TRANSPORTATION ENGINEERING

SITE

VISIT

REPORT

ON

HOT MIX PLANT

Date of Visit: 01/09/2016
SITE VISIT REPORT

Name: Hot Mix Plant (DM45)
Location: Yerwada, near SURVEY OF INDIA
Date of Visit: 01/09/2016
Purpose of Visit: To Study the Hot mix plant and its process.
Guide Name: Vinay Purandare (Plant Manager)
On Wednesday 23/09/2015 we the class of BE CIVIL visited to hot mix plant in yerwada next to Survey Of India. Our visit started at 11pm with our subject teacher prof. Amol wagh and lasted for two hours. In this two hours we learn the entire manufacturing process of bitumen.
INTRODUCTION:

Is an ISO 9001:2008 certified govt. own plant started in 1991, with initial 40 employees. 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 Pune which are accomplished successfully.

The plant is spread over an area of 3.5 acres and has all the modern equipments needed for production of bitumen. The production capacity of plant is 45 tonnes per hour. The raw material for bitumen production is imported from various PSUs like HPCL, BPCL, IOCL situated in Mumbai. The aggregates are imported from wagholi 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 degree 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 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 final destination. A temperature in the range of 100 - 200 degrees Celsius is normal.

**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 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.

**Types of plant**

**Batch heater**

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.

**Continuous**

The asphalt drum mix plant (also called continuous asphalt plant) is a set of machine 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 Roadstone 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
Control of loadout by this method involves accurately predicting the material "in flight" between the discharge door and the vehicle.

CONCLUSION

The site visit to hot mix plant gives us the clear idea about the process of this plant.

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