Not more than 25%

2.2 Magnesium Sulfate Soundness (AASHTO T 104 or ASTM C 88)

The test estimates the soundness of aggregates when subjected to weathering action in concrete or other applications. This is accomplished by repeated immersion in saturated solution of sulfate for 16-18 hours followed by oven drying at 110 °C until constant weight is achieved, for 5 cycles. The internal expansive force, derived from the rehydration of the salt upon re-immersion, simulates the expansion of water on freezing. The result is expressed as the percentage of weighted average loss of weight for all the fractions being tested.

Requirement: Not more than 18% (coarse aggregates), not more than 20% (fine aggregates)

2.3 Flakiness Index (MS 30)

The flakiness index is the percentage by weight of aggregates whose least dimension (thickness) is less than three fifths of their mean dimension.

Requirement: Not more than 30%

2.4 Water Absorption (MS 30)

Water absorption of aggregates is expressed as the percentage by weight of the absorbed water (the difference in weight between saturated surface dry aggregates and oven-dried aggregates after being immersed in distilled water at 27 ^{o}C for 24 hours) to the weight of oven-dried aggregates (placed in oven at 105 °C for 24 hours).

Requirement: Not more than 2%

2.5 Polished Stone Value (MS 30)

The polished stone value gives a relative measure of the extent to which different types of aggregate in the wearing course will polish under traffic. Aggregate samples are subjected to an accelerated polishing action in a special machine and the state of polish reached by each sample is measured by means of a suitable friction test.

Requirement: Not less than 40

2.6 Sand Equivalent Value (ASTM D 2419)

Sand equivalent value indicates the relative proportions of clay-like or plastic fines and dust in fine aggregates that pass the No.4 (4.75 mm) sieve. The term sand equivalent expresses the concept that most fine aggregates are mixtures of desirable coarse particles (sand) and undesirable clay or plastic fines and dust.

Requirement: Not less than 45%

2.7 Fine Aggregate Angularity (ASTM C 1252)

Fine aggregate angularity ensures a high degree of fine aggregate internal friction and rutting resistance. It is defines as the percent air voids present in loosely compacted fine aggregates smaller than 2.36 mm. Higher void contents mean more fractured faces.

Requirement: Not less than 45%

2.8 Methylene Blue Value (Ohio Department of Transportation Test Method)

Methylene Blue value indicates the amount of harmful clays and organic matters present in fine aggregates.

Requirement: Not more than 10 mg/g

Attachment 3

3.0 BITUMEN TESTS

3.1 Penetration (ASTM D 5)

The test measures the consistency of bitumen so that it can be classified into standard grades. It is done by subjecting bitumen sample in a test cup 55 mm diameter and 35 mm deep to a penetration of a standard needle with a 100 g mass for 5 seconds at 25 °C.

Requirement: 60 – 70 x 0.1 mm

3.2 Softening Point (ASTM D 36)

The test measures the temperature at which bitumen reaches a certain degree of softness. It is done by loading bitumen sample, which is confined in a brass ring, with a steel ball of diameter 9.5 mm and mass 3.5 g, in a gradually heated water. The water temperature in °C at which the sample softens and the ball strikes a plate 25 mm below the ring is called the ring and ball softening point of the bitumen.

Requirement: 48 – 56 °C

3.3 Solubility in Trichloroethylene (ASTM D 2042)

The test measures the purity of bitumen. The portion of bitumen that is soluble in trichloroethylene represents the active cementing constituents. Only inert matter such as salts, free carbon or non-organic contaminants are insoluble. The test is done by allowing about 2 g of bitumen sample to dissolve in a 100 ml of the solvent and filtering the solution through a glass fibre pad. The weight of residue retained is determined and the percentage of soluble material is calculated by difference.

Requirement: Minimum 99.0%

3.4 Ductility (ASTM D 113)

The test is intended to provide assurance that the bitumen is not too brittle to induce cracking in the bituminous road surfacing. Bitumen sample is subjected to elongation at a rate of 5 cm per minute at 25 °C. The elongation in cm at which the sample breaks is called the ductility of the bitumen.

Requirement: Minimum 100 cm

3.5 Flash Point (ASTM D 92)

The test is primarily a safety test. It indicates the maximum temperature to which the bitumen can be safely heated. The flash point of bitumen is the temperature at which it evolves inflammable vapours which will ignite on contact with open flames. The test is done by gradually heating bitumen sample in a brass cup and periodically passing a small flame across its surface until a brief flash of blue flame is observed.

Requirement: Minimum 250 °C

3.6 Retained Penetration after Thin Film Oven (ASTM D 1754/D 5)

The thin film oven test (TFOT) actually is not a test but a procedure intended to subject bitumen to hardening conditions approximating those that occur in normal hot-mix facility operations. The retained penetration determined after TFOT is considered to be a measure of the resistance of the bitumen to changes under conditions which produce hardening. The TFOT is done by placing a 50 ml bitumen sample in a flat-bottomed pan 140 mm diameter and 10 mm deep. The bitumen layer is about 3 mm deep. The pan is placed on a shelf which rotates approximately 5 to 6 revolutions per minute for 5 hours at 163 °C in an oven. The effects of heat and air are evaluated from changes in the penetration values. Penetration change is reported as the penetration of the residue expressed as a percentage of the original penetration.

Requirement: Minimum 52%

3.7 Loss on Heating (ASTM D 6/D 5)

This test method provides a relative measurement of the volatility of bitumen under test conditions. A 50 g sample is placed in a container of diameter 55 mm and heated in a revolving-shelf oven for 5 hours at 163 °C. The loss in mass is expressed as a percentage of the original mass. The drop in penetration is expressed as a percentage of the original penetration.

Requirement:Loss on heating – maximum 0.2%
Drop in penetration after heating – maximum 20%

Attachment 4

CHECK CARD

1.0) Contract No.: _____

2.0) Plant : _____

3.0) Date: _____

4.0) Type of Mix: _____

5.0) Load No. : _____

6.0) Tip-Truck Registration No.: _____

7.0) Sampling _____

7.1) At Plant: YES / NO

a) Type of Sample: _____

b) Tests (specify): _____

7.2) At Site: YES / NO

b) Type of Sample: _____

b) Tests (specify): _____

8.0) Temperature of Mix on Tip-Truck

LOCATION	Front	Middle	Rear
Plant			
Site			

9.0) Time Leave Plant: _____

10.0) Weather At Plant: _____

11.0) Time Arrive Site: _____

12.0) Weather At Site: _____

13.0) Time Start Laying: _____

14.0) Temperature of Mix in Paver Hopper: _____

15.0) Start Chainage: _____

16.0) End Chainage: _____

17.0) Temperature At Laying/Rolling

CHAINAGE	LAYING		ROLLING	
	Vergeside Wheelpath	Offside Wheelpath	Vergeside Wheelpath	Offside Wheelpath

18.0) Remarks: _____

19.0) Reporting Officer

19.1) At Plant: _____

19.2) At Site: _____