

A SITE VISIT REPORT ON HOT MIX PROJECT



KALYANI CHARITABLE TRUST'S **LATE G. N. SAPKAL COLLEGE OF ENGINEERING**

Kalyani Hills, Anjaneri-Vadholi, Trim bakeshwar Road, Dist: Nashik – 422 212 (India)
Tel.: +91 – 2594 – 220168/71, Fax : +91 – 2594 – 220174
Website: www.sapkalknowledgehub.org E-mail: gns_engineering@sapkalknowledgehub.com



SITE VISIT REPORT ON HOT MIX PLANT

Date: 06/11/2023

Time: 10.00 am

Venue: Pawar Patkar Construction Pvt. Ltd. Ram plaza building, 9 shakti chowk. Bhaba Nagar Mumbai Naka, Nashik, Maharashtra , code, 27.

Name of Coordinator(s): Prof. Sachin U. Pagar, Prof. Dipak D. Shelke.

Number of students: 67 students of BE CIVIL Div A and Div B



Photo 1.1

1.1 INTRODUCTION:

The Department of Civil Engineering of Late G. N. Sapkal College of Engineering, Nashik organized one day visit to Hot mixed Bitumen plant on 06/05/2023 for the Final year student of Civil Engineering (BE) program.

The visit was organized with the prior permission and guidance of Respected Principal Prof. (Dr.) S. B. Bagal and HOD of Civil Department Prof. (Dr.) R. T. Pardeshi Along with the staff members, students of BE have taken hard efforts and initiative for the visit. Faculty members Prof. Sachin U. Pagar and Prof. Dipak D. Shelke of our college accompanied the 67 students of BEcivil program for educational visit.

1.2 OBJECTIVE OF VISIT:

The main aim of visit is to observe & understand the different aspects of Hot Mix Plant. **Er. Pawar sir (Deputy executive Engineer)** has briefed the students about different units of Hot Mix Plant.

1.3 INTRODUCTION ABOUT PROJECT

Is an ISO 9001:2008 certified govt. own plant started in 1997. The plant is operational for 24 hrs. to meet the construction activities with various government departments like MIDC, CIDCO,PWD etc. of Maharashtra and various Municipal councils and Municipal corporations, engaged with various construction activities which includes construction of roads , civil works etc at different places in and around Nashik which are accomplished successfully.

The plant is spread over an area of 7.0 acres and has all the modern equipment's needed for production of bitumen .The production capacity of plant is 50 tonnes per hour for local orders and 130 tonnes per hours for mass orders. The raw material for bitumen production is imported from various PSUs like HPCL,BPCL,IOCL.situated in Mumbai. The aggregates are imported from Velholi of various sizes 6mm ,12mm,20mm. as per design needs. For warm conditions emulsion is used which is stored in barrels of 200 ltr capacity. The transport temp to be maintained is around 150 degrees Celsius .

The manufacture of coated road stone demands the combination of a number of aggregates, sand and a filler (such as stone dust), in the correct proportions, heated, and finally coated with a binder, usually bitumen based or, in some cases, tar, although tar was removed from BS4987 in

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2001 and is not referred to in BSEN 13108/1 . The temperature of the finished product must be sufficient to be workable after transport to the destination. A temperature in the range of 100 - 200 degrees Celsius is normal.



Picture 1.2

MAIN STRUCTURE

The asphalt plant is mainly composed of cold aggregate supply system, drum dryer, coal burner, coal feeder, dust collector, hot aggregate elevator, vibrating screen, filler supply system, weighing and mixing system, asphalt storage, bitumen supply system.

BINDER

Binder comes in different grades known as "penetration" or "pen" grades, with values varying between around 30 and 300. The pen value is an expression of the depth to which a standard needle will penetrate the surface of the binder at a specified temperature (the higher the value, the

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softer the binder). This has an effect on the workability of hot asphalt and the stiffness of the asphalt when cooled. Lower pen values give harder wearing. Asphalt wearing courses are typically 35-50 pen, base courses will be higher, typically 200 or 300 pen. The coating plant may combine binder of different grades to achieve a grade between those held on site.

FILLER

Filler, as the name implies, fills the voids between aggregate grains and improves the wearing capabilities of the overall mix. It is stored and fed dry into the mix, during or after addition of binder. A common source of filler is fines from the heating process recovered by bag filters or wet filtration ponds from the exhaust of the heating drum.



Photo 1.3

TYPES OF PLANTS:-

1) BATCH TYPE PLANT

Mobile asphalt batch type plant A batch heater plant runs material from various cold feed hoppers into a heater drum, where the batch is then heated up to temperature. The hot aggregate is screened into numerous hot bins (depending on the various aggregate sizes).

Each hot bin releases a certain amount of aggregate into a weigh hopper, then it is discharged into a mixing drum where (dry) filler and binder are added. The blend is mixed and discharged either directly into the delivery vehicles or into a small weighing and collecting hopper.

To increase throughput, the heater can be heating the next batch while the previous is being mixed. Capacity is usually of the order of tens of tons per hour. Batch heater plant is used where short production runs are common (a different recipe can be used on each mix) or where total volume is low. Mobile batch heaters are available.

Asphalt drum mix plant is different from batch plant. It works constantly but with a fixed mixture ratio. In the drum-type mixing plant, the aggregate and other materials are dried, heated, and mixed with the binder in the drum in a continuous process



Photo 1.4

CONTINUOUS

The asphalt drum mix plant (also called continuous asphalt plant) is a set of machines that produces asphalt. It is the traditional type of asphalt mixing plant. Different from asphalt batch mix plant, the asphalt drum mix plant produce asphalt in a continuous way.

CLASSIFICATION

By structure the asphalt drum mix plant can be divided as single drum type plant and twin drum type plant. By functions, the asphalt drum mix plant can be divided as stationary drum plant and mobile drum plant.

FUNCTION PRINCIPLE

In the continuous (or drum) plant, raw aggregate is brought up from ground hoppers at a precisely controlled rate and fed into a heater drum similar to that used in the asphalt plant. Once heated it is immediately coated in the same drum (with the binder spraybars situated behind the burner) or in a smaller drum situated immediately behind it. Finished product is almost invariably discharged into a hot storage silo or surge bin rather than directly into delivery vehicles. Changing mix is achieved by varying the feed rates of the aggregate, filler and binder feeders, with time delays so that the change of blend occurs at the same point in the coating drum. Sand tends to move more slowly through the heating drum, so the blend proportions will not necessarily change at the same point on the feed conveyor. It is common to divert a small amount of material to a waste chute when the transition point reaches the hot elevator. Drum mix plants are not really suitable for short production runs; although with sophisticated controls the change of mix can be accurate to within some seconds, production rates of hundreds of tonnes per hour may equate to a tonne every ten seconds or so.

HOT STORAGE

Finished Road stone must be kept heated to avoid setting. It is commonly stored in large electrically heated insulated stainless-steel silos, from which it is weighed into delivery vehicles. This may be achieved by intermediate weigh hoppers (which may shuttle between hoppers) or by mounting the hoppers directly on load cells. Control of load out by this method involves accurately predicting the material "in flight" between the discharge door and the vehicle.

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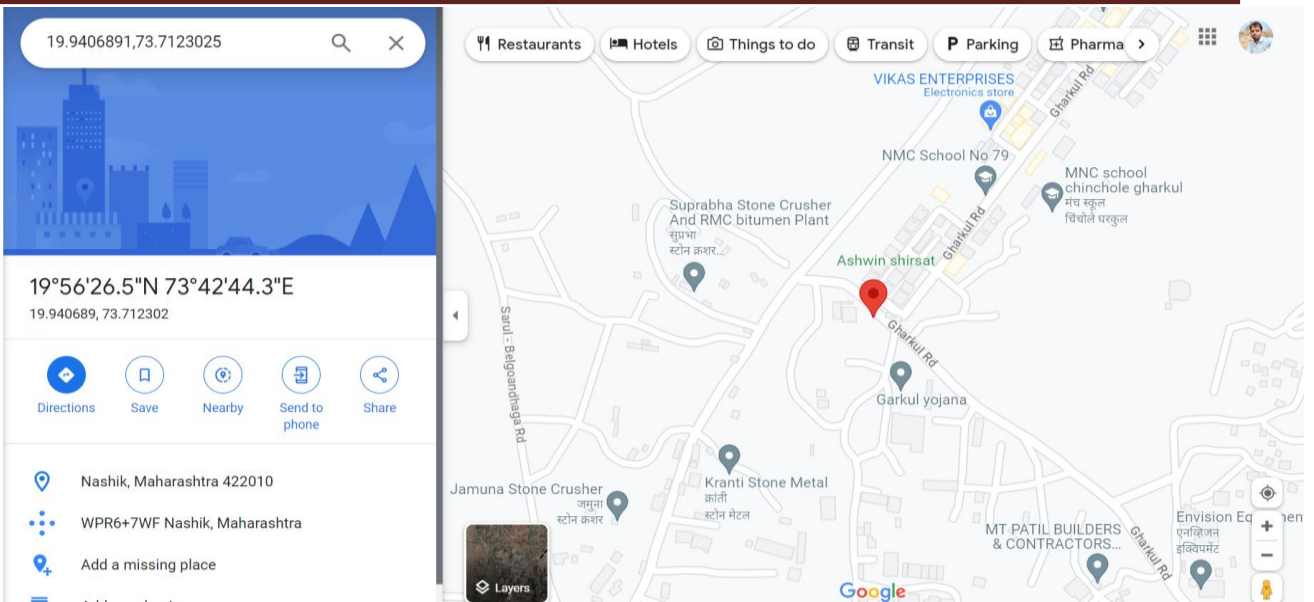


Photo 1.5



Photo 1.6

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Photo 1.7



Photo 1.8

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Photo 1.9



Photo 1.10



Photo 1.11

➤ **CONCLUSION**

The site visit to hot mix plant gives us the clear idea about the process of this plant. We learn about the types of hot mix plant such as batch mix plant & drum mix plant. We also learn about binder and filler material used in hot mix plant.