
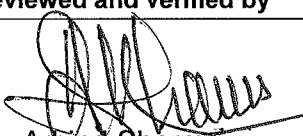
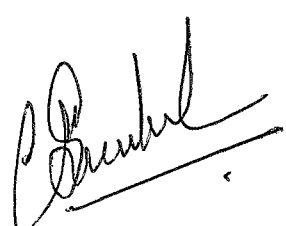
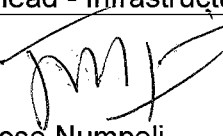



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STANDARD OPERATING PROCEDURE (SOP)

BATCHING PLANT OPERATION SAFETY

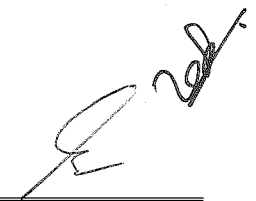
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Document Change Note


Rev. No	Rev. Date	Comments / Changes
00	28-12-2022	New Issue



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1 PURPOSE

To ensure safety of men & equipment involved in batching operation and obviate undesirable effects on environment.

2 SCOPE

This procedure shall apply to all AMNS project sites and related work areas including contractors to meet –

- Legal and regulatory requirements
- AMNS HSE requirements
- ISO 45001 and ISO 14001 standard requirements

3 DEFINITIONS AND ABBREVIATIONS

3.1 DEFINITIONS

Batching Plant

Assemblage of bins, conveyers, and weighing equipment arranged for the purpose of weighing the materials entering into a batch of concrete

Ready-mix concrete (RMC)

A concrete that is manufactured in a batch plant, according to each specific job requirement, then delivered to the job site "ready to use".

3.2 ABBREVIATIONS

PTW	:	Permit to Work
JSA	:	Job Safety Analysis
ELCB	:	Earth Leakage Circuit Breaker
MSDS	:	Material Safety Data Sheet
RMC	:	Ready-mix Concrete
TM	:	Transit Mixer

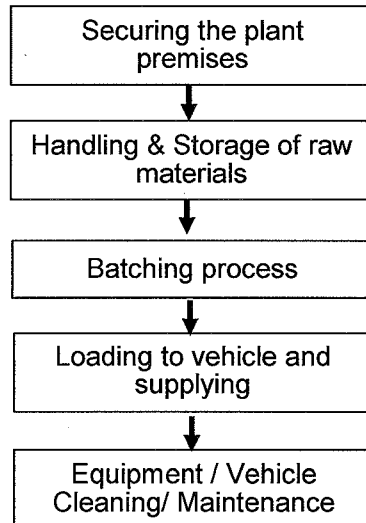
4 RESPONSIBILITIES

The Project Head is responsible for ensuring that the project is in compliance with the general requirements and those given in this procedure. Project Head also shall ensure that only competent and trained personnel are handling the batching plant operation.

HSE Manager is responsible to identify all possible hazards, document it and provide training and further to check compliance at Batching Plant with respect to this procedure.

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5 BATCHING PLANT SAFE OPERATIONS ASSURANCE



5.1 OVERVIEW OF BATCHING PLANT

Different types of equipment are used in a Batching Plant involving a variety of activities. The following are equipment in Batching Plant.

- Silos
- Sand and aggregates hopper
- Chemical / raw material storage
- Water Tanks
- Electrical machineries
- Conveyor
- Vehicles / Transit Mixer
- Loader / backhoe
- Dumper / Truck
- Electric Panel room

Different types of activities are as follows:

- Loading and unloading of raw materials for storage
- Supply of raw materials for batching process
- Cleaning of equipment
- Operation & Maintenance

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5.2 HAZARDS DURING BATCHING PLANT OPERATION

Following are hazards associated with Batching Plant Operation:

- Electrocution
- Struck by moving parts / flying particles
- Slip / trip
- Caught in between moving parts
- Fire
- Dust
- Struck by moving vehicles
- Lone work
- Confined space work
- Fall from height

5.3 SECURING THE PLANT PREMISES

- Batching plant area shall be demarcated and fenced.
- Experienced & authorized personnel only shall enter the premises
- Only inspected and permitted vehicles shall enter or operate in the batching plant area
- Only those with HSE induction card shall be allowed inside the batching plant
- The speed of vehicles inside the batching plant shall be 15 km/Hr.
- Reversing the vehicle shall be allowed only in earmarked area
- Walk way for pedestrian shall be made and isolated from vehicle movement area

5.4 STORAGE OF RAW MATERIALS

- Raw materials shall be stored in designated area
- Aggregates shall be sprinkled or covered with tarpaulin during wind season. Water shall be sprinkled when unloading aggregates, to avoid dust generation.
- Cement shall be stored inside a shelter and on an elevated base. If stored in a silo, it shall be weatherproof and the mechanism will be cleaned regularly in accordance with manufacturer's manual. The air filter shall be cleaned after every delivery. Care shall be taken to use stored cement in the order of delivery. Care shall be taken to minimise the contact of cement with air.
- Storage of admixture shall be as per the manufacturer's recommendations. A copy of MSDS shall be available at the storage place. The containers shall be levelled to indicate the contents, batch number, date of manufacture, shelf life and any other requirements for storage. Hazard Symbol, Capacity of Add Mixture to be displayed on Storage Tank
- Wherever possible, water storage tanks shall be sited below ground. If this is not possible, they should be hard barricaded.

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5.5 BATCHING PROCESS

- Provision shall be made to prevent dust accumulating in the plant and immediately before it is used each day (or after any substantial interruption in concreting) it shall be flushed out with water.
- Feed belts and weigh batchers shall be protected from the wind so that cement can't be blown away.
- Water used for cleaning shall be diverted to a specific water collection pit, so natural evaporation / absorption by soil.
- No man movement to be allowed during the loading of batching plant.
- All the types of machinery & equipment to be checked, tagged with a green sticker.
- Prolonged exposure/ inhalation of dust or cement powder shall be avoided. Ensure respiratory masks are provided to all involved in carrying cement / sand.
- Follow the maximum weight limit for men and women workers engaged in lifting the mixed concrete.
- Safe work platform with edge protection to be ensured at hopper areas & only Height pass workmen to be engaged for height work.
- Ensure the availability of external electric motor vibrators in the feeding hopper of batching plant to reduce human intervention in clearing jammed aggregates.
- Ensure all applicable safety devices like pull-chord on both the sides of conveyor for stopping the conveyor in emergency, all limit switches, emergency push buttons, safety interlocks are working.
- Ensure that manufacturer's operating manual is available and understood by the operating staff.
- All the moving parts to be guarded and no loose clothing allowed near the machinery/ conveyors.
- Transferring of admixture from storage to tank shall be in closed condition.

5.6 VEHICLES MOVEMENT

- Proper documents of the mobile equipment /vehicle to be examined and cleared 'OK' before entering the site.
- Daily inspection and observation for the equipment and the checklist to be fulfilled daily.
- Only competent operator / licensed shall operate/drive a equipment / vehicle.
- Proper access to be provided by clearing all unwanted materials or traffic to enter the work place.
- Movement area of the equipment / vehicle to be isolated from walkway for pedestrians.

5.7 VEHICLE CLEANING

- Vehicles shall be cleaned at a dedicated place.
- The waste water shall be collected in a dedicated storage pit allowing for natural evaporation / absorption by soil.
- The waste water of batch mixing equipment shall also be routed to the dedicated pit.

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5.8 MAINTENANCE OF EQUIPMENT

- Maintenance and repair training by qualified personnel is required to inspect and maintain cherry picker in accordance with the manufacturer's recommendations.
- Trained and authorized personnel shall be engaged to do maintenance
- Approved Permit to Work (PTW) shall be taken with authorized person and made available at site.
- Visual indication like "MEN AT WORK", "MACHINE UNDER SERVICE", "DO NOT START" etc. to warn and prevent against unintended restart shall be displayed.
- LOTOTO procedure shall be followed when entering batch mixing plant, silos for cleaning / maintenance purposes. Especially when chipping and cleaning is carried out inside the mixer by manual intervention, it is extremely necessary that the machine is locked out for the mixer motor. For that, it is strongly recommended to keep the emergency switch pushed, panel to be shut off and main switch of the panel to be locked.
- Before restarting the machine, ensure that no one is working inside the mixer.

5.9 MINIMUM PPE REQUIREMENT

Head protection	Helmet with Chin strap	Hand Protection	Cotton gloves
Eye protection	Safety glass	Foot Protection	Safety shoes
Dust protection	Respiratory Protection / dust Mask	Body Protection	Coverall

6 CHECKING, CORRECTIVE AND PREVENTIVE ACTION

Periodic inspections shall be carried out to assess the hazards as the work progresses. Any deviations shall be reported to Project Head & Corrective and preventive action shall be taken.

7 TRAINING

All employees affected by the requirements of this Procedure should attend relevant training. Training should cover the use of relevant plant, the risks associated with using the plant and the control measures put in place by the employer.

8 RECORDS

S. No.	Title	Location	Retention period
01	Weekly inspection checklist	HSE Department	Until the completion of Project

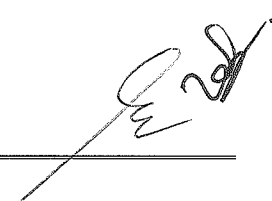
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9 REFERENCES

Format No.	Standard Name
AMNS-Project-SS-HSEM-05	Training Awareness and Competence
AMNS-Project-SS-HSEM-08	HIRAC Procedure
AMNS/Project/SS/HSEM/10	Permit to work Procedure
AMNS/Project/SS/HSEM/12	Emergency Management
AMNS/Project/SS/HSEM/15	Environment Management
AMNS/Project/TS/HSEM/08	Plant and Machinery Operations
AMNS/Project/TS/HSEM/14	Working in confined space
AMNS/Project/TS/HSEM/20	Lockout, Tag out and Try out procedure
AMNS/Project/SOP/HSEM/06	Lone Work Safety

10 ANNEXURES

AMNS-Project-SOP-HSEM-07-F01 Batching Plant Inspection Checklist (Weekly)



AM/NS INDIA	BATCHING PLANT INSPECTION CHECKLIST	AMNS/Project/SOP/HSEM/07/F01
		Rev : 00
		Date: 28 Dec 2022
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Project Name:		Date	
Name of Contractor		Name of Supervisor	
Batching plant No.		Location	

Sr. No.	Description	Yes / No / NA	Remarks
1.	Is the fencing / barricades of batching plant area intact?		
2.	Is the operator cabin neat, clean and maintained?		
3.	Is the conveyer guard in place?		
4.	Is the conveyor emergency switch or pull cord in working condition?		
5.	Are all belts, chains drive shafts and other rotating equipment guarded properly?		
6.	Is the mixing chamber in closed condition?		
7.	Guard rail on top of silos in good condition?		
8.	Is the metal mesh available on aggregate and sand hoppers?		
9.	Is the staircase in good condition without any damage/rust?		
10.	Is monkey ladder available with cage and fall protection system?		
11.	Body earthing available in all machinery of the batching plant?		
12.	All equipment / machinery is inspected and have valid green tag?		
13.	Is fire extinguisher and first aid kit available in operator cabin?		
14.	Is emergency switch and hooter available in working condition?		
15.	Is proper space and road provided for the stand and movement of loading, unloading trucks, other heavy equipment?		
16.	Is the chemicals storage area secured and MSDS available?		
17.	Is the interlocking facility made available and operative for the batching unit?		
18.	Is there a ramp facility available for the heavy vehicle to feed raw materials hopper? Such ramp shall have a fixed edge barrier.		

	INSPECTED BY (SUPERVISOR)	INSPECTED BY (HSE)
NAME		
SIGNATURE		
DATE		

