

Project Summary- Concrete Batching Plant and Read-Mix Facility

NAME OF PROJECT:

National Concrete & Aggregates

LOCATION OF PROJECT:

Sublot Lettered A being a portion of lot Lettered B South of Railway Line,
Plantation Union, West Coast Demerara

NAME OF DEVELOPERS:

Awad Narayan Boodhoo & Vijay Anthony Boodhoo

DEVELOPERS:

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DATE PREPARED:

December 14, 2023

SITE DESCRIPTION

With approximately three (3) acres of Prime land located in Plantation Union, Nouvelle Flander West Coast Demerara, the proposed Cement Batching Plant will occupy approximately $\frac{3}{4}$ of the land. The site will include the Plant, office space, parking, storage area etc.

This project is currently under its construction phase (land preparation), the site was cleared and sand-filled, however, levelling and compacting of the sand were ongoing after which a perimeter fence and drain will be constructed. Following the yard will be concreted, and the batching plant will be installed. Additionally, the sumps, maintenance area, and office will be constructed.



Caption #1: Showing a Google Satellite image of the Facility's location

PROJECT DESIGN

(SOURCE OF UTILITIES SERVICES)

The Operation at La Union is consistent with any other ready-mix concrete operation throughout Guyana. The concrete Batching Plant will be powered by an 175KVA Generator, having the capacity to 80yd³ per hour of operation. The plant is strategically placed into an enclosed bond, ensuring the effective management of dust emissions and efficiency for the batching process. The plant will consist of a 20-ton cement silo and three (3) bins(compartments) for the housing: both fine and coarse aggregates and sand. The plant is designed to use bulk cement as well as +45kg cement bags. The controls for plant will be in a small office and is operated by a qualified batch technician.

Raw materials such as sand and stone are initially moved from the storage stockpile area by a front-end loader. They are then placed into the loading bins attached to the concrete batching plant. The sand and stone (aggregates) are weighed under the loading bin according to the design requirements. The material is then transported and conveyed into the mixing chamber or mixer through a conveyor belt. To ensure that the concrete produced is of the highest quality, the aggregates are blended with 70% $\frac{3}{4}$ and 30% $\frac{1}{2}$, which helps to minimize air pockets in the final product.

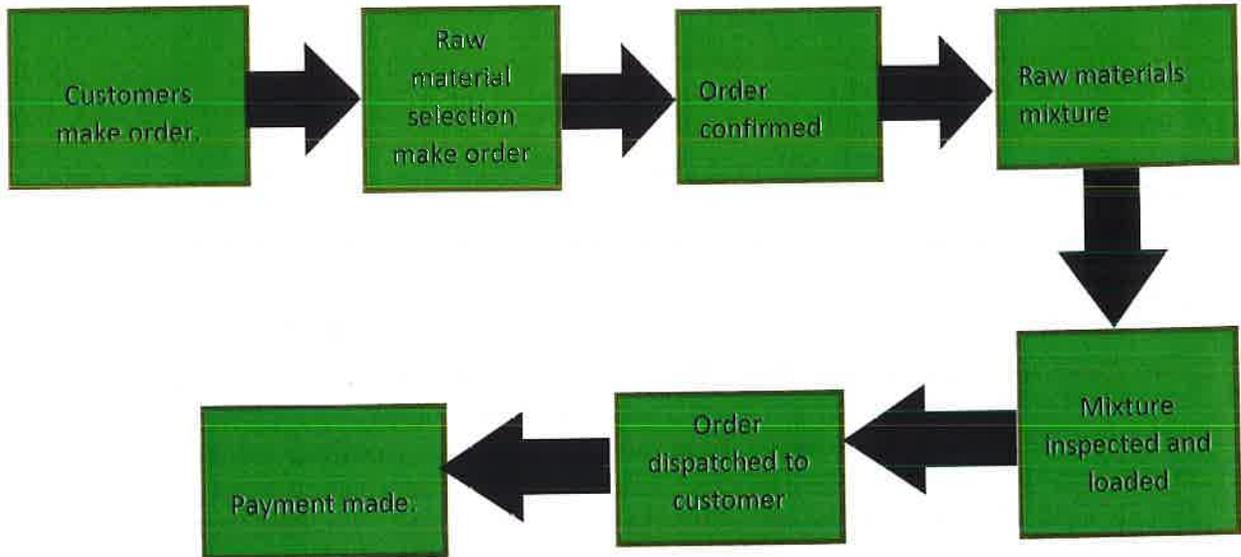
A forklift truck operator then moves the cement tonne sack from the temporary storage area to the cement bin or hopper. An auger or spiral conveyor sends cement into a weighing bin on top of the mixer according to the amount of cement required. The silo, equipped with an air filter, feeds the conveyor to the batching plant through an enclosed system. The water flows from the water storage tank into the water weighing tank, and then to the mixer through electric pumps.

The batch technician loads the raw materials into the mixer trucks, based on the strength and type of concrete ordered, using various plant system control mechanisms to operate the control room via a panel that controls each component of the Cement Batching Plant to produce liquid concrete. Once all the raw materials are in the mixer tank and accumulates the required weight, the aggregates and sand are then added to it via the conveyor belt system. The batcher turns on the mixing chamber. The mixer continues to mix until completion. When the mixer tank accumulates the required weight, the

The batcher sounds a horn to indicate to the truck driver that the liquid concrete is ready to load, and a truck reverses under the mixer's lower door or gate.

The batcher releases the chamber gate or door, allowing the liquid concrete to flow into the concrete mixing truck. The shutter located in front of the plant opens, and the truck drives out to take the concrete to the awaiting construction site. Another truck then backs into the plant, and the shutter closes again.

Process diagram of activity



Potential impacts associated with the batching plant

Air Quality

The industrial activities are situated in Lot 2B La Union Compound, which is situated by rice fields. However, there is a potential environmental hazard caused by the dust generated from cement and aggregate during operation. Impact of this activity on residents is minimal. The only residential zones located within the 100m limit of this industrial activity are on the other side of the West Coast Highway.

Moreover, the high traffic activity ensures that there are enough gusts of wind-generated to disperse the cement and dust particulates before they can cause any potential harm in the residential zones. To add another layer of safety, the cement and aggregate mixtures are stored in dry storage, which is optimized for the storage of these materials. This helps to ensure that there is no opportunity for stormwater to cause moisture damage to the product and to ensure that residues are kept out of drainage areas.

Moreover, there is a chance of carbon monoxide being released from the generator (175 Kva).

MITIGATION MEASURES

Mitigation measures proposed by National Concrete & Aggregates to aid in the reduction of Air emissions during the operational phase:

1. A closed batching plant system that is equipped with computerized doors which seal the bins and silo and a covered conveyor.
2. The silo shall be fitted with dust collectors to aid in reducing dust emissions from cement when transferring from the truck to the silo.
3. Regular inspection of the ready-mix plant to detect early any defects in the structure of the closed system.
4. Wetting of the stockpile area and entry to the public road to reduce dust emission. Additionally, stockpiles will be covered to reduce dust emissions.
5. Trucks will be covered to minimize dust emissions.
6. A speed limit will be imposed on vehicular traffic, a maximum of 30km/hour on site, during operations.
7. Regular servicing of the generator in keeping with the manufacturer's specifications. This will be done to reduce the emission of fumes.
8. A concrete base will be constructed at the project site, including entry from the road, to reduce dust emissions.

9. The generator will only be used, when necessary, e.g, during a power outage (backup generator) thus reducing emissions to the air.

NOISE & VIBRATION

The site is prone to noise pollution due to the operation of heavy machinery. The machinery that contributes to this noise includes front-end loaders, forklifts, trucks, and cement batching machines. These machines produce a range of sounds, including engine noise, beeping sounds, and the sounds of heavy objects being moved.

The noise generated from these sources can be a nuisance to workers and can cause hearing damage if proper precautions are not taken.

The following mitigation measures will be implemented to reduce operational phase impacts on baseline noise levels:

1. Restriction of operating hours of the Concrete Plant from 7:30 hours to 16:30 hours.
2. A concrete base will be constructed at the project site, including entry from the road. This will help to dampen vibrations caused by the operation of the plant and the movement of heavy-duty vehicles.
3. Power to be supplied by GPL to minimize the use of generators. Generators will only be used as a backup supply in cases of emergency or power outage.
4. Noise-generating equipment or machinery will be used with the necessary muffling apparatus to reduce operational noise to acceptable levels.
5. Routine equipment inspection to ensure proper functionality of noise and vibration suppression devices.
6. Vehicles and machinery will be turned off when not in use.
7. All engine covers will remain closed while the equipment is operating.
8. Warning signs will be posted in areas of high noise levels instructing employees to wear ear protection.
9. Use of appropriate PPE by workers near heavy-duty machinery and plants.

Water Pollution and Spills

Water is produced during the facility's wash-down process or when the truck is being refilled with batched cement. To reduce the environmental impact, there is a collection sump in place that captures all wastewater. The sediments from the collection sump are regularly removed and then recycled through landfilling.

Liquid cement, fuel, admixture, or other substances may accidentally spill and contaminate the environment. To prevent this from happening, spill pallets have been installed in the facility to capture any potential spills. Additionally, spill kits are available on-site in case of an emergency. Drip pans are also in place to collect any drips that may result from admixture collection.

Waste Management

Non-hazardous waste, such as empty cement bags and food boxes, is disposed of in a designated bin located in a secure area. The bin is enclosed by concrete walls and a gate. Puran Brothers Disposal Inc. collects the waste once a week, or more frequently if necessary.

Hazardous waste, specifically waste oil generated by the facility, is temporarily stored in metal drums in a designated holding area. Interested individuals can collect the waste oil regularly, as it is made available for collection.

Additional information to be noted:

- The plant produces about 1500 cubic yards of material per month.
- The electricity source: 175 KVA generator set.
- Puran Bros. Disposal Inc. collects all domestic waste.
- Water will be pumped from the surrounding canal and treated to be used in plant.
- The facility generates the following types of waste and emissions:
- Effluent from washing trucks when they return from construction sites.
- Noise during the production/mixing process. - Solids (cement tonne sacks from the process).

PROFORMA INVOICE

DATE: 03.02.2023 NUMBER: EE2107-1085-5

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	Subject	Dry Type Concrete Batching Plant

1. SCOPE OF THE WORK

ELKOMIX-60 DRY TYPE QUICK MASTER CONCRETE BATCHING PLANT



