

Project summary

RZND CONCRETE BUILDING
MATERIALS CO., INC.



July 2025
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DEMERARA

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1.0 Background

RZND Concrete Building Materials Co. Inc. has applied to the Environmental Protection Agency (EPA) for an Environmental Permit to facilitate the development and operation of a HZS120 Concrete Mixing Station. The facility is designed to produce a variety of concrete products, including paving concrete, subgrade concrete, and roller-compacted concrete, which are used in the construction of high-grade highways, urban roads, airports, and ports. It also supplies concrete for commercial building projects. The plant currently supports ongoing infrastructural development in Georgetown and its surrounding areas.

The facility is located at 92 First Street, Garden of Eden, East Bank Demerara, with geographic coordinates 6.6357000 (N), -58.1804240 (W) provided in the site map attached as Appendix 1. The site is accessible via the East Bank access road. The main operation involves the production and sale of high-quality concrete to meet the demands of Guyana's construction sector.

The project area is characterized by a mix of agricultural, commercial, industrial, and residential activities. To the north of the site is a chicken farm and storage bond, while a livestock farm lies to the west. On the eastern boundary is a Concrete mixing facility owned by another entity, and to the south, there is a single residential property.

The facility operates six days a week, from 08:00 hours to 17:00 hours, and employs approximately 20 workers, comprising mainly skilled laborers, drivers, and support staff. The project began operations in January 2025 and is expected to continue indefinitely in order to meet the growing demand for quality concrete.

2.0 Project site

RZND Concrete Building Materials Co., Inc. operates on approximately two (2) acres of leased farmland located within a predominantly mixed-use zone. The Project Area of Influence includes several other concrete plants, one resident, and farmlands. There is one resident in the immediate project environment; however, there are residential properties and small businesses situated along the main access road leading to the facility.

Within the project site, several key facilities and infrastructure components are present. These include the main cement silo, storage bonds, living quarters, administrative building, security huts, kitchen and restroom facilities, and a designated area for the servicing of vehicles and equipment. Also located on-site are a poultry farm, storage containers, a fuel dispensing station, and a power generator. Bulk materials such as aggregates and fuel are stored on the premises to support ongoing operations.

The main cement silo is a steel structure measuring approximately 50 meters in length, 15 meters in width, and 6 meters in height. A brick machine workshop, also constructed of steel, measures 48 meters in length, 12 meters in width, and 6 meters in height. The facility also houses a storage bond currently under construction, as well as a range of heavy-duty equipment and machinery, including trucks, forklifts, and excavators, which are essential for the daily operations of the Concrete Mixing Station.

There are no sensitive receptors, such as schools, Daycare centers, or hospitals, within the immediate project area. The main receiving water bodies are canals located along the eastern and western boundaries of the premises. The facility's drainage system directs wastewater and cement slurry from the plant to the primary onsite drainage system, which includes sediment settling chambers or traps (see Appendix 4). These systems treat the wastewater before it is discharged into the western canal.

A recycling reservoir located on the southern section of the facility is used to recycle cement slurry into water, which is reused in the Concrete Mixing Station. Additionally, a network of concrete drains has been installed to effectively manage stormwater runoff. Locally sourced sand and aggregates are stored onsite to support production needs, and

a block-making testing room is available to monitor and ensure the quality of concrete products.

3.0 Project Design

The HZS120 Concrete Mixing Station is a modular machine designed for easy installation and relocation. It features an efficient interface suitable for long-term use and is built to meet environmental protection standards. Its accurate measurement system makes it ideal for large-scale construction projects that require high volumes of concrete.

The main raw materials, sand, cement, water, and stones, are locally sourced. Sand and stones are delivered to the project site by truck and stored in open areas, while cement is purchased in large slings and stored in a central cement silo. Concrete is produced based on demand using the precise mixing system, helping to minimize waste. The finished product is then delivered to construction sites using ready-mix concrete trucks.

The equipment used in the operation includes:

- Aggregate batching supply system
- Cement supply system
- Water and additive supply system
- Mixing device motor
- Control room

3.1 Stages of the production process

• Stage 1 – Aggregate Weighing

Aggregates are loaded into individual bins using loaders through door-opening mechanisms. In sequence, the aggregates are discharged into the aggregate weighing hopper, where they are measured according to pre-set proportions. Once weighed, the materials are transported to the mixer via a feeding belt conveyor.

- **Stage 2 – Cement Weighing**

Cement is conveyed into a vertical powder tank using pumping devices. From there, the required quantity is transferred to the cement weighing hopper for accurate measurement. After weighing, the cement is sent directly to the mixer.

- **Stage 3 – Water and Additive Weighing**

Water is pumped into the weighing box using submersible pumps. Simultaneously, the necessary amount of additives is added. The measured water and additives are then transported through pipelines and sprayed into the mixer via a water sprayer.

- **Stage 4 – Mixing**

All materials, aggregates, cement, water, and additives are introduced into the mixer according to a programmed mixing cycle. The components are stirred using double-channel propeller blades and a central mixing shaft to ensure a uniform mixture. Once the mixing time is complete, the discharge cylinder releases the concrete into a holding area. The mixed concrete is produced at a rate of **120 m³ per hour** and is then loaded into ready-mix trucks for delivery to construction sites.

4.0 Sources of Utility

Utilities

- **Electricity**

Electricity for the facility is primarily supplied through solar power, which supports energy needs for the administrative and residential buildings. A 25 KVA generator is available to provide backup power, while the operation of the cement plant itself is powered by dedicated generators.

- **Water Supply**

Potable water is supplied by Guyana Water Inc. (GWI). To ensure an uninterrupted water supply, the facility is also equipped with water storage tanks. A network of strategically installed water pipes distributes water efficiently throughout the site.

- **Communication**

Telephone and internet services are provided by a local telecommunications provider to support both administrative and operational communication needs.

Waste Management

The facility will generate the following categories of waste:

- **Construction waste** from the additional storage bond includes
- Scrap metal, steel offcuts, packaging materials (wood, plastic, and cardboard), empty cement bags, broken blocks, and general debris.

- **Operational Waste**

Includes:

- Scrap steel and wood
 - Cement bags/sacks and plastic packaging
 - Broken pallets
 - Additive containers
 - Waste oil and lubricants
 - Cement slurry
 - Dust and particulate matter
- **Solid Waste**
- Generated from daily operations, including:
- Snack packaging and food waste
 - Disposable cups, plates, food boxes, and wrappers
 - Office waste (e.g., paper, used stationery)
 - Washroom disposables (e.g., paper towels)
 - Organic waste from kitchen

- **Sewage/Grey Water**

- Wastewater from toilets and sinks will be managed through appropriate sanitation systems.

- **Hazardous Waste**

- Cement packaging and residues
- Absorbent pads from fuel spills
- Used oils and lubricants from heavy-duty machinery and equipment

5.0 non-technical explanation

RZND Concrete Building Materials Co. Inc. operates a Concrete Mixing Station on the East Bank Demerara that makes concrete for roads, airports, ports, and buildings in Georgetown and nearby areas. The facility started operating in January 2025 and works six days a week with approximately 20 employees. It's established on two acres of land that includes buildings for storage, offices, security, and living quarters, in addition to a poultry farm and fuel station.

The facility uses machines like trucks and forklifts to help with daily work. Water from the plant is treated before being released into nearby canals, and the facility recycles cement slurry and manages rainwater. Materials such as sand, stones, and cement are stored on-site, and there's a room to test the quality of the concrete made.

The main machine mixes concrete using local materials such as sand, cement, water, and stones, in the right amounts, only when needed, to reduce waste. This machine can make 120 cubic meters of concrete every hour, which is then loaded onto trucks and sent to construction sites.

6.0 Duration of the Project

The operation of the project is expected to be sustained for an extended indefinite time period.

7.0 Potential Environmental Impacts and Mitigation

Operation of RZND Concrete Mixing Station		
Potential impact	Activities	Mitigation Measures
Environmental and Social Impacts		
Soil Contamination	<ul style="list-style-type: none"> Spillage of aggregate or cement may lead to contamination of surrounding soil and nearby surface water bodies, especially during loading, transport, or mixing activities. Potential to degrade groundwater quality due to infiltration of fine cement particles or chemical residues if not properly contained. 	<ul style="list-style-type: none"> Materials are stored on an impermeable concrete surface to prevent seepage into the soil and minimize contamination risks from spills. Sediment control systems such as settling chambers or traps are installed within the drainage network to capture and treat runoff and wastewater before discharge. The project will ensure proper site grading and effective drainage design to prevent pooling, flooding,

and uncontrolled runoff into surrounding soil or water bodies.

Air Emission

Dust emissions from the Concrete Mixing Station during material handling and mixing processes may impact the surrounding air quality.

- Air emissions from vehicles, including trucks delivering raw materials and transporting concrete, contribute to localized air pollution.
- Dust and particulate matter generated during the construction and operation of the additional storage bond.

- The Concrete Mixing Station is built for high efficiency and low dust emissions. All procedures for measuring raw materials and maintaining equipment will be strictly followed to ensure maximum performance and dust control.
- Conveyors used to transport materials are completely covered to reduce the release of airborne dust during operations.
- Wet suppression methods, such as water spraying, will be applied regularly

	<ul style="list-style-type: none"> • Fugitive dust emissions from sand and aggregate storage and handling, particularly during dry and windy conditions. • Exhaust emissions from heavy-duty machinery and equipment, including loaders, excavators, and generators used during operations, which may contribute to air pollution and greenhouse gas emissions. • 	<p>on exposed surfaces, storage piles, and during loading/unloading activities to control dust.</p> <ul style="list-style-type: none"> • Appropriate tools and machinery will be used for all operations, and regular maintenance will be conducted to ensure efficient, low-emission performance. • Dust suppression techniques such as misting and, enclosure of dust-generating activities will be applied as needed, especially during dry or windy conditions.
<p>Water pollution</p>	<ul style="list-style-type: none"> • Runoff carrying cement slurry from the mixing station or washing areas can enter nearby drains or water bodies, 	<ul style="list-style-type: none"> • A drainage system is in place to channel cement slurry into a sedimentation tank, where the

potentially leading to water pollution and increased sedimentation.

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- Runoff containing oil, fuel, or other chemical contaminants from equipment maintenance or refueling areas can seep into the soil or reach surface and groundwater sources.
- Accidents during loading and offloading of materials (e.g., aggregates, cement, fuel) may result in spills, leaks, or injuries, posing risks to both the environment and worker safety.

wastewater is treated. Treated water is then recycled for use in the mixing process, minimizing discharge into the environment.

- Cement is stored in enclosed silos, reducing the risk of exposure to wind and water, and preventing contamination of runoff.
- All materials, including cement and additives, are stored safely and in accordance with manufacturer specifications and environmental guidelines to prevent accidental spills and contamination.
- Safety signage in Chinese, English, and Spanish will be

erected in high-risk areas including loading/offloading zones, fuel storage) to guide workers and reduce the risk of accidents.

- Only trained and authorized personnel are employed to carry out loading, offloading, and equipment handling operations to ensure safe and compliant practices.

Oil spills

- Oil spills due to leakage or accidental discharge from vehicles, generators, or machinery can contaminate soil and potentially enter nearby drainage systems or water bodies.
- Oil spills during refueling and servicing of vehicles and generators may occur if not properly managed,
- Establish Standard Operating Procedures (SOPs) for managing land transportation, refueling, and maintenance activities to minimize the risk of oil and fuel spills.
- The fuel service station is equipped

leading to localized pollution and health hazards.

- Servicing of generators on unprotected surfaces increases the risk of oil and fuel residues seeping into the ground, impacting soil quality and groundwater.

with a spill containment wall designed to hold 110% of the maximum fuel volume, ensuring effective containment in case of leaks.

- A designated vehicle servicing area has been constructed with spill containment features to safely capture and manage any accidental discharges during maintenance.
- Spill clean-up procedures and safety signage will be strategically erected in Chinese, Spanish, and English to accommodate the primary languages of employees.
- Emergency contact information will be

		<p>prominently displayed at key locations across the site, also in the three main languages spoken by workers.</p> <ul style="list-style-type: none"> • Spill response equipment, including spill trays, dispersant spray systems, and sorbent pads, will be readily available and maintained for immediate use in the event of a spill.
Water pollution	<ul style="list-style-type: none"> • Runoff carrying cement, oil, or other contaminants • Accidents during loading and offloading 	<ul style="list-style-type: none"> • Store cement and other materials safely following specifications • Erect safety signs • Employ trained personnel
Noise/vibration emissions	<ul style="list-style-type: none"> • Noise generated from construction activities, vehicular movement, and the operation of heavy-duty equipment (such 	<ul style="list-style-type: none"> • Apply sound attenuation measures (e.g., acoustic barriers, silencers, or

as mixers, trucks, and excavators) can negatively affect workers, nearby residents, and livestock.

- Prolonged exposure may lead to hearing issues, stress, or disturbance to surrounding land users.

enclosures) for high-noise activities and equipment to minimize sound propagation.

- Adhere to the Guyana National Bureau of Standards (GNBS) guidelines for acceptable noise emission levels specific to industrial operations.
- Provide appropriate Personal Protective Equipment (PPE), such as earplugs or earmuffs, to all workers operating in or near the noisy zones.
- Install clear warning signage in English, Spanish, and Chinese to inform workers and visitors of noise hazards and required protective measures.

Improper Waste Management

- Improper disposal of construction and operational waste
- Inadequate management of hazardous and non-hazardous waste
- Littering
- Adhere strictly to the Environmental Protection (Litter Enforcement) Regulations 2013.
- Comply with the Environmental Protection Hazardous Waste Management Regulations 2000 for proper handling and management of hazardous waste.
- Install covered waste receptacles at strategic locations throughout the facility to prevent littering and exposure.
- Maintain good hygiene and sanitation practices within the facility.
- Engage an approved service provider to regularly collect and properly dispose of all waste generated.

	<ul style="list-style-type: none"> • Provide training for employees on effective waste management and environmental best practices.
<p>Fire/explosion</p> <ul style="list-style-type: none"> • Smoking by patrons and employees may pose health and safety risks. • Improper storage of products, potentially leading to spoilage, contamination, or safety hazards. 	<ul style="list-style-type: none"> • Erect no-smoking signage in designated areas and ensure all employees and patrons comply with smoking regulations. • Acquire and strategically place firefighting equipment, such as sand buckets and fire extinguishers, throughout the facility, following guidance from the Guyana Fire Service. • Ensure that everyone entering the facility is informed about emergency procedures,

		<p>including muster points and emergency exits.</p> <ul style="list-style-type: none"> • Erect Muster point signage in the 3 primary languages spoken by employees
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<p>Hazardous waste (HW)</p>	<ul style="list-style-type: none"> • Fuel and oily waste contamination resulting from accidental spills. • Risks associated with improper storage of containers. • Potential environmental and health hazards from the use and disposal of cleaning chemicals. 	<ul style="list-style-type: none"> • Store hazardous waste separately from non-hazardous waste and dispose of it according to the specifications indicated on the items. • Maintain hazardous waste (HW) cleanup kits on site for immediate response to spills. • Ensure employees wear appropriate personal protective equipment (PPE) when handling hazardous materials and waste
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Socioeconomic Impacts

<p>Health and Safety Risks:</p>	<ul style="list-style-type: none"> • Risk of injury to workers and visitors from heavy machinery operation or falling objects. • Potential for vehicular accidents within or near the facility site. 	<ul style="list-style-type: none"> • Enforce the use of Personal Protective Equipment (PPE) such as helmets, boots, and masks for all workers on site. • Conduct regular safety briefings and training sessions to keep staff aware of potential hazards and safe practices. • Implement strict safety protocols for operating heavy machinery, including regular equipment maintenance and operator training.
<p>Traffic congestion and damage to road</p>	<ul style="list-style-type: none"> • Increased movement of trucks and heavy-duty vehicles, potentially leading to elevated noise levels • Traffic congestion and safety risks. 	<ul style="list-style-type: none"> • Schedule truck and heavy-duty vehicle movements during off-peak hours to minimize traffic congestion and disturbance. • Implement speed limits and designated routes

within the facility to enhance safety and reduce noise exposure.

- Use noise-reducing equipment and maintain vehicles regularly to minimize noise pollution.
- Provide clear signage and traffic management controls to ensure safe vehicle and pedestrian interactions.
- Train drivers and site staff on safe vehicle operation and traffic protocols.

**Impact
Aesthetics**

on

- The facility can appear unsightly if not well-maintained and managed
- Erect fencing and plant trees to provide necessary visual screening around the facility. The facility has planted trees on the southern section of the premises.
- Decorative and food plants have been incorporated within the facility grounds to enhance aesthetic appeal and provide food for workers..
- Ensure the project site is regularly maintained, well-organized, and cleaned to prevent untidiness.
- Implement proper waste disposal practices to keep the site clean and visually appealing.

Disturbance to the community

- Potential complaints from nearby residents due to noise, dust, increased traffic, road deterioration, or other disturbances associated with facility operations.
- Limit facility operations to daytime hours to reduce noise and disturbance during evenings and nights.
- Engage regularly with nearby communities to keep open communication and address concerns proactively.
- Establish a grievance redress mechanism to provide residents with a clear, accessible process for reporting issues and resolving complaints.
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8.0 Appendices

Appendix 1: Map of surrounding land use



Image 1: site map

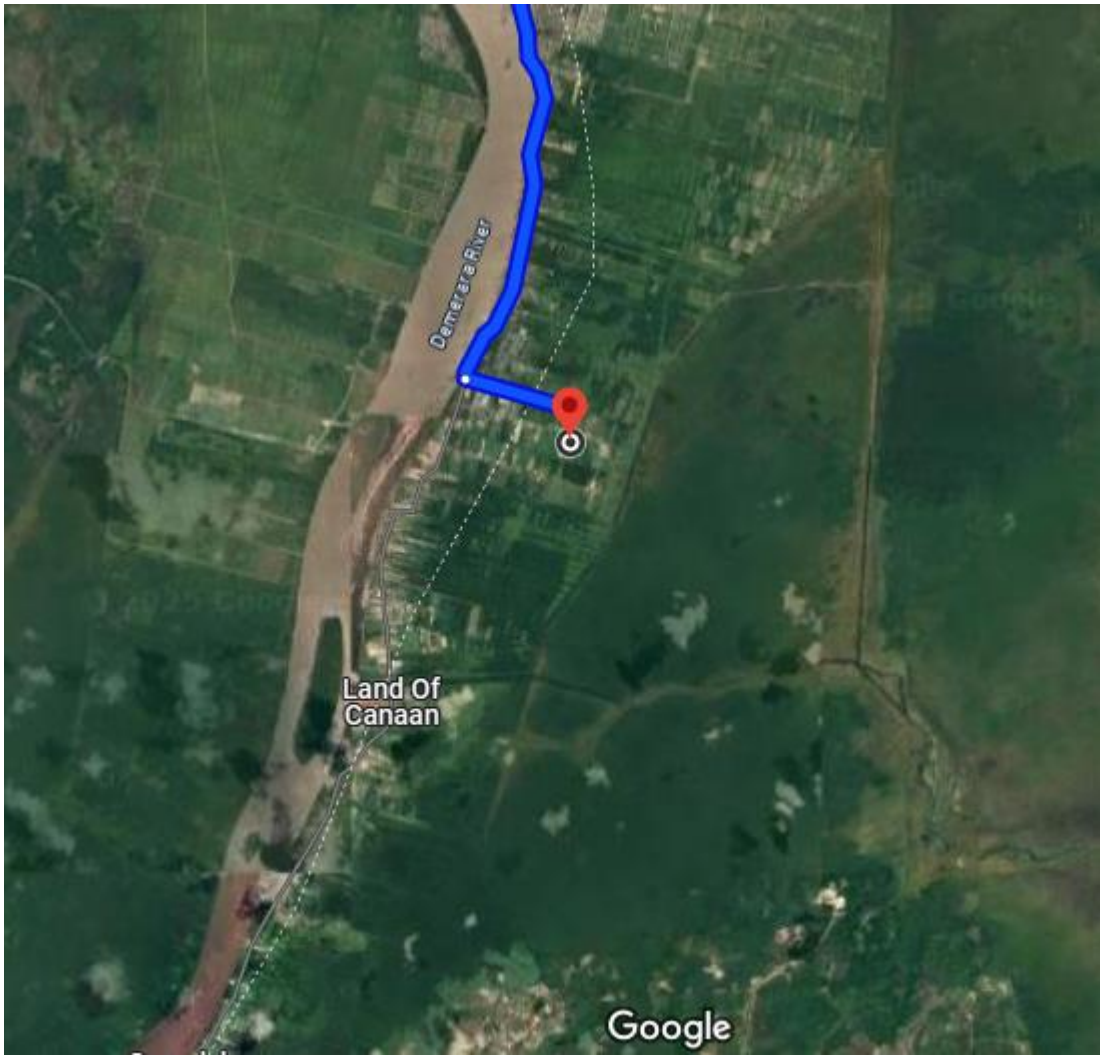


Image 2: Site map

Appendix 2:

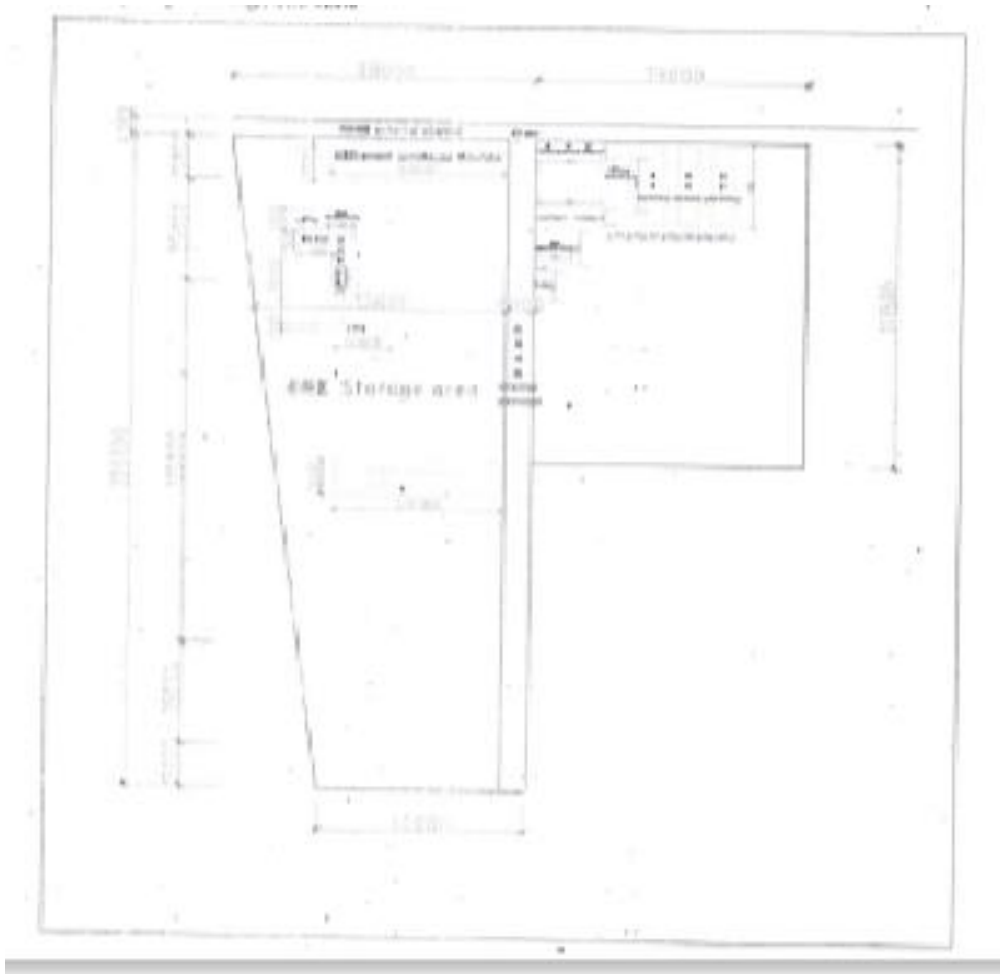
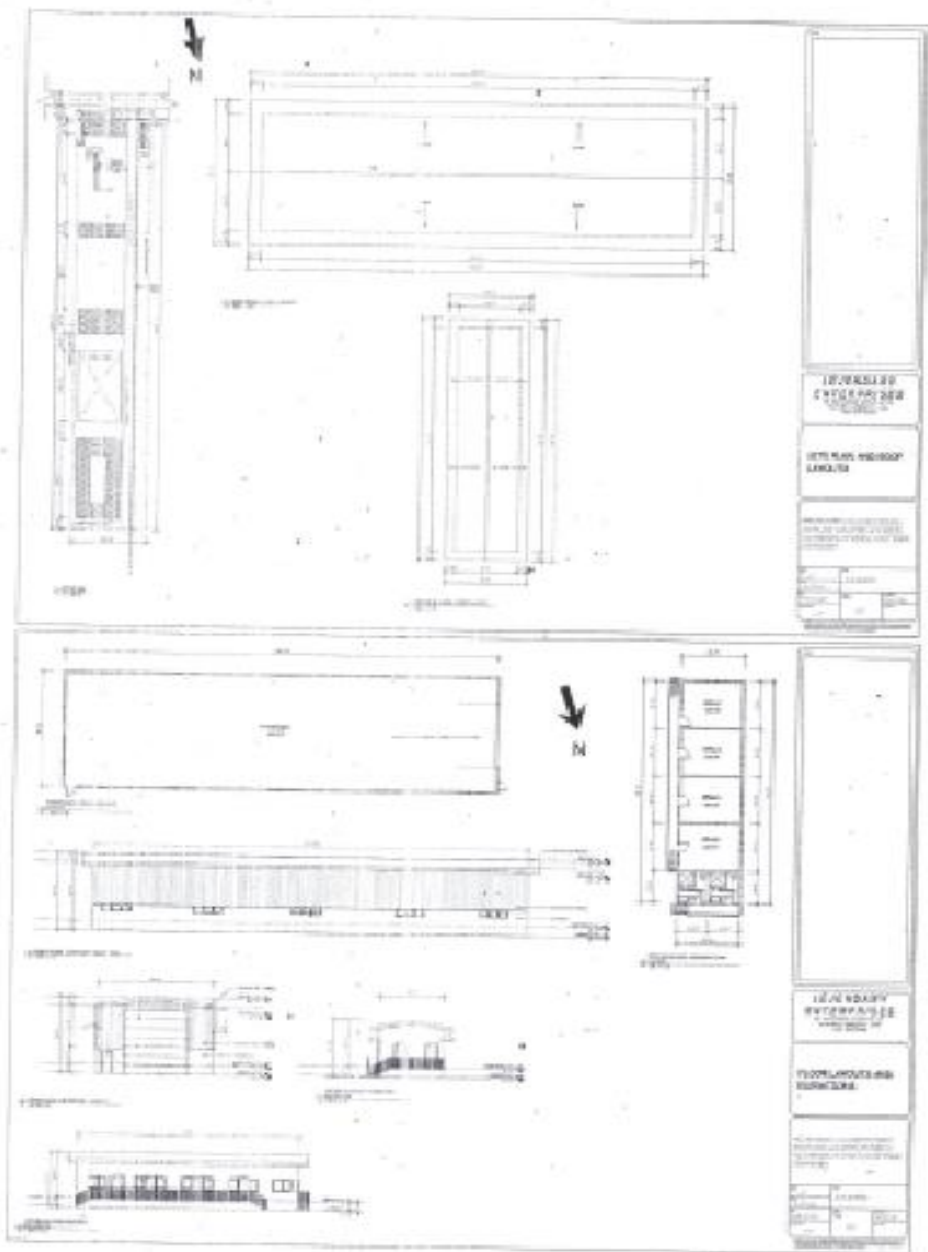


Image 3: Site Plan



The main building is a concrete slab, with a floor of concrete and a roof of concrete.

Image 4: Site Plan

Appendix 3: RZND Cement Mixing Station



Image 5: Cement Mixing Station

Appendix 4: Drain with sediment settling chambers



Image 6: Drain with sediment settling chambers