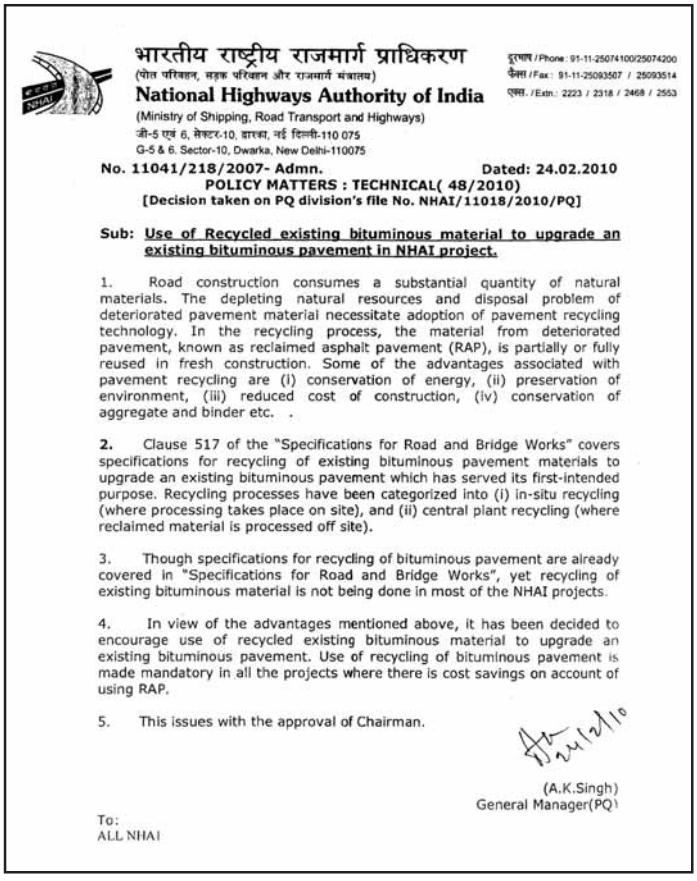
ASTEC
An Astec Industries Company

TIL Tractors India

‘DOUBLE BARREL’ HOT-MIX ASPHALT PLANTS

MADE IN INDIA

NHAI advocates **RAP**



भारतीय राष्ट्रीय राजमार्ग प्राधिकरण
(पोत परिवहन, सड़क परिवहन और राजमार्ग मंत्रालय)
National Highways Authority of India
(Ministry of Shipping, Road Transport and Highways)
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No. 11041/218/2007- Admn. **Dated: 24.02.2010**

POLICY MATTERS : TECHNICAL(48/2010)
[Decision taken on PQ division's file No. NHAI/11018/2010/PQ]

Sub: Use of Recycled existing bituminous material to upgrade an existing bituminous pavement in NHAI project.

1. Road construction consumes a substantial quantity of natural materials. The depleting natural resources and disposal problem of deteriorated pavement material necessitate adoption of pavement recycling technology. In the recycling process, the material from deteriorated pavement, known as reclaimed asphalt pavement (RAP), is partially or fully reused in fresh construction. Some of the advantages associated with pavement recycling are (i) conservation of energy, (ii) preservation of environment, (iii) reduced cost of construction, (iv) conservation of aggregate and binder etc. .

2. Clause 517 of the "Specifications for Road and Bridge Works" covers specifications for recycling of existing bituminous pavement materials to upgrade an existing bituminous pavement which has served its first-intended purpose. Recycling processes have been categorized into (i) in-situ recycling (where processing takes place on site), and (ii) central plant recycling (where reclaimed material is processed off site).

3. Though specifications for recycling of bituminous pavement are already covered in "Specifications for Road and Bridge Works", yet recycling of existing bituminous material is not being done in most of the NHAI projects.

4. In view of the advantages mentioned above, it has been decided to encourage use of recycled existing bituminous material to upgrade an existing bituminous pavement. Use of recycling of bituminous pavement is made mandatory in all the projects where there is cost savings on account of using RAP.

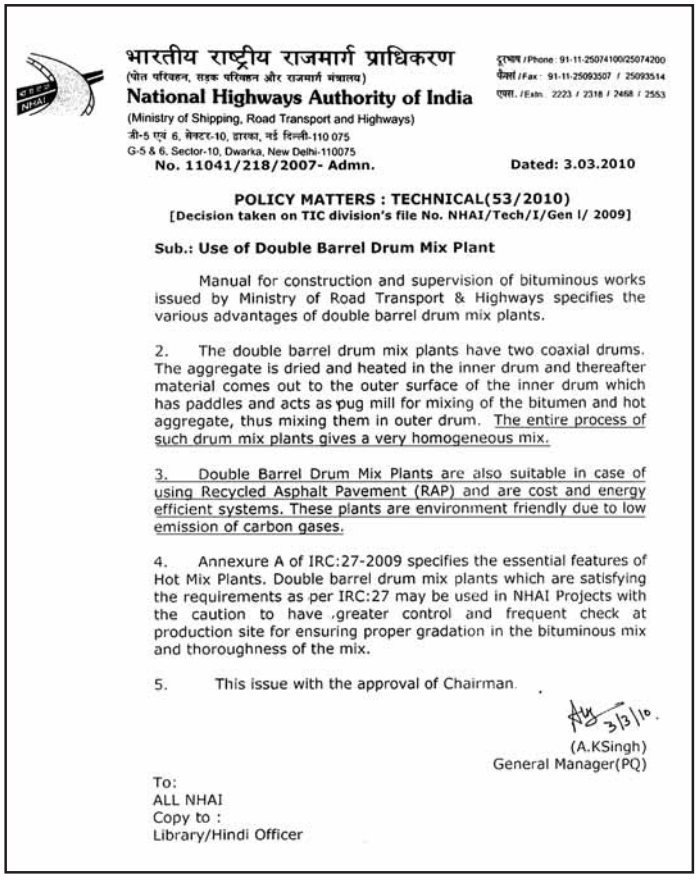
5. This issues with the approval of Chairman.

24/2/10

(A.K.Singh)
General Manager(PQ)

To:
ALL NHAI

NHAI approves **Double Barrel**



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No. 11041/218/2007- Admn. **Dated: 3.03.2010**

POLICY MATTERS : TECHNICAL(53/2010)
[Decision taken on TIC division's file No. NHAI/Tech/I/Gen I/ 2009]

Sub.: Use of Double Barrel Drum Mix Plant

Manual for construction and supervision of bituminous works issued by Ministry of Road Transport & Highways specifies the various advantages of double barrel drum mix plants.

2. The double barrel drum mix plants have two coaxial drums. The aggregate is dried and heated in the inner drum and thereafter material comes out to the outer surface of the inner drum which has paddles and acts as pug mill for mixing of the bitumen and hot aggregate, thus mixing them in outer drum. The entire process of such drum mix plants gives a very homogeneous mix.

3. Double Barrel Drum Mix Plants are also suitable in case of using Recycled Asphalt Pavement (RAP) and are cost and energy efficient systems. These plants are environment friendly due to low emission of carbon gases.

4. Annexure A of IRC:27-2009 specifies the essential features of Hot Mix Plants. Double barrel drum mix plants which are satisfying the requirements as per IRC:27 may be used in NHAI Projects with the caution to have greater control and frequent check at production site for ensuring proper gradation in the bituminous mix and thoroughness of the mix.

5. This issue with the approval of Chairman.

3/3/10.

(A.KSingh)
General Manager(PQ)

To:
ALL NHAI
Copy to :
Library/Hindi Officer

TIL brings the State-of-Art technology in Hot Mix Asphalt Plant from ASTEC Inc., USA.
"The Six - Pack® Asphalt facility", now made in India.
Available in 200tph,300tph & 400tph @ 3% moisture content.
Huge savings on account of transportation, dismantling and installation cost.

SIX - PACK PORTABLE PLANT

Cold Feed Bins

Cold feed bins of 1/4 inch thick steel plate reinforced with stiffeners.

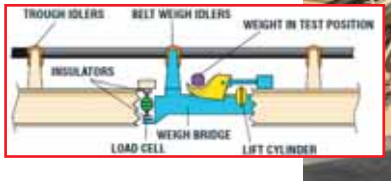
Steep bin walls - end walls angled at 67°, side walls at 60° with Self relieving bottom. Bin vibrators only vibrate the wall without shaking the entire fines bin. Tachometer on each feeder tail shaft monitors belt speed. Available in self-contained portable systems with 3 or 4 bin systems. Optional high-density polyurethane liners can be installed inside the bins for added wear protection.

All parts of the cold feed system, from the bins themselves to the steel bulkheads and foundations, are fabricated to perform and stand up to Front End Loaders and abrasive materials year after year.

Inclined Conveyor

Enabler to move aggregates from cold feed bins to Double Barrel.

Provided with a Scalping screen for removal of oversized aggregates and dirt. Fitted with Accurate and Reliable Belt Scales which includes a test weight for calibration and the calibration procedure is simple. Chute vibrator provided at drum entry Point.



Bitumen Tank

Bitumen storage - An insulated tank.

Metering system uses two positive displacement pumps for accurate metering. (i) Bitumen supply pump (ii) Metering pump.

Multiple-circuit hot oil heater & Optional STACKPACK™ economizers.

Double Barrel

The patented technology for aggregate Drying, Heating and Mixing.

A co-axial drum providing for drying and heating in the inner drum & mixing of RAP, Bitumen & filler material in the outer drum in that order to carry out sequential and homogenous mix in adherence to job mix formula. Lower fuel consumption per ton of Hot-Mix. The ASTEC Double Barrel can meet and even exceed expectations by effectively and efficiently producing hot mix using high percentages of RAP of up to 50%. Facilitates use of wide range of additives.

TIL- ASTEC offers efficient burners-

Phoenix Talon - Most silent burner in its league.

Phoenix Phantom - Ultra Low NOx burner (gaseous fuels only)

Whisper Jet - Dual fuel burner for extreme climatic conditions.

Efficient Combustion and Noise Emissions

Reliable Firing & Advanced Design

Compact Flame Shape

Self Erecting Surge Bin

Complete system for load out of hot mix on Tippers /Trucks.

Self supportive & self erecting surge bin featuring quick and easy erection of the drag chain conveyor and surge bin which are mounted on floating hold-down bearings. Insulated drag chain conveyor with Ni - Hard liners. A loop of strong, wear-resistant, 6" roller chain runs from the mixer exit chute to the SEB batcher hardened to Rockwell C60. Load cells on the individual batchers for accurate measurement of tipped out mix.

Baghouse

To remove particulates from the exhaust stream to efficiencies greater than 99.5%.

The baghouse epoxy coated interior houses ASTEC customized P-84 aramid fiber bags. Life of the bags estimated between 600,000 – 800,000 tons and Wear-sides of duct turns are lined with 360 Brinell AR (abrasion resistant steel). Zero opacity.

All service access doors and covers are sealed with soft rubber gaskets to prevent leakage.

OPTIONAL ITEMS

Accuswipe & AGU

Measure the accuracy of gradation as per the job in real time basis.

The Accu-Swipe belt sampler simplifies quality control by automatically taking a cross-section of aggregate from the inclined conveyor - in less than one second and without stopping production. Automatic Gradation Unit (AGU) for real time (<20 sec) quality control of aggregates. Load cell and Accu-Swipe will ensure the right gradation prior to heating of aggregates and ensures energy saving.

RAP Bin Feeder

The utilization of RAP or Reclaimed Asphalt / Bituminous Pavement ensures -

100% aggregate recovery and residual bitumen recovery in the process while maintaining the quality of the mix. Preservation of existing pavement geometrics. Conservation of energy. Preservation of environment. The plant permits use of up to 50% RAP (Reclaimed Asphalt Pavement).

SILO

Use the silos as a conventional surge bin during the busy time of day - Stores mix for four days without loss of mix quality.

Fully insulated and sealed from all sides which ensures flow of mix across the entire c/s of the silo to minimize mix segregation. Five different capacities ranging from 100 to 500 tons. Ensures first - in/first - out inventory and no mix build up on silo walls. Standard design is to Seismic Zone IIA conditions and 150 miles per hour wind velocity.

Tons	100	150	200	250	300
Metric Tons	91	136	181	227	272

Capacities are based on 120 lbs/cu.ft. for mix (0.5 metric tons / cu. meter)

Warm Mix (foaming) Technology

A key benefit of the new Astec Double Barrel® Green system is the substantial absence of smoke emissions during paving and load-out.

The Double Barrel Green System does not require the addition of expensive commercial additives. Instead, the injection of water along with the liquid asphalt cement causes the liquid asphalt to foam and expand in volume. The foaming action helps the liquid asphalt coat the aggregate at a temperature that normally is in the range of 110 - 130°C versus traditional temperatures of 140 - 160°C.

Additive Feeding System

Silos for dry additive are used for mineral filler, dust or lime in drum mix plants or batch plants.

The silos comes in six different sizes, from 40,470 liters to 104,064 liters capacity. Liquid additive systems are also offered. Liquid systems come in either 3,785 liters or 7,570 liters size. Systems with or without slurry systems come on a self-supporting frame and include a screw conveyor and metering device.

They are skid mounted and come complete with system controls, pumps valves and hot oil coils for materials that require heat.

PMII - B Continuous Mix Blending Controls

PMII controls and monitors proportional control of aggregate feeders and the blending of asphalt, recycle, shingles, and additives.

Fully Automatic controls with Windows Operating System

Unlimited mix design storage

Material mix design tolerances

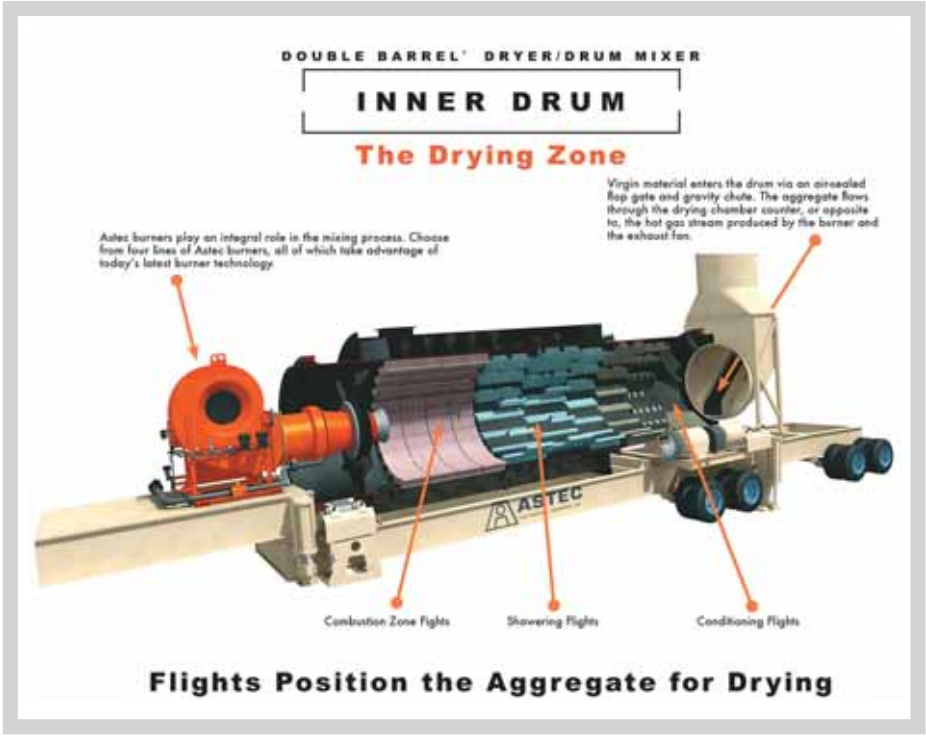
TECHNICAL SPECIFICATIONS

Plant Model				
Double Barrel Portable Plant	Plant Capacity @3% Moisture Content	tph	200	300
Mixing Cycle	Cycle Time	sec	70 to 90	70 to 90
PACKS				
Cold Feed Bins	No. of Bins/ Capacity	No. / ton	4/13	4/13
AccuSwipe & AGU	Belt Sampler Capacity	Kgs	18	18
Double Barrel Drier Drum	Dryer (L x D)	Meters	10.05 x 1.83	10.7 x 2.13
Burner	Fuel	Diesel/FO/LDO/NG		
	Capacity	MW	14.5	22
Drag Chain Conveyor	Capacity	tph	220	335
Weighing Unit	Surge Bin Capacity	Tons	45	68
Double Barrel Mixing Drum	Mixer Capacity	Continuous (tph)	200	300
	Bitumen Pump	Liters/m	757	757
Pollution Control Unit	Bag House Filter Cloth Area	m^2	589	878
Control Panel	Type	PMII-B Continuous Mix Blending Controls		
Power requirement	Capacity	KVA	550	700
* OPTIONS AVAILABLE				
ACCESSORIES				
Filler Silo	Capacity Range	Liters	40470/86720	
Bitumen Tanks	Capacity	Liters	75000 / 50000	
	Heating System (HCS-100)	Thermic Oil		
Thermic Oil Heater	Hot Oil Heater Pump	lpm	378	
Hot Mix Storage Silo	Capacity Range	tons	136/181/227	

Due to continuous improvement, specifications are subject to change without prior notice


DOUBLE
BARREL
ASTEC

CROSS SECTIONAL VIEW OF DOUBLE BARREL



Six-Pack® Double Barrel Asphalt Plant - 400 tph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