

PROJECT SUMMARY OUTLINE

FOR THE DEVELOPMENT WORKS AT

LOT 102 LONG CREEK, SOESDYKE LINDEN
HIGHWAY, GUYANA

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Lot 102 Long Creek, Soesdyke Linden Highway,
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1. SUMMARY OF PROJECT



Illustration of the Proposed Site Layout

Namalco Construction Services Limited was awarded a contract by the Ministry of Public Works, for the reconstruction of the Soesdyke Linden Highway and have acquired this location at Lot 102 Long Creek, Soesdyke Linden Highway to setup its operations to support the execution of the works on the project.

The following scope of the works to be carried out on this Project

- Earthworks
- Cold Milling and Asphalt Paving of sections of the Existing Roadway
- Full Depth Reconstruction of sections of the Existing Roadway
- Drainage Works
- Lighting Works
- Retaining Wall Works
- Bridge Works
- Culvert Works
- Traffic Management Works
- Roundabout Construction at Soesdyke Junction and Linden

The following gives a general summary of the development works proposed at this location Lot 102 Long Creek, Soesdyke Linden Highway, site.

1. Construction of Field Office, Stores and Workshops

This will entail the construction of approximately 30,000 sq. ft. of Office Space, Work Shop, Shed and Warehouse Storage.

The proposed Office will feature modern office spaces comprising of conference/meeting rooms, offices, work stations, reception area, male and female washrooms, kitchen and lunch room, filing and storage rooms.

The proposed workshop will feature materials / spare parts stores, mechanic work areas, supervisor offices, male and female washrooms, lunch / locker room.

The proposed sheds and warehouse will feature open and enclosed sheds and warehouse spaces, primarily used for storing equipment and materials.

(see attached Appendix I – Site Layout and Preliminary Designs)

2. Setup and Operation of Concrete Batch Plant

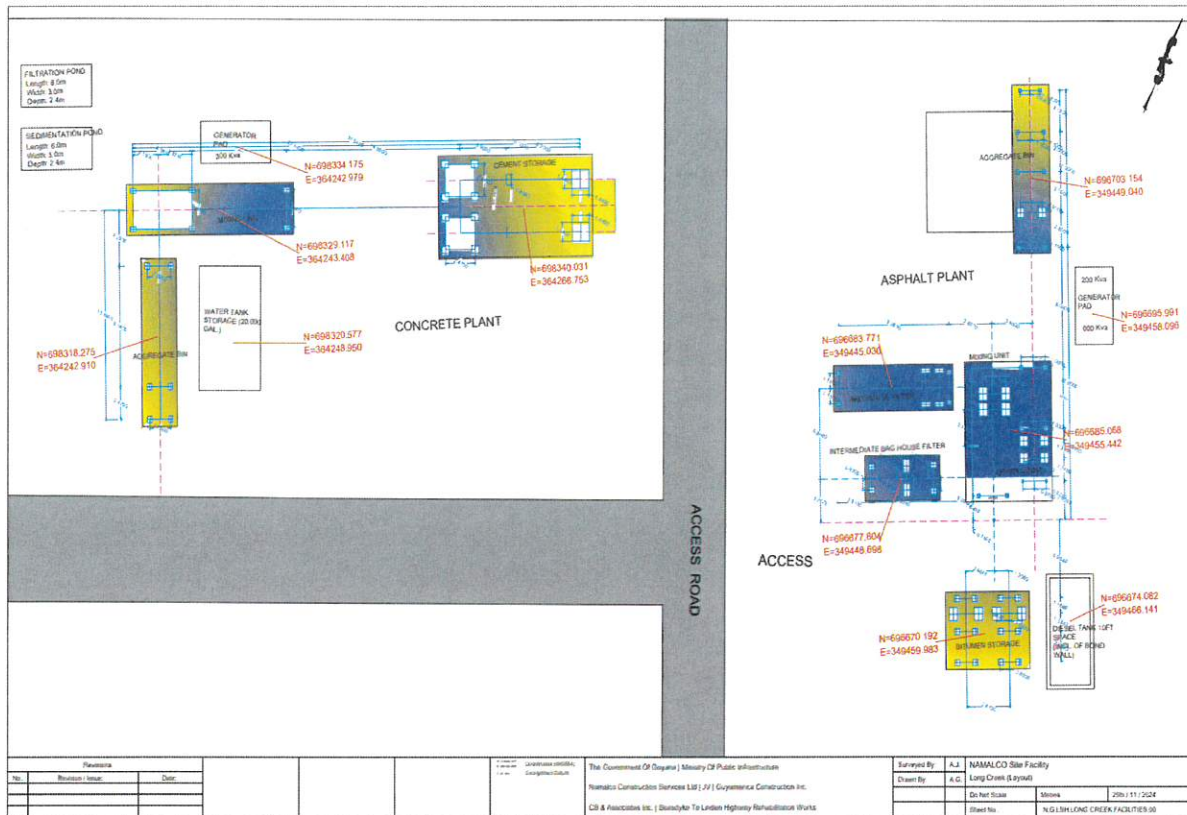
We propose to setup and operation of concrete batch plant (MEKA – **100m3 capacity** Mobile Concrete Batching Plant) or Similar. The area proposed for the setting up of the concrete batching facility is approximately 30,000 sq ft in size and is located to the western end of the site. This concrete plant facility will entail the various plant components, the electric generator, aggregate stockpiles & cement storage, water storage, etc. **(see attached Appendix II - Concrete Plant Brochure).**

3. Setup and Operation of Asphalt Batch Plant

We propose to setup and operation of asphalt batch plant (Parker – Roadstar 2000 **160TPH capacity** Mobile Asphalt Plant) or similar. The area proposed for the setting up of the asphalt batching facility is approximately 25,000 sq ft in size and is also located to the western end of the site. This asphalt plant facility will entail the various plant components, electric generator, aggregate stockpiles & bitumen storage, etc. **(see attached Appendix III - Asphalt Plant Brochure).**

2. DESCRIPTION OF THE SITE

This property is an existing facility owned by Avisha Ready-Mix (Guyana) Inc. It is bounded on the East by a business place and the Soesdyke Linden Highway, on the South & West by a Development Project and on the North by vacant agriculture lands. The land is flat and uniformly graded and Namalco proposes the following layout for the development of this property.



PROPOSED SITE LAYOUT PLAN
(see enlarged copy attached)

3.PROJECT DESIGN: ACTIVITIES ASSOCIATED WITH PROJECT

The activities associated with this project is broken into (2) two categories

1. **Construction Phase**
2. **Operation Phase**

1. Construction Phase

Foundation Works

- **Concrete plants:** Mass concrete will be used to prevent foreign objects from entering sensitive areas below the plant and also as a form of aesthetic as no concrete foundation is required for construction of the Concrete plant.
- **Asphalt plants:** Mass concrete will be used to prevent foreign objects from entering sensitive areas below the plant and also as a form of aesthetic as no concrete foundation is required for construction of the asphalt plant.
- **Office buildings and work sheds** will have relatively light structural foundation, but the soil and load-bearing capacity will still be assessed properly for both.

Substructure Works

- The substructure includes the work done below ground level, such as **excavation, drainage systems**, and installation of **septic systems** or **water supply pipes**.
- Proper drainage around the plant (both for water runoff and wastewater from plant operations) is critical for maintaining environmental standards.
- The substructure for the office buildings and work sheds will primarily consist of underground utilities and basic concrete slab foundations, which need to be well-drained to prevent water accumulation.

Superstructure Works

- For the **plant structures** (e.g., silos, batching towers, and conveyor systems), reinforced concrete or steel frameworks will be used to handle heavy equipment and machinery.
- The **office buildings** and **work sheds** can use steel frames or reinforced concrete to support the roof and walls, depending on the size and scope of the building.
- **Office spaces** will typically have two to three stories, requiring solid foundations for vertical load distribution, plus appropriate structural framing for walls and floors.
- **Plant buildings** may have taller superstructures due to equipment height, such as large storage silos or elevated conveyor systems.

Structural Steel Erection

- Structural steel is used for building the skeleton of tall structures like **conveyor towers, silos, and batching plants**. Steel is essential for handling the weight of plant equipment and providing flexibility under stress.
- **Steel beams and columns** will also be needed for the office building to allow for flexibility and longer spans.
- **Work sheds** may require a steel frame for supporting roof structures, depending on the planned width of the sheds.

Roofing Works

- Roofing for **plant structures** (e.g., silo buildings, storage areas, etc.) is designed to be **fire-resistant** and capable of withstanding extreme temperatures or chemical exposure.
- **Office buildings** will have more conventional roofing, with materials like corrugated metal, tiles, or membrane roofing depending on the aesthetic and weather requirements in Guyana (tropical climate).
- **Work sheds** may have corrugated metal roofs to minimize cost and provide easy access for large plant machinery.

Doors & Windows

- **Plant facilities** (e.g., batching areas, silos) may require large industrial doors to accommodate delivery trucks, material handling equipment, and machinery.
- **Office buildings** will have more standard entry doors, windows, and security features such as shuttered windows and fire-rated doors.
- **Work sheds** will have simple doors for access and ventilation, and the windows would be minimal to ensure security and reduce exposure to the elements.

Plumbing Works

- **Plant facilities** will need water supply and drainage systems for mixing concrete, cleaning equipment, and cooling the machinery. This will likely involve large stormwater drainage systems, and industrial pipes capable of handling wastewater.
- **Office buildings** will need drinking water supply, sewage systems, and stormwater drains for everyday use, as well as potentially fire-fighting plumbing systems.
- **Work sheds** may need less extensive plumbing but will still require water connections and drainage for washrooms or maintenance areas.

Electrical Lighting & Power

- Powering heavy equipment and machinery at both the **asphalt plant and concrete plant** will require a substantial **electrical infrastructure**. This includes high-voltage wiring, transformers, backup generators, and distribution panels.
- **Office buildings** will need a standard **lighting system, electrical outlets,** and emergency power supplies (e.g., UPS or generators) to ensure continuous operations.
- Electrical systems must comply with **safety standards** for industrial settings, including proper grounding and shielding for sensitive equipment.

Tiling Works

- **Tiling** may be applied to interior areas of the **office buildings** (e.g., floors in restrooms or reception areas).
- **Work sheds,** tiles may be used in areas that require cleaning and hygiene, such as maintenance rooms or washrooms.
- **Plant facilities,** it's more common to use non-porous materials that are easier to clean (such as concrete floors or industrial flooring solutions).

Ceiling Works

- **Office buildings,** ceilings will involve gypsum board, acoustic panels, or suspended ceilings for improved acoustics and aesthetics.
- **Work sheds,** simple corrugated metal ceilings or open ceilings may be used to accommodate ventilation and air circulation.
- **Plant structures** may not require detailed ceiling work as the focus is typically on high ceilings or open, ventilated areas to accommodate machinery and ventilation ducts.

Painting and Finishing

- **Office building** will require interior and exterior painting to enhance aesthetics, protect surfaces from the tropical weather, and preserve materials.
- **Work sheds** and plant buildings may require anti-corrosion finishes for steel components exposed to the elements and weather-resistant paints for walls and roofs.

Air Conditioning Works

- **Office buildings** will require **HVAC systems** for employee comfort, cooling, and air quality control.
- **Work sheds** may not need HVAC systems but may require **ventilation** systems to ensure air quality in industrial areas, especially where dust or fumes are present (e.g., near the asphalt plant).

Mechanical & Piping Works

- **Mechanical works** involve the installation of all machinery and equipment, such as batching plants, mixers, conveyors, and storage silos for concrete and asphalt production.
- **Piping systems** will include water pipes for mixing, heating systems for asphalt, fuel lines, and ventilation ducts for fume extraction.
- **Maintenance facilities** within **work sheds** will require mechanical equipment like air compressors, hoists, and workshops.

Security Fencing Works

- **Security fencing** around the perimeter of the plant and office complex will be essential for safety, ensuring **public access** is restricted and protecting valuable equipment.
- **Gates and access controls** will be needed for secure entry, especially for delivery trucks, maintenance vehicles, and personnel.
- In industrial settings, **security fencing** needs to be high, durable, and possibly topped with **barbed wire** or **electric fences** to deter trespassing.

2. Operation Phase

Maintenance of Electrical Lighting & Power

- **Maintenance Requirements:** Regular checks on lighting and power systems, including replacing faulty lights, inspecting cables for wear and tear, and ensuring generators or backup power systems are functioning.

Maintenance of Buildings

- **Maintenance Requirements:** This includes routine checks for leaks, cracks, or deterioration in buildings, as well as ensuring that HVAC systems, plumbing, and electrical wiring within buildings are operational.

Maintenance of Security Fencing

- **Maintenance Requirements:** Inspecting fences for signs of wear, corrosion, or damage. Regular repairs or replacements of sections of fencing and gates should be scheduled, and access points should be secured to avoid unauthorized entry.

Maintenance of Plumbing

- **Maintenance Requirements:** Regular checks for leaks, clogged pipes, and drainage issues. Routine maintenance of septic systems, water treatment systems, and other plumbing infrastructure to ensure safe and sanitary conditions.

Maintenance of Air Conditioning

- **Maintenance Requirements:** Regular inspection and cleaning of filters, ducts, and cooling units. Ensuring that HVAC systems are running efficiently and maintaining the correct temperature and humidity levels in sensitive areas like control rooms or laboratories.

Production of Ready-Mix Concrete

- **Maintenance Requirements:** Ongoing checks for the calibration of batching equipment, regular inspection of mixers for wear and tear, and ensuring that silos are sealed to avoid dust contamination. Maintenance of the air filtration systems and ensuring that the water treatment systems used in mixing are functioning properly.

Production of Hot Mix Asphalt

- **Maintenance Requirements:** Maintenance of drying and mixing equipment to ensure they are operating at the required temperatures. Regular checks for equipment wear and tear, including the calibration of temperature controls and maintenance of storage silos for bitumen.

Aggregate Haulage & Stockpiling

- **Maintenance Requirements:** Regular inspections of the haulage equipment (e.g., trucks, conveyors) to ensure they are functioning efficiently. Maintenance of stockpile areas to prevent contamination, ensuring proper drainage to manage runoff, and preventing mixing of materials.

Cement & Bitumen Handling and Storage

- **Maintenance Requirements:** Regular inspections of storage tanks and silos for leaks or structural issues. Ensuring that bitumen storage systems are functioning correctly, including temperature monitoring. Maintenance of cement silos to prevent clogging, corrosion, or moisture damage

3. PROJECT DESIGN: SOURCES OF UTILITY SERVICES

We propose to following sources of utilities services for the development of this location at Lot 27 Waiakabra, Soesdyke Linden Highway as follows.

Electricity – Power & lighting

1. We propose that the primary source of Electric Power & Lighting to be supplied from the Guyana Power and Light (GPL) through the public grid.

Name, Address and Contact for Power Supplier

Guyana Power and Light Inc.
40 Main St. Georgetown,
Guyana.

Phone: +592 226-2600

Portable Water Source

1. We propose that the primary source of portable water to this property will be by truck borne water supply and by well.

Telecommunication and Internet Services

1. We propose that the telecommunication and Internet services to be provided by local service providers.

Name, Address and Contact for Telecommunication Supplier

Guyana Telephone and Telegraph Company
RVC2+2FX. Georgetown,
Guyana.

Phone: +592 225-1315

4. PROJECT DESIGN: WASTE MANAGEMENT DETAILS

During the construction and operation phases of the project we expect that the waste to be generate in three categories.

- Concrete Plant Waste
- Asphalt Plant Waste
- General Waste

Namalco will be guided by the national regulations in the management and proper disposal of all waste generated at its site and details of these waste management processes will be dealt with in our environmental management plan.

Below is a comprehensive list of waste types, estimated monthly quantities/volumes, chemical compositions, and waste disposal/treatment methods for mobile concrete and asphalt plants.

1. Types of Waste and Monthly Quantities/Volumes

A. Concrete Plant Waste

1. Wash Water Waste

- *Source:* Equipment washing (e.g., mixer drums, trucks, and batching plants).
- *Volume:* 10,000–15,000 liters per month.
- *Chemical Composition:* Contains suspended solids (cement particles), high pH (alkaline), traces of heavy metals (chromium, lead), and dissolved salts.
- *Treatment/Disposal:* Settling ponds, pH neutralization using CO₂ or acids, and recycling of clarified water for equipment washing.

Wash Water Reuse:

- **Process:**
 - Collect wastewater from equipment washing in settling ponds or tanks.
 - Allow suspended solids (cement particles) to settle to the bottom.
 - Extract clarified water and filter for reuse in concrete batching or equipment washing.
- **Benefits:** Reduces water consumption and limits effluent discharge.

2. Concrete Slurry and Dust

- *Source:* Excess concrete and dust from batching operations.
- *Volume:* 5–10 cubic meters per month.
- *Chemical Composition:* Contains cement, aggregates, and water.
- *Treatment/Disposal:* Allowed to solidify and used as a sub-base material or recycled for non-structural concrete.

Dust Recycling (Asphalt and Concrete Plant):

- **Process:**
 - Capture particulate matter (dust) from baghouse filters during asphalt production or cement handling.
 - Reintroduce captured dust into the production mix (e.g., as a filler in asphalt or concrete).
- **Benefits:** Prevents air pollution and reduces raw material costs.

3. Solid Waste (Unused Material)

- *Source:* Broken or unused concrete.
- *Volume:* 3–5 tons per month.
- *Treatment/Disposal:* Crushed and reused as aggregate in construction.

Recycling Broken Concrete:

- **Process:**
 - Crush unused or broken concrete into small pieces using mobile crushers.
 - Screen crushed material for size grading and use it as aggregate in non-structural concrete or road sub-bases.
- **Benefits:** Reduces raw material demand and minimizes solid waste generation.

B. Asphalt Plant Waste

1. Asphalt Waste

- *Source:* Spills, off-spec production, and equipment cleaning.
- *Volume:* 2–3 tons per month.
- *Chemical Composition:* Bitumen, aggregate, and additives.
- *Treatment/Disposal:* Recycled back into the mix or used for road repair.

Asphalt Waste Recycling:

- **Process:**
 - Collect off-spec or excess asphalt.
 - Reheat and incorporate it into new asphalt mixes.
- **Benefits:** Prevents landfill disposal and reduces material costs.

2. Airborne Dust (Particulate Matter)

- *Source:* Aggregates drying and mixing.
- *Volume:* 10–20 kg/day.
- *Chemical Composition:* Silica, calcium, and other minerals.
- *Treatment/Disposal:* Captured using baghouse filters and reused in production.

Baghouse Filtration (Particulate Capture):

- **Process:**
 - Install baghouse filters in asphalt and concrete plants to trap airborne dust.
 - Periodically clean filters to remove accumulated particles.

- **Handling Captured Dust:**
 - Recycle dust as filler material in concrete/asphalt or dispose of safely if not reusable.
- **Benefits:** Reduces air pollution and improves workplace air quality.

3. Spent Filters and Bags

- *Source:* Filtration system maintenance.
- *Volume:* 2–5 units/month.
- *Treatment/Disposal:* Sent to a licensed hazardous waste facility for incineration or landfill disposal.

C. General Waste

1. Domestic Waste

- *Source:* Staff on-site (food, packaging, etc.).
- *Volume:* 1–2 cubic meters per month.
- *Treatment/Disposal:* Segregated for recycling and proper disposal.

2. Used Oil and Filters

- *Source:* Machinery maintenance.
- *Volume:* 50–100 liters/month.
- *Chemical Composition:* Contains hydrocarbons, heavy metals (zinc, lead), and additives.
- *Treatment/Disposal:* Stored in sealed containers and sent to licensed oil recyclers or hazardous waste facilities.

Encapsulation of Hazardous Waste

- ***Examples:***
 - *Used oil filters, contaminated rags, and spent bags.*
- ***Process:***
 - *Store hazardous waste in sealed, leak-proof containers.*
 - *Label and transport to certified hazardous waste facilities.*
- ***Benefits:*** Prevents environmental contamination during storage and transport.

3. Packaging Waste

- *Source:* Cement bags, additive containers.
- *Volume:* 100–200 kg/month.
- *Treatment/Disposal:* Segregated for recycling where possible or sent to waste management facilities.

2. Effluent Volume and Chemical Composition

A. Concrete Plant Effluent

- *Volume:* 10,000–15,000 liters per month.
- *Chemical Composition:*
 - Suspended solids: 1,000–2,000 mg/L.
 - pH: 11–13.
 - Heavy metals: Chromium (Cr): 0.05–0.1 mg/L.

- *Treatment:* Settling ponds for solids removal, pH neutralization, and reuse of clarified water.

pH Neutralization

- **Process:**
 - *Test effluent's pH level using meters.*
 - *Add neutralizing agents (e.g., CO₂, acids like sulfuric acid, or natural lime) to bring pH to acceptable discharge levels (6.5–9.0).*
 - *Mix thoroughly to ensure uniform treatment.*
- **Benefits:** *Prevents damage to aquatic ecosystems from highly alkaline wastewater.*

Settling and Neutralization (Effluent Treatment)

Settling Ponds

- **Setup:** Construct lined ponds or tanks to collect wastewater.
- **Process:**
 - Allow wastewater to stand undisturbed, enabling solids (cement particles) to settle.
 - Periodically remove sludge and solid waste from the bottom.
- **Benefits:** Removes suspended solids, making the water reusable or safer for further treatment.

B. Asphalt Plant Effluent

- *Volume:* Minimal (200–500 liters/month from equipment cleaning).
- *Chemical Composition:* Hydrocarbons, oils, and suspended solids.
- *Treatment:* Oil-water separators for hydrocarbon removal and discharge within permissible limits.

3. Methods of Waste Disposal/Treatment

1. Recycling

- Reuse wash water in batching operations.
- Recycle broken concrete into aggregates.
- Incorporate collected dust into asphalt or concrete mixes.

2. Settling and Neutralization

- Settling ponds allow suspended solids to settle.
- Use pH adjusters to bring effluent within permissible limits.

3. Filtration and Encapsulation

- Use baghouse filters for airborne particulate capture.
- Encapsulate hazardous materials (e.g., filters, used oil) for safe transport and disposal.

4. Licensed Facilities

- Transport hazardous and non-recyclable wastes to certified disposal facilities.

5. On-Site Reuse

- Incorporate treated effluent, dust, and solidified slurry into production processes to minimize waste.

Additional Measures to Improve Waste Management

1. Monitoring and Documentation

- Maintain records of waste generation, treatment, and disposal.
- Regularly analyze effluent composition to ensure compliance with local standards.

2. Training and Awareness

- Train workers on waste segregation, recycling, and spill management.
- Promote an environmentally responsible culture on-site.

3. Periodic Maintenance

- Ensure equipment is regularly inspected to minimize leaks and reduce waste generation.
- Clean settling ponds, filters, and separators to maintain efficiency.

5. PROJECT SIZE AND DETAILS

This property is an existing facility owned by Avisha Ready-Mix (Guyana) Inc. It is bounded on the East by a business place and the Soesdyke Linden Highway, on the South & West by a Development Project and on the North by vacant agriculture lands. The land is flat and uniformly graded and Namalco proposes the following layout for the development of this property.

- details on the office, sheds, workshop, warehouse see Appendix I – Drawings & Preliminary Designs
- details on the Concrete Batching Plant see Appendix II – Concrete Plant Brochure.
- details on the Asphalt Batching Plant see Appendix III – Asphalt Plant Brochure.

The Reconstruction of the Soesdyke Linden Highway Project will see the full rehabilitation and upgrade of this key roadway between Soesdyke and Linden. This project was awarded at a price of **USD\$161M** and will be undertaken over a (2) year period. This project is expected to engage the services of (150) two hundred to (300) construction jobs for the (2) year project duration.

6. DURATION OF PROJECT

The implementation of these development works at Lot 27 Waiakabra Soesdyke Linden Highway is required for the duration of the project which is (2) years construction phase and (1) year defects notification period. Subject to the approval by the authorities we plan to implement these developmental works within a (2) two months period as outlined below.

1. Office, Shed, Warehouse & Workshop Areas will be implemented over a (2) two months period and much of these works will require a lot of details, specialist skill and materials, foreign and local inputs, etc.
2. Concrete Batching Plant will be erected and in operation within (2) two months from the date of approvals by the authorities, as this plant is already in Guyana and is ready for setting up and operation.
3. Asphalt Batching Plant will be erected and in operation within (2) two months from the date of approvals by the authorities, as this plant is already in Guyana and is ready for setting up and operation.

7. ENVIRONMENTAL MANAGEMENT PLAN

Environmental Impact

Environmental Policy Statement

Namalco is committed to protecting the environment and will conduct its operations in a manner that reduces the risk of negative impact on the environment. It is Namalco's policy to:

- Comply with all existing applicable laws, regulations, and rules and to any requirement to which the organization subscribes.
- Continually review our operation in order to monitor and minimize the impact of activities on the environment.
- To provide the necessary training and information so that employees are aware of the applicable laws, regulations, rules, and standards relevant to their specific duties and responsibilities.
- To ensure that all employees have a responsibility to cooperate with other companies that has developed environmental management programs where appropriate.
- To conduct environmental aspect and impact assessments of our operations to determine significant impacts on the environment.
- To audit operations and make necessary improvements to its policies, procedures and preventative measures so that negative impact on the environment is reduced or eliminated.
- Cooperate with companies that have identified the need to develop Emergency response plans and conduct drills where appropriate.
- To demonstrate good environmental practices through reducing, reusing, recycling, or recovering waste materials in the organization's operations.
- Cooperate with other organizations that we may work with, as part of a multi-organization with their Environmental Management Program.
- Cooperate with companies that carry out annual auditing of their environmental management system as appropriate
- Review the policy statement at least once every 3 years or if our activity changes to one that may affect the environment

Authorized By

Introduction

This Environmental Compliance and Monitoring Plan is developed to ensure that Namalco's construction activities comply and is maintained in accordance with the environmental commitments made through the environmental documentation and permitting process. It is the intent of Namalco to consistently deliver our projects in an environmentally responsible manner.

This proposed Environmental Management Plan (EMP) aims at recognizing, evaluating and controlling the occurrence of environmental aspects and impacts, establishing the basic administrative, planning and organization, with the objective for implementation of measures for controlling all the existing environmental risk or those that might come to exist, extending to subcontractors who will act in this work.

Purpose

The Environmental and Monitoring plan sets out to have an effective system in place outlining a strategy for reduction of environmental impacts and non-compliance incidents.

The following plans are meant to promote proactive communication among the environmental staff and construction personnel for the effective resolution of the construction.

Environmental Goals

The broad objective of Namalco's EMP is to achieve 100% Program Compliance through appropriate Prevention, Response, and Reporting.

Deliver a project, which meets all legislative requirements, with minimal impact on the local environment.

Compliance and monitoring planning starts at the early stages of the project and occurs throughout the contract lifecycle for continuous improvement. This plan reiterates shared responsibility for compliance by all staff, and Sub-contractors. This is imperative to maintain and improve on the high level of compliance. Prevent environmental non-compliance events from happening during construction.

By comparison of data from previous years, Namalco would set out to achieve a reduction in its carbon emission footprints, greenhouse gas emissions, air pollution emissions and reduce transport noise emissions by practicing a 'switching off method'. Where all machines would be turned off when operators are on rest periods. Effective measurement would reflect from total amount (liters) of fuel used annually.

Reducing solid waste generated from the project and by reusing materials such as polyvinyl chloride (PVC) cutting to use as candlesticks for road edge protection. This would be measured by a reduction in cost for disposing of waste.

Project Compliance Processes

Programming Phase-scoping Project Manager

- Approves the EMP and commits to the application.
- Conduct project management reviews
- Develops awareness of environmental protection through personal training.
- Takes part in environmental audits and assume main correspondent.

Scoping Phase EHS Coordinator

- Report to the Project Manager and to all the HSE Department.
- Prepare project management reviews.
- Perform internal environmental audits and keep an actualization schedule of such audits.
- Describe environmental obligations to the subcontractors and suppliers.
- Review the environmental documents of the subcontractors.
- Write monthly environmental reports.
- Complete and determine level of environmental documentation requirements.
- Review planned dates.
- Provide environmental input to Project Management Plan and negotiate the level of effort milestones and cost, and sign PMP.
- Ensure permanent external controls on the site and is check all the corrected points by those who perform work.
- In consultant with the Project Manager, must suspend execution immediately whenever he is informed of a major risk of environmental nuisance or a chance of archaeological find.

Environmental Health and Safety Officer

- Reports to EHS Coordinator
- Implements the EMP on site.
- Oversee the implementation environmental specific plans and supervises environmental protection measures.
- Implement a schedule of site inspection observing the correct application of environmental procedures and non-conformities
- Prepare site inspection reports, including corrective action required and follow up site inspection.
- Direct and assist with field monitoring: water, soil, and air quality, as well as noise monitoring within specific legislation.

This Notebook/Binder

Will include both standardized information relating to contact information, monitoring and reporting procedures, as well as project, specified requirements. Specific chain of communication the notebook/binder will include but are not limited to the following information:

- Contact information for the other Agencies.
- Inspection and Monitoring Companies.
- Emergency Contacts.
- Copies of the authority's permit.
- All Monitoring and Test conducted for the project.

Technical Specialists

- Wildlife and ecology.
- Acoustics.
- Air quality.
- Surface water quality and hydrology.
- Contaminated land and remediation.
- Groundwater contamination and remediation.

All Staff

All staff has a responsibility to conduct their work in such a way as to minimize their actions on people and the environment.

Employee's Commitment to the Norm and Standard Fulfilment

Every employee and subcontractor is committed to disseminate implement and maintain the company's standards for Health and Safety and the Environment.

Any violations of rules should be reported immediately to the responsible supervisor and HSE department. Those responsible for violations are subject to investigation and disciplinary action, according to following measures:

- Verbal warning
- Written warning
- Written and Suspension of Work
- Resignation.

Communication internal

Toolbox

Guidelines are provided to employees before each activity, which is based on the environmental requirements tools, equipment and procedures used. Toolbox training brings together supervisory staff and is designed to give them information on the environmental system in place to raise awareness of environmental risks, control measures, and emergency response procedures.

HSE Meeting

The project manager promotes regularly meets to discuss solutions and improvements in Environmental aspects at work. All discussed decisions are subsequently disseminated to other operational staff levels for knowledge and develops actions.

Other Tools.

Other forms of broadcasting information (through murals, brochures, preventive awareness and environmental campaigns) among other actions are Contractor efforts, on keeping employees alert of the risk during the performance of their work.

Communication external

External communication is conducted by the project manager or someone designated by him. Being a specific channel in order to maintain communication with clients and other concerned parties.

Contractors' complaints log is kept on site to have active communication with neighbours on impacts of lighting, noise, dust, water, and vibration. These records are shared with the Client.

Other modes of external communication.

- Direct meeting with client and consultants
- Formal correspondences
- Electronic communications.

Environmental Monitoring

Monitoring of all activities will be in accordance with the Environmental conditions as stipulated in the permit to address the management of environmental impacts during the construction phase.

- Noise and vibration monitoring plans.
- Air quality monitoring plans.
- Flood water quality and sediment management plans.

These plans are required under the contract as they are listed in the Permit and have to be submitted to the EPA (Environmental Protection Agency) for approval.

Environmental Impact Analysis and Mitigation Measures

Operations	Impact and Aspects	Monitoring process	Corrective Measures
Concrete plant operations	Surface water runoff from concrete plant	To be identified on issuance of the permit	Management and control of surface waters will be established on the compound to eliminate the potential for contaminated run-off that will impact local water quality. A water retention system would be build with the adequately sized to allow for the controlled release of storm flows to prevent silty water disposal measures would be put in place in accordance to the environmental permit.
	Dust generated from concrete plant	To be identified on issuance of the permit	Airborne dust is difficult to suppress. Therefore Namalco put in has introduced a full-time water truck that will be used to suppress the excessive dust are being generated, constantly. Continuous wetting of stock pile for concrete plant raw materials
Asphalt plant operation	Dust generated from the Asphalt plant	To be identified on issuance of the permit	A newly designed plant with a built in dust collection unit to trap dust generated from the mixing process.
	Noise generated from the vibrator on the raw materials loading bin of the asphalt plant	To be identified on issuance of the permit	This noise is minimal and reads at 67BD during normal operation during daytime activiites and 87db at night night time activities

Namalco Environmental Impact Mitigation measures

1. Air Quality Impact

- **Projected Impact:** Dust, particulate matter, and gas emissions from the production of asphalt and concrete may degrade air quality, affecting local communities and wildlife.
- **Mitigation Measures:**
 - Install dust suppression systems (e.g., water sprays) on haul roads and material storage areas.
 - Use air filters on exhaust systems and implement periodic air quality monitoring.
 - Implement vehicle maintenance schedules to minimize emissions.
 - Establish buffer zones with vegetation around plants to help capture dust and particles.

2. Water Quality and Resources Impact

- **Projected Impact:** Potential contamination of nearby water bodies from spills, runoff, and wastewater discharges.
- **Mitigation Measures:**
 - Install sedimentation ponds to capture runoff before it reaches nearby streams.
 - Create spill containment systems around fuel, oil, and chemical storage areas.
 - Recycle water for dust suppression and wash-down to minimize freshwater use.
 - Conduct regular water quality testing and monitoring downstream of the plants.
 - Ensure spill kits are available.

3. Noise Pollution

- **Projected Impact:** Noise from machinery, trucks, and the general operation of plants may disturb local wildlife and nearby communities.
- **Mitigation Measures:**
 - Enclose high-noise equipment and apply noise-dampening materials where feasible.
 - Operate plants only during permitted hours to minimize community disturbances.
 - Implement a quarterly monitoring program to ensure noise levels remain within acceptable limits.

4. Land Disturbance and Biodiversity Impact

- **Projected Impact:** Land clearing for plant setup may lead to habitat loss and affect local flora and fauna, including potentially sensitive species.
- **Mitigation Measures:**
 - Limit land clearance to only essential areas and avoid sensitive habitats wherever possible.
 - Implement a revegetation plan for unused or temporarily cleared areas.
 - Conduct preconstruction ecological surveys and, if necessary, relocate affected species.
 - Establish a buffer zone to reduce the encroachment on local ecosystems.

5. Waste Management

- **Projected Impact:** Solid and hazardous waste from plant operations (e.g., asphalt binder waste, concrete sludge) could contaminate soil and water.
- **Mitigation Measures:**
 - Develop proper segregation practices, storage, and disposal of waste.
 - Recycle or reuse materials where possible (e.g., reusing concrete slurry in production).
 - Partner with licensed waste disposal companies to ensure compliance with environmental regulations.

6. Soil Quality and Erosion

- **Projected Impact:** Construction activities and heavy machinery may lead to soil compaction, reducing soil quality and potentially increasing erosion risks.
- **Mitigation Measures:**
 - Implement soil stabilization techniques, such as the use of Flex MSE Bags in critical areas if needed.
 - Use erosion control measures like silt fences, riprap, or mulching on exposed soils.
 - Limit the movement of heavy machinery to designated paths to reduce soil compaction.

7. Traffic Impact and Road Safety

- **Projected Impact:** Increased traffic due to materials and equipment transportation could cause congestion and potential accidents in the area.
- **Mitigation Measures:**
 - Develop a traffic management plan to ensure safe vehicle movement within and around the construction sites.
 - Schedule transportation during off-peak hours and use traffic controllers as needed.
 - Install appropriate road signage and speed limit warnings around the plant sites.

1. Fire Response Procedures

- **Immediate Actions:**
 - Sound the alarm and alert all personnel. Have a designated person to call the fire department and emergency services.
 - Evacuate the immediate area of non-essential personnel and prevent access.
 - Ensure all persons muster at the designated location, to ensure head count and accountability of all personnel
 - Activate fire suppression equipment (fire extinguishers, fire hoses, sprinklers) based on the fire classification:
 - **Class A (wood, paper, etc.):** Water-based extinguishers.
 - **Class B (flammable liquids like oil and diesel):** CO₂ or dry powder extinguishers.
 - **Class C (electrical fires):** CO₂ or dry powder extinguishers.

- **Containment & Suppression Measures:**
 - Utilize sand or fire blankets for small fuel fires, if safe to do so.
 - Use fire hoses to contain spreading fires from a safe distance.
 - Isolate any fuel sources by shutting off valves or isolating tanks.
 - Follow instructions of the Fire department/ officers
 - Evacuate personnel upwind to avoid exposure to smoke and toxic fumes.

- **Post-Incident Actions:**
 - Conduct a thorough investigation to determine the cause.
 - Repair or replace damaged equipment and fire suppression systems.
 - Update fire safety training and protocols based on incident findings.

2. Oil and Diesel Spillage Response Procedures

- **Immediate Actions:**
 - Stop operations and alert all personnel.
 - Contain the spill at the source by shutting off pumps, valves, or other transfer systems.
 - Avoid any ignition sources in the vicinity of the spill area.
 - Deploy spill kits immediately to contain and absorb the spill.

- **Containment Measures:**

- Use oil absorbent pads, booms, or pillows around the spill perimeter to prevent spreading.
 - In case of a large spill, use a secondary containment like sandbags or earth barriers to prevent seepage.
 - Ensure spill containment drains to designated spill containment zones, avoiding soil or water contamination.
 - Place spill response mats around drainage inlets to prevent infiltration into stormwater systems.
- **Disposal & Clean-Up:**
 - Collect contaminated absorbents and dispose of them according to hazardous waste regulations.
 - Wash down affected surfaces with biodegradable cleaners, capturing runoff for safe disposal.
 - Monitor groundwater and soil in the affected area and conduct remediation if necessary.
 - **Post-Incident Actions:**
 - Report the incident to the environmental agency as per regulatory requirements.
 - Conduct incident analysis and review spill response procedures.
 - Train personnel on spill response protocols and equipment handling.

3. Hazardous Material Spills (General) Response Procedures

- **Immediate Actions:**
 - Identify the spilled substance and assess the hazard level as per the material safety data sheets (SDS). Chemical inventory with all chemical SDS will be located in strategic area for anyone to review
 - Evacuate non-essential personnel from the affected area.
 - Provide PPE to all response team members to prevent contact with hazardous materials.
 - Seal off any drains or water sources to prevent contamination.
- **Containment Measures:**
 - Use spill containment booms, berms, or barriers around the perimeter.
 - Use neutralizing agents if applicable and safe to do so, under the supervision of a qualified environmental officer.
 - Ventilate the area to disperse any fumes if indoors or in an enclosed area.
- **Clean-Up and Disposal:**
 - Collect and label hazardous waste for disposal in line with environmental regulations.
 - Decontaminate the area and conduct tests to ensure no residual contamination.
 - Record all actions taken and submit a report to environmental management.

- **Post-Incident Actions:**

- Conduct incident debrief and review the procedures.
- Update the spill response plan based on lessons learned.

4. Personnel Training & Preparedness

- Conduct regular training sessions for all staff on emergency response which will include spill response, fire response, and hazardous material handling.
- Ensure all personnel know the location and proper use of spill kits, fire extinguishers, and emergency shut-off systems.
- Designate a trained emergency response team with clear roles and responsibilities.

5. Equipment & Supplies

- **Spill Kits:** Ensure spill kits are strategically located, stocked, and easily accessible.
- **Fire Suppression Equipment:** Maintain fire extinguishers, hoses, and automatic suppression systems.
- **Personal Protective Equipment (PPE):** Provide and require the use of PPE, including gloves, masks, and face shields.
- **Containment Barriers:** Have sandbags, absorbent barriers, and neutralizing agents for immediate use.

❖ Asphalt Plant Waste Disposal Procedures

- **Waste Type:**

- Waste asphalt, dust, sludge from scrubbers, spent oil, filters, empty chemical containers, and general construction waste.

- **Disposal Methods:**

- **Waste Asphalt:** Recycle and reuse waste asphalt whenever possible for future asphalt mixes or as sub-base material.
- **Dust and Particulate Waste:** Collect in bag filters and dispose of per local environmental regulations or use as fill material, ensuring it does not contaminate surrounding areas.
- **Spent Oil & Filters:** Store used oil in secure, leak-proof containers marked for hazardous waste and dispose of through licensed waste disposal services.
- **Empty Chemical Containers:** Triple-rinse and store for recycling or dispose of as hazardous waste through certified disposal companies.
- **General Waste:** Ensure regular disposal to avoid accumulation, using municipal services or licensed waste disposal contractors.

- **Air Emissions:**

- Use high-efficiency bag filters or scrubbers to capture dust and minimize air pollution.
- Perform regular maintenance on dust control systems to ensure proper functioning.

- **Spill Control and Response:**
 - Equip the plant with spill kits near potential spill areas.
 - Train staff on spill containment procedures and ensure that all spills are cleaned promptly, with contaminated materials disposed of by certified hazardous waste handlers.

❖ **Concrete Plant Waste Disposal Procedures**

- **Waste Type:**
 - Waste concrete, slurry water, washout residue, used oils, empty admixture containers, and general plant waste.
- **Disposal Methods:**
 - **Concrete Slurry and Washout Residue:** Use designated washout areas with containment pits to capture slurry; allow it to settle, then recycle the water or safely discharge, following environmental guidelines. Solid residues can be reused as aggregates in non-structural concrete or paving.
 - **Waste Concrete:** Crush and reuse as aggregate or base material on the project site where permitted.
 - **Used Oil:** Collect used oil in leak-proof, clearly marked containers and arrange for disposal through certified waste disposal services.
 - **Empty Admixture Containers:** Rinse thoroughly, store, and dispose of through licensed recycling or waste disposal services as required.
 - **General Waste:** Remove regularly through certified municipal services or licensed waste contractors as required.
- **Water Management:**
 - Use settling basins or filters to treat wastewater before discharge.
 - Monitor water quality to ensure compliance with environmental discharge standards.
- **Spill Prevention and Control:**
 - Maintain spill kits on-site, particularly near oil storage areas and admixture storage.
 - Train employees on spill response procedures, ensuring any spills are promptly contained and disposed of by certified handlers.

Environmental Monitoring and Compliance

- Conduct quarterly environmental monitoring to ensure compliance with local and international standards for emissions, water quality, and solid waste management.
- Engage with licensed disposal facilities for hazardous waste and maintain disposal certificates as proof of compliant practices.
- Report waste disposal activities and any incidents as part of the environmental management plan.

Employee Training

- Train staff on waste handling, spill response, and environmental procedures.
- Reinforce adherence to safety and environmental policies to mitigate risks associated with waste disposal.

Namalco's Flow Diagram Showing Asphalt Production Process

1. Start

- (Initiate production process in mobile asphalt plant)

2. Material Delivery

- **Crushed Aggregate** (delivered by trucks or stockpiled)
- **Bitumen** (delivered in heated tanks or containers)
- **Additives** (optional materials like polymers, anti-stripping agents, etc.)

3. Storage and Weighing

- **Aggregate Storage Bins**
 - Crushed aggregates are stored in bins or silos
- **Bitumen Tank** (heated to required temperature)
- **Additive Storage** (if required)
- **Weighing Bins/Conveyors**
 - Aggregates, bitumen, and additives are weighed accurately as per recipe.

4. Aggregate Feeding

- Aggregates are transferred from storage bins to the **drying drum** (drum mixer or rotary dryer).

5. Drying of Aggregates

- **Hot Air / Burner** (hot air is circulated through the drying drum)
- **Water Evaporation** (removes moisture from aggregates)
- **Temperature Monitoring** (to achieve optimal temperature for proper drying)
- Heated aggregates exit the drying drum.

6. Dust Separation (Optional)

- **Cyclone or Bag Filter**: Separates dust particles from the exhaust gases.
- Recycled dust can be fed back into the process or disposed of.

7. Mixing

- **Bitumen Transfer** (from bitumen tank to mixing unit)
- **Additives** (added in specific proportions if required)
- Aggregates and bitumen are transferred to the **mixing chamber** (drum or batch mixer).
- **Hot Mix Asphalt (HMA)** is produced.
- **Mixing Duration** (ensures proper bonding between aggregates and bitumen)

8. Quality Control & Testing

- **Temperature Monitoring** (ensures temperature is within required range)
- **Viscosity Testing** (ensures proper bitumen consistency)
- **Gradation Testing** (ensures proper aggregate size and consistency)
- **Sampling for Lab Tests** (to ensure the quality of asphalt mix)

9. Storage of Hot Mix Asphalt

- **Storage Silos:** Hot mix asphalt is stored in silos, ready for transportation or direct use.
- **Insulated Silos:** To maintain temperature before use.

10. Transportation

- **Delivery Trucks:** Asphalt is loaded into insulated trucks for transportation to the job site.
- **On-Site Delivery:** Asphalt can be laid directly from the truck to the site, ready for compaction.

11. Asphalt Laying at Site

- **Paver Machine:** Asphalt is poured and spread evenly on the roadbed.
- **Compaction Process:**
 - **Rollers** (vibratory or static) compact the asphalt to the required density and thickness.
- **Finishing:** Ensures a smooth, even surface.

Flowchart Diagram:

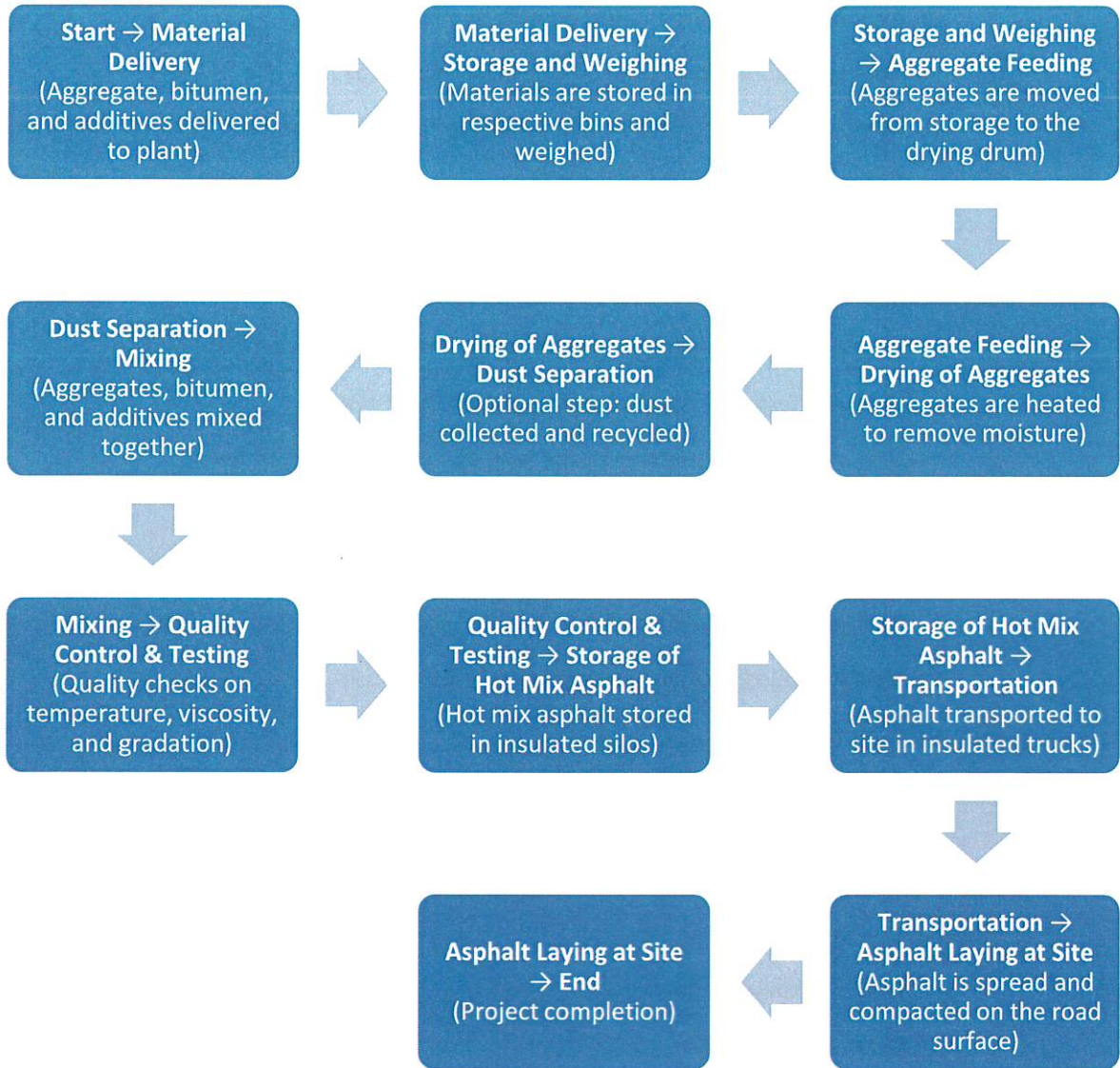


Diagram Layout:

- Start → Material Delivery → Storage & Weighing → Aggregate Feeding → Drying of Aggregates → Dust Separation (Optional) → Mixing → Quality Control → Storage → Transportation → Asphalt Laying → End.

Notes:

- The **mobile asphalt plant** design can vary, but generally, it will include an integrated unit where all steps, such as drying, mixing, and storage, happen in a compact, mobile format.
- The key difference between a traditional and mobile plant is the ability to move the plant to the construction site and set it up quickly.
- **Dust control** is an important environmental consideration, so many mobile plants are equipped with dust extraction systems.
- **Bitumen** is typically delivered in **insulated tanks** to keep it at the proper temperature for mixing.
- **Additives** can include anti-stripping agents, polymers, or modifiers to improve the properties of the asphalt mix.

Namalco's Guide For Producing Asphalt Using a Mobile Asphalt Plant

1. Raw Materials Selection and Preparation

1.1. Materials Used

- **Aggregates:**
 - Crushed stone, sand, and gravel form the structural framework of asphalt. Different sizes are required to ensure proper compaction and load distribution.
 - Gradation is critical for a balanced mix (e.g., coarse aggregates resist loads, fine aggregates fill voids for better cohesion).
- **Filler Material:**
 - Fines (lime, fly ash) enhance the asphalt's stiffness and binding properties. Ensure filler compatibility with bitumen.
- **Asphalt Binder (Bitumen):**
 - Acts as a glue binding aggregates. Common grades include penetration-grade bitumen (e.g., 60/70) or viscosity-grade bitumen (VG-30).
 - Polymer-modified bitumen (PMB) improves elasticity and durability.
- **Additives:**
 - Anti-stripping agents enhance moisture resistance.
 - Rejuvenators restore properties in mixes with reclaimed asphalt pavement (RAP).

1.2. Material Specifications

- **Aggregates:**
 - Size Distribution: Gradation standards ensure an ideal mix; check against ASTM C136 or AASHTO T27.
 - Cleanliness: Aggregates must be free from clay, organic material, or other impurities.
- **Bitumen:**
 - Must meet the penetration and viscosity requirements of ASTM D946 (penetration-grade) or ASTM D3381 (viscosity-grade).
- **Filler:**
 - Ensure fillers conform to particle size and chemical composition standards (e.g., EN 13043).

1.3. Testing of Raw Materials

- **Sieve Analysis (ASTM C136):**
 - Evaluate aggregate gradation to ensure compliance with the job mix formula (JMF).
- **Moisture Content Test (ASTM D2216):**
 - Excess moisture affects mixing temperature and aggregate adhesion.
- **Stripping Test (ASTM D3625):**
 - Tests aggregate resistance to water-induced stripping of bitumen.
- **Bitumen Testing:**
 - Viscosity: Ensures workability at mixing temperatures (ASTM D4402).
 - Penetration: Measures hardness (ASTM D5).

2. Feeding and Pre-Drying

2.1. Cold Feed System

- Aggregates are loaded into bins based on size.
- Calibration: Each bin's gate controls the aggregate flow rate. Bins must be calibrated to maintain proportions based on the JMF.

2.2. Conveying and Pre-Drying

- Aggregates are moved via conveyors to the dryer drum.
- The dryer removes moisture to ensure proper coating during mixing.
- Optimal Drying Temperature:
 - Aggregates: 140–160°C for hot mix, 95–120°C for warm mix.

2.3. Dust Collection

- Cyclones and baghouse filters collect fines and prevent environmental pollution.
- Recycle collected fines back into the mix if permitted by standards.

3. Heating and Mixing

3.1. Bitumen Heating

- Stored in insulated tanks and heated to 140–160°C to ensure viscosity and flowability.
- Avoid overheating to prevent oxidation, which reduces durability.

3.2. Aggregate and Bitumen Mixing

- Aggregates are fed into a drum mixer or pug mill where they are heated and combined with the binder.
- Mixing Time and Temperature:
 - Follow ASTM D6926 for batch plant operations.
 - Ensure homogeneity and avoid temperature segregation.

3.3. Additives

- Add fibers, polymers, or anti-stripping agents to enhance specific mix properties.
- Additives should be pre-measured and introduced at specific stages of mixing for even distribution.

4. Production and Storage

4.1. Batch Production

- Ingredients are mixed in controlled batches, ensuring uniformity.
- Use computer controls to adjust proportions and document each batch.

4.2. Continuous Production

- Materials are continuously fed and mixed in a drum mixer.
- Use real-time sensors to monitor output consistency.

4.3. Storage

- Asphalt mix is transferred to insulated silos.
- Storage Best Practices:
 - Temperature: Maintain 140–160°C.
 - Time: Avoid prolonged storage to prevent binder aging.

5. Quality Control and Testing

5.1. Asphalt Testing

- Marshall Stability and Flow Test (ASTM D6927):
 - Measures the load the mix can sustain before deformation.
- Volumetric Analysis:
 - Air voids, VMA, and VFA determine mix compactability and durability.

- **Binder Content:**
 - ASTM D2172 (Ignition Method) ensures the binder percentage matches the mix design.
- **Gradation:**
 - Post-production sieve analysis checks compliance with JMF.

5.2. Production Control

- Monitor mix temperature at all stages.
- Test each batch to ensure it meets design criteria before dispatch.

6. Standards and Specifications

6.1. Mix Design

- **Marshall Method:**
 - Determine the optimum binder content by testing stability, flow, and volumetric properties (MS-2 MIX DESIGN METHOD)
- **Superpave Design:**
 - AASHTO M323 for performance-based mixes considering traffic load, climate, and durability.

6.2. Environmental Compliance

- Adhere to EPA regulations for emissions and particulate matter.
- Maintain records of dust collection and waste disposal.

6.3. Safety Standards

- Comply with OSHA regulations for hot plant operations.
- Use PPE (gloves, face shields, etc.) for personnel handling bitumen and hot mix.

7. Final Delivery and Installation

7.1. Transportation

- Use insulated trucks to minimize heat loss.
- Pre-treat truck beds with a release agent to prevent asphalt sticking.

7.2. Installation

- **Paving Temperature:**
 - Ensure mix is laid at 120–140°C to allow compaction before cooling.
- **Compaction:**
 - Rollers should achieve the required density while mix is within the compaction temperature range.

7.3. Post-Installation Testing

- **Density Testing:**
 - ASTM D2950 (nuclear gauge) ensures compacted density matches specifications.
- **Ride Quality:**
 - Measure smoothness using International Roughness Index (IRI) or ASTM E950.
- **Skid Resistance:**
 - Conduct tests using ASTM E274 to ensure adequate traction.

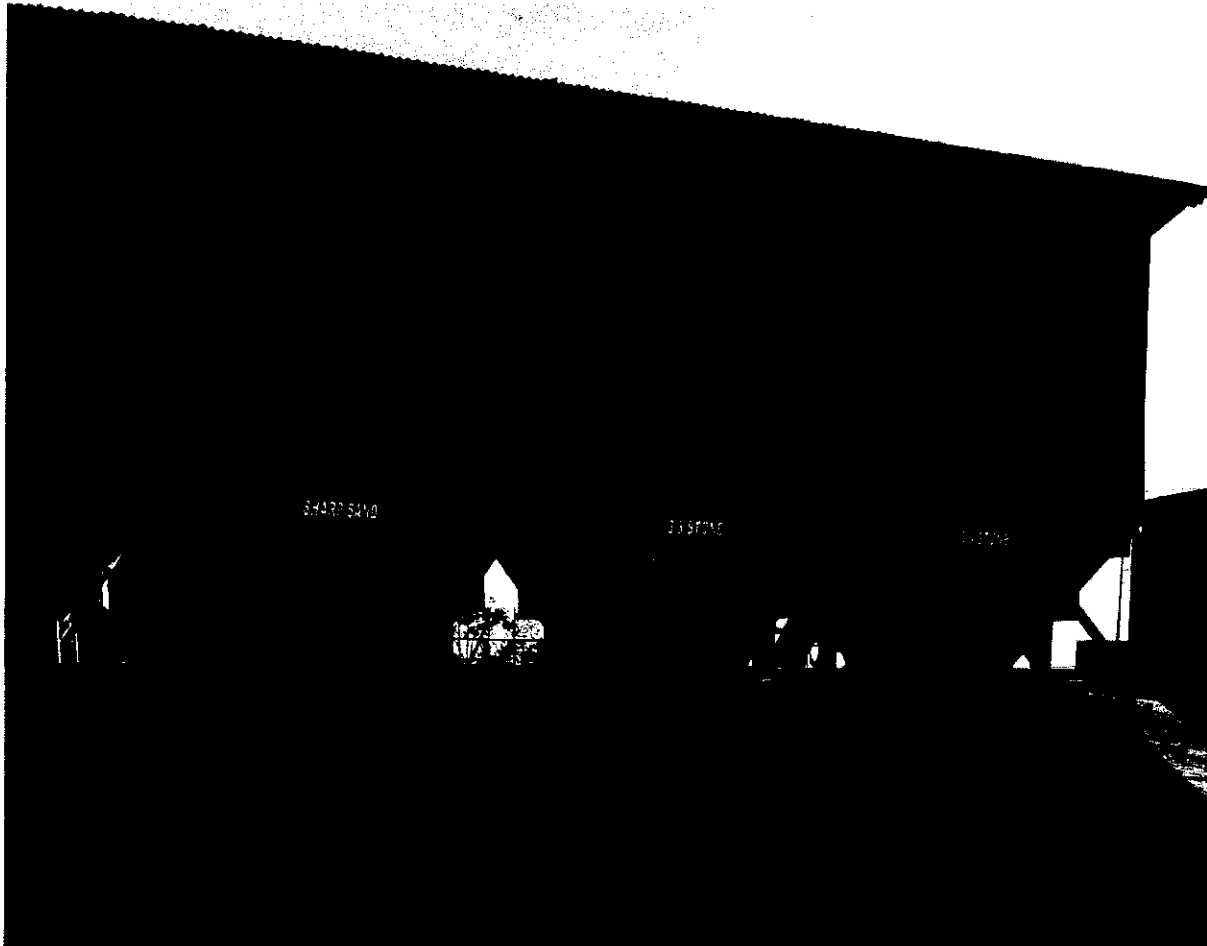
Namalco's Operational Procedures for Producing Asphalt Using a Mobile Asphalt Plant

1. Pre-Operational Preparations:

Before starting production, ensure the following steps are completed:

- **Site Setup:**
 - Select a stable, level area for the plant, ensuring proximity to the construction site and raw material sources.
 - Secure necessary permits and environmental approvals for operations.
- **Power and Utilities:**
 - Ensure power supply (generator or connection) is adequate.
 - Check water availability for cooling and cleaning.
- **Inspection and Calibration:**
 - Inspect all plant components (cold feed bins, conveyor belts, dryer drum, burner, baghouse, mixing unit, and storage silos) for damage or wear.
 - Calibrate weigh scales and temperature sensors for accuracy.
- **Material Testing:**
 - Perform quality testing of raw materials (aggregates, filler, and bitumen) to ensure compliance with specifications.

2. Raw Material Preparation and Loading:



- **Aggregate Management:**
 - Sort aggregates into size fractions as per the job mix formula (JMF).
 - Load aggregates into the appropriate cold feed bins using a loader, ensuring consistent feed rates.
- **Bitumen Supply:**
 - Heat bitumen in the storage tank to the required temperature (150–170°C) for proper viscosity.
 - Ensure pipelines and pumps are pre-heated to prevent clogging.
- **Filler (Mineral Dust):**
 - Check filler storage and delivery systems to ensure a steady supply.

3. Cold Feed and Conveyor System:



- Adjust feed rates of aggregates based on the mix design.
- Monitor and control conveyor belt speed to ensure steady material flow to the dryer drum.

4. Drying and Heating Process:



- **Dryer Drum Operation:**
 - Start the dryer drum and burner, setting the temperature between 120–170°C (adjust based on aggregate moisture content).
 - Ensure proper air-fuel ratio for efficient combustion and minimal emissions.
 - Monitor the exhaust temperature and pressure to avoid overheating and equipment damage.
- **Moisture Evaporation:**

- Maintain sufficient drying time for aggregates to achieve required moisture content (typically <1%).

5. Dust Collection and Emissions Control:



- Operate the baghouse filter system to capture fine particles and ensure environmental compliance.
- Regularly inspect and clean filters to maintain efficiency.

6. Mixing Process:



- **Batch Mixing:**
 - Feed heated aggregates into the mixing chamber in the correct proportions.
 - Introduce filler and bitumen as per the JMF.
 - Mix thoroughly for 30–60 seconds to achieve a uniform blend.
- **Continuous Mixing (if applicable):**
 - Maintain consistent flow of aggregates, filler, and bitumen to the pugmill mixer.
 - Monitor the mixing time and temperature.

7. Quality Control During Production:



- Regularly collect samples of the produced asphalt for laboratory testing:
 - Check for gradation, temperature, air voids, and bitumen content.
 - Ensure the asphalt meets the specified design criteria.
- Adjust feed rates, temperatures, or mixing times based on test results.

8. Storage and Loading:



- Transfer the mixed asphalt to insulated storage silos to maintain temperature until dispatch.
- Load asphalt into trucks using a controlled discharge system, ensuring minimal temperature loss.

9. Shutdown and Maintenance:

- **Shutdown:**
 - Gradually reduce feed rates and stop production.
 - Allow the burner and dryer drum to cool.
 - Clean all material residues from the mixer, conveyors, and silos.
- **Maintenance:**
 - Inspect and lubricate all moving parts.
 - Replace worn-out components and clean sensors and burners.
 - Check for clogs in the baghouse and pipelines.

10. Specifications and Standards to Maintain:

- **Temperature Control:**
 - Aggregate temperature: 150–170°C.
 - Mix discharge temperature: 135–160°C.
- **Bitumen Content:**
 - As per JMF, typically 4–7% by weight.
- **Mix Gradation:**
 - Ensure gradation aligns with project-specific requirements (e.g., ASTM or AASHTO standards).
- **Environmental Standards:**
 - Follow local emission norms and noise limits.
 - Properly dispose of waste materials

Namalco's Flow Diagram Showing Concrete Production Process

Flow Diagram for Concrete Production from a Mobile Concrete Plant

Key Stages:

1. **Material Delivery**
2. **Material Storage**
3. **Batching (Weighing and Proportioning)**
4. **Mixing Process**
5. **Concrete Discharge**
6. **Transportation**
7. **Concrete Placement**
8. **Curing Process**
9. **Quality Control**
10. **End**

Detailed Breakdown of Each Step:

1. Material Delivery

- Raw materials are delivered to the plant site.
 - Cement (delivered in bulk or bags)
 - Aggregates (sand, gravel, crushed stone)
 - Water (in tanks or bulk)
 - Admixtures (chemicals, if required)

2. Material Storage

- Materials are stored in separate bins or silos:
 - Cement in silos to keep it dry
 - Aggregates in bins or hoppers, often with separate compartments for fine and coarse aggregates
 - Water in tanks
 - Admixtures (optional) in separate containers

3. Batching (Weighing)

- Materials are measured using an automated batching system.
- The exact proportions are crucial to maintaining the correct mix design (e.g., cement, sand, gravel, water, and any admixtures).
- The system can be computerized to ensure precision and consistency.

4. Mixing Process

- The materials are transferred to the concrete mixer (drum or twin-shaft mixer) for thorough mixing.
- The mix is blended until uniform, and the right water-cement ratio is maintained for optimal workability and strength.

5. Concrete Discharge

- The mixed concrete is discharged from the mixer either directly into:
 - A **Concrete Transport Truck** (ready-mix truck with a rotating drum)
 - A **hopper** (for immediate use or further transport)

6. Transportation

- The concrete is transported to the construction site via **transit mixer trucks**.
- The truck drum keeps rotating to prevent the concrete from setting during transport.

7. Concrete Placement

- Once the concrete reaches the site, it is poured into molds or forms, or it may be pumped if needed.
- Concrete placement can include the use of pumps, cranes, or direct pouring.

8. Curing Process

- Concrete is left to harden and gain strength through **curing**.
 - Curing is essential for proper hydration of the cement.
 - Methods of curing include spraying water, covering with wet burlap, using curing compounds, or applying plastic sheeting.

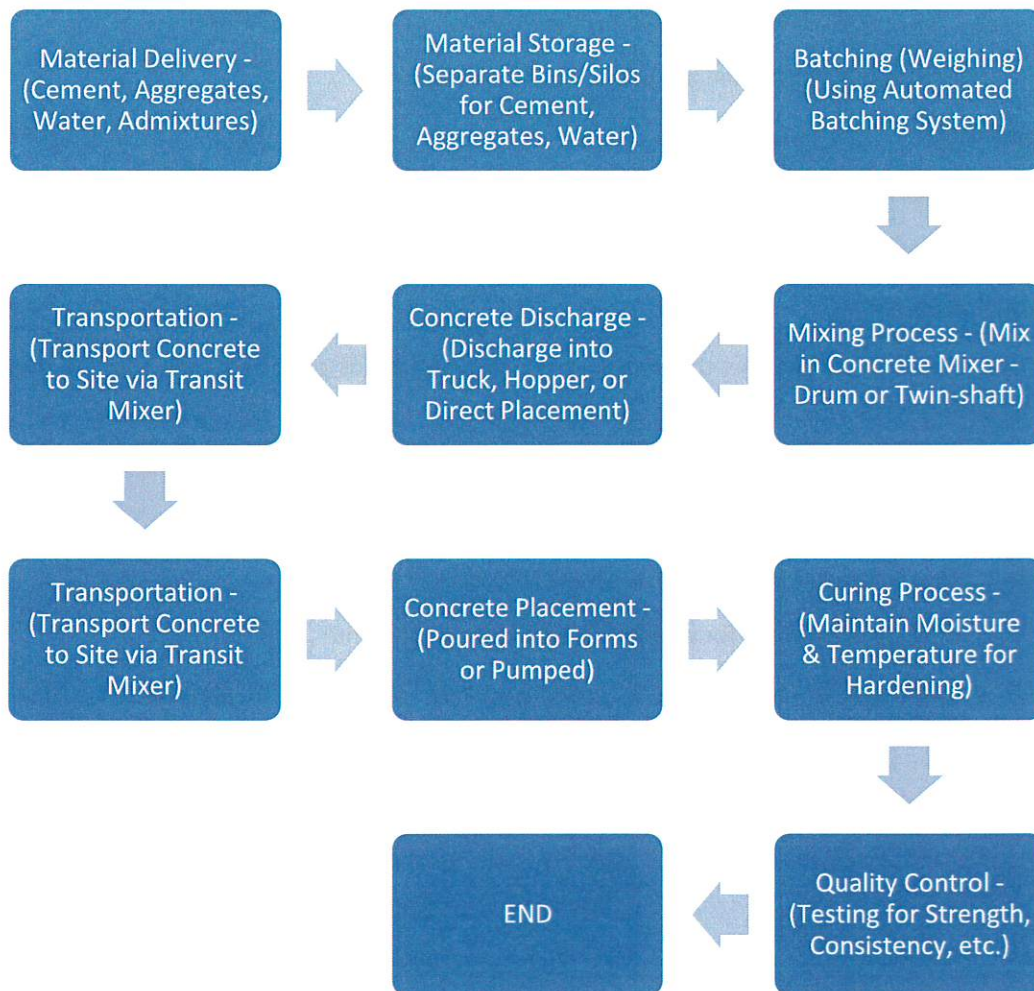
9. Quality Control

- Throughout the process, concrete is tested for:
 - **Slump test** (for workability)
 - **Compressive strength** (after curing)
 - **Consistency and air content**
- Adjustments are made if necessary to meet specification requirements.

10. End

- The production process is complete once the concrete has been delivered, placed, and cured.

Visual Flow Diagram:



Namalco's Comprehensive Guide for Producing Concrete Using a Mobile Concrete Plant

Stage 1: Raw Materials Preparation

1. Cement

- **Type:**

Cement selection depends on the project requirements:

- Ordinary Portland Cement (OPC): Used for general purposes.
- Pozzolanic Portland Cement (PPC): Offers improved durability and resistance to chemical attacks.
- Sulphate-Resistant Cement: For structures exposed to sulfate-rich environments.

- **Storage:**

- Store in weather-proof silos or sealed bags in a moisture-free environment.
- Bags should be stacked no more than 10 high to prevent compaction.

- **Tests:**

- Fineness (Blaine's test): Ensures proper hydration rate.
- Setting time: As per ASTM C191.

2. Aggregates

- **Fine Aggregates (Sand):**

- Must be well-graded to fill voids between coarse aggregates, per ASTM C33.
- Clean to avoid contamination affecting bonding strength.
- Perform sieve analysis (ASTM C136).

- **Coarse Aggregates:**

- Ensure angular or rounded particles for better interlocking.
- Size: Use 10mm, 20mm, or 40mm depending on structural requirements.
- Conduct flakiness index and elongation index tests to ensure uniformity.

3. Water

- **Quality:**
 - Use potable water free of salts, oils, and debris.
 - Impurities can weaken hydration or cause chemical reactions.
- **Tests:**
 - Conduct pH tests (must be between 6 and 8).
 - Chemical analysis for chlorides and sulfates (ASTM C1602).

4. Admixtures

- Purpose: Enhance workability, set time, or durability depending on project needs.
- Dosage: Add in precise amounts as per the manufacturer's guidelines.
- Tests: Trial batches to check compatibility with cement and aggregates (ASTM C494).

Stage 2: Site Setup and Calibration of Mobile Concrete Plant

1. Placement

- Position the plant close to raw material sources to minimize hauling costs.
- Ensure a stable base to prevent uneven settlement of the plant during operation.

2. Calibration

- Calibrate load cells, flow meters, and admixture dispensers as per ISO 9001 standards.
- Use test weights for aggregates and simulate full production to confirm batching accuracy.

3. Material Loading

- Load aggregates into the respective hoppers in layers to avoid segregation.
- Charge cement silos carefully, ensuring no contamination with other materials.

Stage 3: Mix Design Development

1. Selection

- **Base the design on required strength, durability, and environmental exposure. For example:**
 - Use low water-cement ratio for higher strength and durability.
 - Incorporate air-entraining agents for frost resistance in cold regions.

2. Trial Mix

- Conduct laboratory trials using project-specific materials to fine-tune the proportions.
- Test for properties such as slump (ASTM C143), air content (ASTM C231), and compressive strength (ASTM C39).

3. Adjustments

- Modify mix based on test results to meet workability and strength criteria.
- Validate through repeated trials before finalizing.

Stage 4: Production Process

1. Batching

- Follow the approved mix design to weigh aggregates, cement, water, and admixtures accurately.
- Sequence material loading: Start with water, then add aggregates, cement, and admixtures for uniform mixing.

2. Mixing

- Ensure a mixing time of 1.5–2 minutes for homogeneity (ASTM C94).
- Inspect the drum regularly for wear and proper mixing blade alignment.

3. Discharge

- Discharge the mixed concrete promptly to prevent early setting.
- Use agitator trucks for long-distance transport, ensuring continuous rotation to maintain workability.

Stage 5: On-Site Delivery and Placement

1. Quality Checks Before Placement

- Conduct a slump test to verify workability and consistency.
- Measure air content for air-entrained mixes.
- Test temperature to ensure it complies with specifications for ambient conditions.

2. Placement

- Use suitable methods like direct pouring, chutes, or pumps depending on accessibility.
- Ensure the formwork is secure and pretreated to avoid sticking.

3. Compaction

- Employ needle or plate vibrators to eliminate air voids.
- Avoid over-vibration, which can lead to segregation or excessive bleeding.
-

Stage 6: Finishing and Curing

1. Finishing

- Level the surface with screeds or floats immediately after placement.
- Use steel or magnesium trowels for smooth finishes or brooming for textured surfaces.

2. Curing

- **Start curing immediately after finishing to prevent moisture loss. Methods include:**
 - Water curing: Sprinkling or wet coverings like burlap.
 - Curing compounds: Spraying liquid compounds to retain moisture.
 - Steam curing: For accelerated strength gain in precast components.

Stage 7: Quality Control and Testing

1. Fresh Concrete Testing

- Slump Test: ASTM C143 to ensure desired workability.
- Air Content: ASTM C231 for entrained air percentages.
- Temperature: ASTM C1064 to ensure it meets specified limits.

2. Hardened Concrete Testing

- Compressive Strength: ASTM C39 at 7 and 28 days to verify strength.
- Flexural Strength: ASTM C78 for pavements or beams.
- Density and Absorption: ASTM C642 for water permeability and porosity.

3. Durability Tests

- Rapid Chloride Penetration: ASTM C1202 for permeability.
- Freeze-Thaw Resistance: ASTM C666 for cold climate durability.
- Carbonation Depth: To assess resistance to atmospheric carbon dioxide.

Stage 8: Final Inspection and Reporting

1. Inspection

- Conduct a walkthrough to inspect for surface cracks, uniform finishing, and curing adequacy.
- Ensure alignment and dimensions comply with the design.

2. Documentation

- Record batching, transport, placement, and curing details in logs.
- Provide a report summarizing mix design, testing results, and quality assurance checks to stakeholders.

Namalco's Operational Procedures for Producing Concrete Using a Mobile Concrete Plant

1. Preparation Phase

1.1 Site Selection and Setup

- **Level Ground:** Select a firm, level ground for setting up the mobile plant to avoid tilting or uneven mixing.
- **Access to Utilities:** Ensure proximity to water, power supply, and raw material storage.
- **Foundation:** Use a stable platform or base as per the manufacturer's recommendations.

1.2 Equipment Inspection

- Inspect the plant components, including the:
 - Aggregates storage bins
 - Conveyors
 - Cement silos
 - Water tanks
 - Mixing drum
 - Control panel
- Check for wear and tear, leaks, or blockages.
- Calibrate the weighing systems (scales for aggregates, cement, and water) as per manufacturer's guidelines.

1.3 Material Storage

- **Aggregates:** Store coarse and fine aggregates separately in clean, well-drained bins.
- **Cement:** Keep in moisture-proof silos or bags.
- **Admixtures:** Store in labeled containers with proper safety measures.
- **Water:** Ensure a clean and uncontaminated supply.

2. Operational Phase



2.1 Raw Material Loading

- Load materials into their respective storage compartments using loaders or conveyors:
 - **Fine Aggregates:** Sand
 - **Coarse Aggregates:** Gravel or crushed stone
 - **Cement:** Via screw conveyor or manually (if bags are used)
 - **Water:** From the tank using a controlled flow system
 - **Admixtures:** Use dosage pumps for liquid admixtures or calibrated dispensers for powders.

2.2 Weighing and Proportioning



- **Follow Mix Design:** Ensure that the proportions meet the project-specific mix design (e.g., M20, M25 concrete).
- Use the plant's automated or manual system to weigh:
 - Aggregates (in kg or tons)
 - Cement (in kg or tons)
 - Water (in liters)
 - Admixtures (in ml or kg)

2.3 Mixing Process



1. Dry Mixing:

- Add aggregates and cement into the mixing drum.
- Mix for 15-30 seconds to ensure uniformity.

2. Add Water and Admixtures:

- Gradually introduce water and admixtures while the drum is rotating.

3. Wet Mixing:

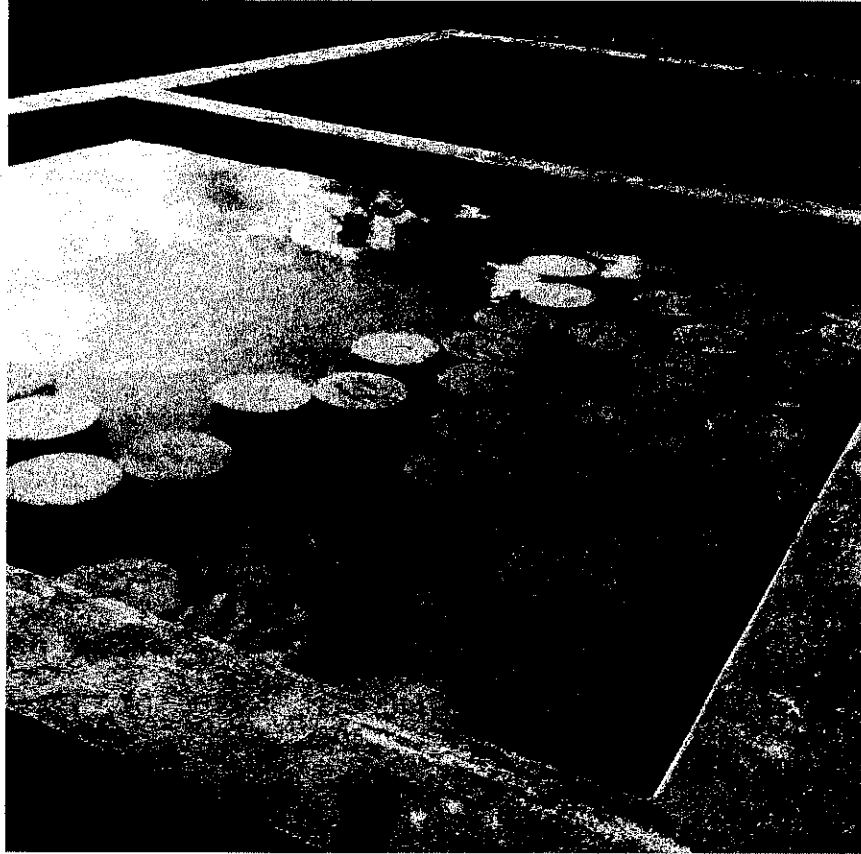
- Continue mixing for 2-3 minutes to achieve a homogenous mixture.

2.4 Monitoring Consistency



- **Slump Test:** Check the workability by conducting a slump test on-site.
- **Adjustments:** If necessary, adjust water or admixtures to meet specifications.

3. Quality Assurance



- **Sampling:** Take samples at regular intervals for laboratory testing (compressive strength, air content, etc.).
- **Batch Records:** Maintain detailed records of each batch, including:
 - Date and time
 - Mix proportions
 - Ambient temperature
 - Test results

4. Dispatch Phase



4.1 Loading Concrete

- Use appropriate discharge methods (chutes, conveyors, or pumps) to load fresh concrete into transit mixers or buckets.

4.2 Cleaning

- Clean the mixing drum immediately after dispatch to prevent concrete build-up.
- Use pressurized water or specialized cleaning agents.

5. Shutdown and Maintenance

5.1 Daily Maintenance

- Clean all bins, conveyors, and mixing drums after daily operations.
- Drain water tanks and hoses to prevent clogging.

5.2 Weekly Maintenance

- Check the calibration of scales and sensors.
- Inspect moving parts for wear and tear.

5.3 Monthly Maintenance

- Conduct a full inspection of the plant, including bearings, electrical components, and hydraulic systems.
- Replace worn-out parts and recalibrate systems.

Specifications to Follow

1. Specification for Ready Mix Concrete: ASTM C94

2. Raw Materials

- **Cement:** Confirm compliance with ASTM C150 or equivalent standards.
- **Aggregates:** Follow ASTM C33 or equivalent for grading, cleanliness, and quality.
- **Water:** Ensure potable quality as per ASTM C1602.
- **Admixtures:** Verify compatibility with cement and aggregates.

2. Concrete Properties

- **Slump:** Verify as per project requirements (e.g., 50-100mm).
- **Strength:** Meet design compressive strength (e.g., 25 MPa for M25 mix).
- **Air Content:** Typically, 5-8% for air-entrained concrete.

3. Environmental Controls

- Prevent dust emission using covers or water sprays.
- Dispose of waste materials according to local regulations.

NAMALCO'S BREAKDOWN OF EXPECTED DISCHARGE RATES, CONCENTRATIONS, AND VOLUMES:

1. Mobile Concrete Plant

Primary Pollutants:

- **Dust (Particulate Matter, PM):**
 - **Sources:** Cement silos, aggregate handling, and mixing.
 - **Discharge Rate:** 0.02–0.05 kg PM per m³ of concrete.
 - **Concentration:** ~50–150 mg/m³ (depends on emission controls like bag filters).
 - **Volume:** Depends on the plant's production capacity (e.g., 100 m³/day of concrete may release 2–5 kg/day of PM).
- **Wastewater:**
 - **Sources:** Washing of equipment, slurry from concrete production.
 - **Typical pH:** 11–13 (alkaline due to cement content).
 - **Suspended Solids (SS):** ~300–800 mg/L.
 - **Volume:** 50–150 liters per cubic meter of concrete.
- **CO₂ and VOCs (Volatile Organic Compounds):**
 - **Sources:** Cement production and admixtures.
 - **CO₂ Emission:** ~0.15–0.2 kg CO₂ per kg of cement.

2. Mobile Asphalt Plant

Primary Pollutants:

- **Particulate Matter (PM):**
 - **Sources:** Aggregate drying, mixing, and silo venting.
 - **Discharge Rate:** 0.2–0.5 kg PM per ton of asphalt.
 - **Concentration:** ~50–200 mg/m³ (with baghouse filters).
 - **Volume:** 5–10 kg/day for 50 tons/day production.
- **Volatile Organic Compounds (VOCs):**
 - **Sources:** Bitumen heating and storage.
 - **Discharge Rate:** ~0.05–0.2 kg/ton of asphalt.

- **Concentration:** ~10–100 ppm.
- **Nitrogen Oxides (NO_x):**
 - **Sources:** Fuel combustion for drying aggregates.
 - **Discharge Rate:** 0.5–2 kg NO_x per ton of fuel burned.
 - **Volume:** Varies with plant capacity (e.g., 50 tons/day = 50–100 kg/day NO_x).
- **Carbon Monoxide (CO):**
 - **Sources:** Incomplete combustion.
 - **Concentration:** ~500–1,500 ppm.
 - **Volume:** ~2–5 kg/day.
- **Sulfur Dioxide (SO₂):**
 - **Sources:** Combustion of sulfur-containing fuels.
 - **Discharge Rate:** 0.2–1 kg/ton of asphalt.
 - **Volume:** Depends on fuel type and sulfur content.

3. Noise Pollution:

- **Mobile Concrete Plant:** ~75–85 dB at 1 m.
- **Mobile Asphalt Plant:** ~80–95 dB at 1 m (higher due to aggregate drying drum and burners).

Mitigation Measures:

1. **Dust Suppression:** Use baghouse filters, wet scrubbers, or cyclones to capture PM.
2. **Wastewater Treatment:** Install sedimentation tanks and neutralization systems.
3. **Efficient Combustion:** Use low-NO_x burners and clean fuels.
4. **VOC Capture:** Vapor recovery systems for bitumen tanks.
5. **Noise Barriers:** Acoustic enclosures around noise-emitting equipment.

Namalco's Discharges and Emissions from Concrete Batching Plants and Asphalt Plants

Concrete Batching Plant

1. Raw Material Handling

- **Cement Storage:**
Storage silos for cement often emit dust during material loading, unloading, and storage. Improper handling can lead to fugitive dust emissions.
- **Aggregates Storage:**
Open or enclosed aggregate piles can release particulate matter (PM) during unloading and loading due to wind or mechanical movement.

2. Material Weighing and Mixing

- **Weighing of Cement and Aggregates:**
Dust emissions can occur during the weighing of dry materials, especially if containment measures are inadequate.
- **Mixing Operations:**
The mixing of cement, aggregates, water, and additives can lead to emissions of PM and moisture vapor. Spillage during mixing may result in wastewater.

3. Transportation of Materials

- **Conveyor Belts and Vehicles:**
Conveyor belts moving aggregates can emit PM if not properly enclosed. Truck movement within the plant can also generate dust and mud runoff.

4. Water Usage and Wastewater Generation

- **Washout Water:**
Cleaning of mixers, trucks, and equipment generates wastewater containing cementitious materials, suspended solids, and high pH levels.
- **Stormwater Runoff:**
Rainfall can lead to runoff carrying fine particulate matter, cement, and chemicals.

5. Energy Use

- **Generators and Machinery:**
Diesel or electricity-powered equipment emits greenhouse gases (GHGs), nitrogen oxides (NOx), and carbon monoxide (CO).

Asphalt Plant

1. Aggregate Heating and Drying

- **Drum Dryer Emissions:**
The drying of aggregates in the drum produces significant emissions, including particulate matter (PM), sulfur oxides (SOx), nitrogen oxides (NOx), volatile organic compounds (VOCs), carbon monoxide (CO), and carbon dioxide (CO₂). These emissions result from combustion processes using fuel (natural gas, oil, or coal).
- **Blue Smoke:**
Hydrocarbons volatilized during heating may form "blue smoke," consisting of fine particulate and VOC emissions.

2. Binder (Bitumen) Heating

- **Bitumen Storage and Heating Tanks:**
Heating bitumen to the required temperature emits VOCs and sulfur-containing compounds. Fugitive emissions may occur from poorly sealed storage tanks and during the loading of bitumen into the mixing unit.

3. Mixing Operations

- **Batch Mix or Continuous Mix Plants:**
Mixing hot aggregates with bitumen can release fine particulate matter, VOCs, and potentially harmful fumes from the binder.

4. Transportation and Handling

- **Conveyor Belts, Trucks, and Load-Out Areas:**
Loading hot-mix asphalt (HMA) into trucks can result in emissions of PM and VOCs. Additionally, vehicular movement generates fugitive dust from unpaved or poorly maintained surfaces.

5. Energy Usage

- **Fuel Combustion:**
Combustion of fuels for aggregate drying and heating produces CO₂, NOx, CO, and other GHGs.
- **Electricity Use:**
Powering auxiliary equipment (e.g., conveyors, motors) indirectly contributes to emissions based on the electricity source.

6. Water Usage and Wastewater

- **Dust Control Systems:**
Water sprays used for dust suppression can generate minor quantities of wastewater containing fine aggregate particulates.
- **Stormwater Runoff:**
Unprotected aggregate storage and loading areas can contribute to run off contaminants.

7. Waste Generation

- **Excess Material and Cleaning Residues:**
Leftover asphalt mix, spilled bitumen, and aggregates, along with residues from equipment cleaning, create solid waste.

Summary of Key Pollutants and Discharges

1. Air Emissions

- **Concrete Batching Plants:**
Dust (PM10 and PM2.5), moisture vapor, CO₂, and minor quantities of VOCs.
- **Asphalt Plants:**
PM, NO_x, SO_x, VOCs, CO, CO₂, blue smoke, and hydrocarbons.

2. Wastewater

- High pH washout water (from concrete batching plants).
- Suspended solids and runoff contamination.

3. Solid Waste

- Cement and aggregate residues (from batching plants).
- Asphalt spills and residual materials (from asphalt plants).

4. Noise

- Generated from equipment operation (e.g., mixers, conveyors and crushers).

Mitigation Measures

Both plants typically incorporate pollution control systems, including:

- Dust collection systems (baghouses, cyclones, and filters).
- Water sprays for dust suppression.
- Enclosures and barriers around equipment.
- Proper storage and containment of raw materials.
- Use of scrubbers or thermal oxidizers for gaseous emissions.

Summary of Public Consultations/Meetings Held

RE:GUYL 1025 Soesdyke -Linden Highway (SLH) Road Upgrade Project, 2024

MINUTES OF STAKEHOLDERS MEETING (19-2024) HELD ON SATURDAY OCTOBER 19, 2024 AT 14:00HRS

Members: -

Mr.:	Danian Douglas	DP	Project Manager
Misses	Arika Manson	A.M	Community Liaison
	Carlene Bascom	C.B	HSE Officer
Misses	Wamanda Chapman	W.C	H.S.E Officer
	Nariscia Philip Peters	N.P	H.S.E Manager
	Sharon Gail Roopchand	S.G.R	HSE/Community Liaison
	Renwick English	R.E	Environmental Specialist
	Wesley Walcott	W.W	Engineer
Misses	Amaya Daniels	A.D	Site Engineer

In attendance were:

	Danian Douglas	D.D	Project Manager
Misses	Arika Manson	A.M	Community Liaison
Misses	Wamanda Chapman	W.C	H.S.E Officer
	Sharon Gail Roopchand	S.G.R	HSE/Community Liaison
	Wesley Walcott	W.W	Engineer
Misses	Amaya Daniel	A.D	Site Engineer
	Kimnath Tota	K.T	Team Lead & Resident Engineer (SLH Project)
	Dikedemma Utoh	D.U	Project Manager (MoWP)
	Rondel Blyden	R.B	Lead Surveyor (CB)
	Bhesram Singh	B.S	Deputy Team Lead (CB)
	M. Ramnarine	M.R	Site Engineer

Community Chairman:

John Rapael	-	Kuru Kuru Squatting Area
Ava Famey	-	Long Creek
Melissa Mundoc	-	Circuitville

Ramesh Ramit	-	Kairuni
Sandra Budhan	-	Banakari

A. Opening Remarks

The meeting was called to order at 14:20 hrs.

The meeting was led by Ms. Sharon Roopchand, HSE/ Community Liaison for the sockeye-Linden Highway (SLH) Road Upgrade project. S.R introduced the team to the stakeholders being that of the contractor's team, Supervisory Consultant's team and the Clients (MoPI) respectively.

Stakeholders were appraised that this was the first stake holders meeting being held in that Region and any questions relating to the project can be asked as we aim to keep them informed as to the activities surrounding the project, while ensuring as humanly possible as can be that their livelihood is not affected.

Ms. Roopchand proceeded with;

- A project summary informing stakeholders of the initiative being a Government of Guyana project led by the MoPI, funded by the Islamic Development Bank and executed by NAMALCO Construction Services Limited and GuyAmerica Construction Inc.
- Purpose of the project
- Key components of the projects
- Environmental & social safeguards
- Timeline & progress
- Significance of the project

Stakeholders were cautioned that they are also other works being executed and those are not of the contractors Namalco & GuyAmerica for the purpose of clarity when lodging any complaints and/or queries.

Further, Mr. Danian Douglas – Project Manager indicated the location for works prescribed were from Soesdyke Junction to Linden (Wismar) for clarity.

Following the presentation, the members were then invited to engage with any questions/concerns relating to the project and information shared.

Stakeholders 1: How can residence get employment?

Gail: Job Application forms will be on all sites (Brickery, Long creek)

Stakeholder 2: How will the road upgrade affect farmers access?

Danian: Some inconvenience may be caused but this is being kept at a minimal, the aim to ensure that ingress/egress is always available, no machinery will be left blocking same.

Stakeholder 3: Will the road be closed off?

Danian: There will be some lane closures but residence will be informed beforehand, there will be signs indicating same too along those roadways.

Stakeholder 4: What about pedestrians, since many schools aged children walk along the roadways to get home and wait for transportation.

Danian: There will be road safety signs which should also be adhered to & lighting.

Stakeholder 5: Will Utilities be affected?

Danian: As per advice there should be no disturbances since all utility wires are ran underground in the area and there shouldn't have major disruptions. The utility companies were also engaged and informed about the project and each utility company has a representative onboard for the project.

Stakeholder 6: What if someone is interested in a job but don't have any documents like a bank card to get payment:

Gail & Danian: They can engage and explore other payment options, if necessary, through the projects.

Danian: For best practice some may prefer to have bank payments as against cash but wants to involve everyone, hence they may be open to seeking other payment options.

Stakeholder 7: Where can persons go to get jobs & will application forms be at the NDCs also?

Gail: At any of the job sites being Brickery, Long creek & forms will be left at the NDCs for easier access.

Stakeholder 8: Where in long creek is the work site

Wamanda: explained there is no address but its a field cleared with a grey container on it also a white tent.

Stakeholder 9: Due to the construction the creeks may be dug up and it takes several days for the water to settle since they use that to drink, bathe and wash, queried if black tanks will be provided.

Danian: While some recreational activities at some creeks will be disturbed, those persons will be engaged by the community liaison before any works begin, further, there should not

be any disturbances to the waterways and the best efforts will be had to protect same. Further, there are protocols in place for testing of the waterways before and after this project to ensure there is no contamination to the waterways.

Stakeholder 10: What will happen to the bus sheds along the way since that's where residents wait for transportation?

Mr Tota: At the moment he didn't consider that but will be conveyed to MoPw and looked into.

Stakeholder 11: Will the new road be a 4-lane road?

Mr. Tota: No, it's just an upgrade to the roadways.

Additionally, Danian advised of the bridges being added, light, pavements and more being added in the upgrade.

Stakeholder 12: What will happen to persons who has business on the government's reserve?

Gail: They will be engagements if removal/relocation is necessary, members were also encouraged to engage their NDCs' chairman before doing any erections on government reserves.

Chairman of the Yarrowkabra community indicated he would like the residence of Yarrowkabra to have access roads in that community. At that point, he was advised that does not fall under the scope of this project but same will be highlighted to the relevant authorities and Mr. Tota was present and heard the request made.

The Kymani community also requested for their road to be done since there is a primary school at the end of the road and children ply that route daily.

Residence of the Kuru Kururu area requested that assistance in fixing roads in the area beginning from the doubles stand to the squatting area at the back.

All the residents shared the same sentiments of having roads and/or road improvements done in their community.

Questions were there after raised if the entrance ways will be fixed a bit during the project. D.D advised that they will be fixing entrances close to the corridor of the roads when the road upgrade is being done, no untidy works will be left.

One resident applauded the Government of Guyana for the works being executed and the kind operators they may encounter. She explained their area at the side of the road had a lot of bushes and debris and she asked the operator on site to assist in moving same on behalf of

the community since he was working in that area and he acceded to their request of which the residents are grateful for that.

Attached herein are contact numbers for the community chairman's' that were present at the meeting for ease of reference along with a signature sheet that was distributed.

There being no other business the meeting concluded at 15:00hrs.

Attachments:

Appendix I – Site Facility Layout Plan

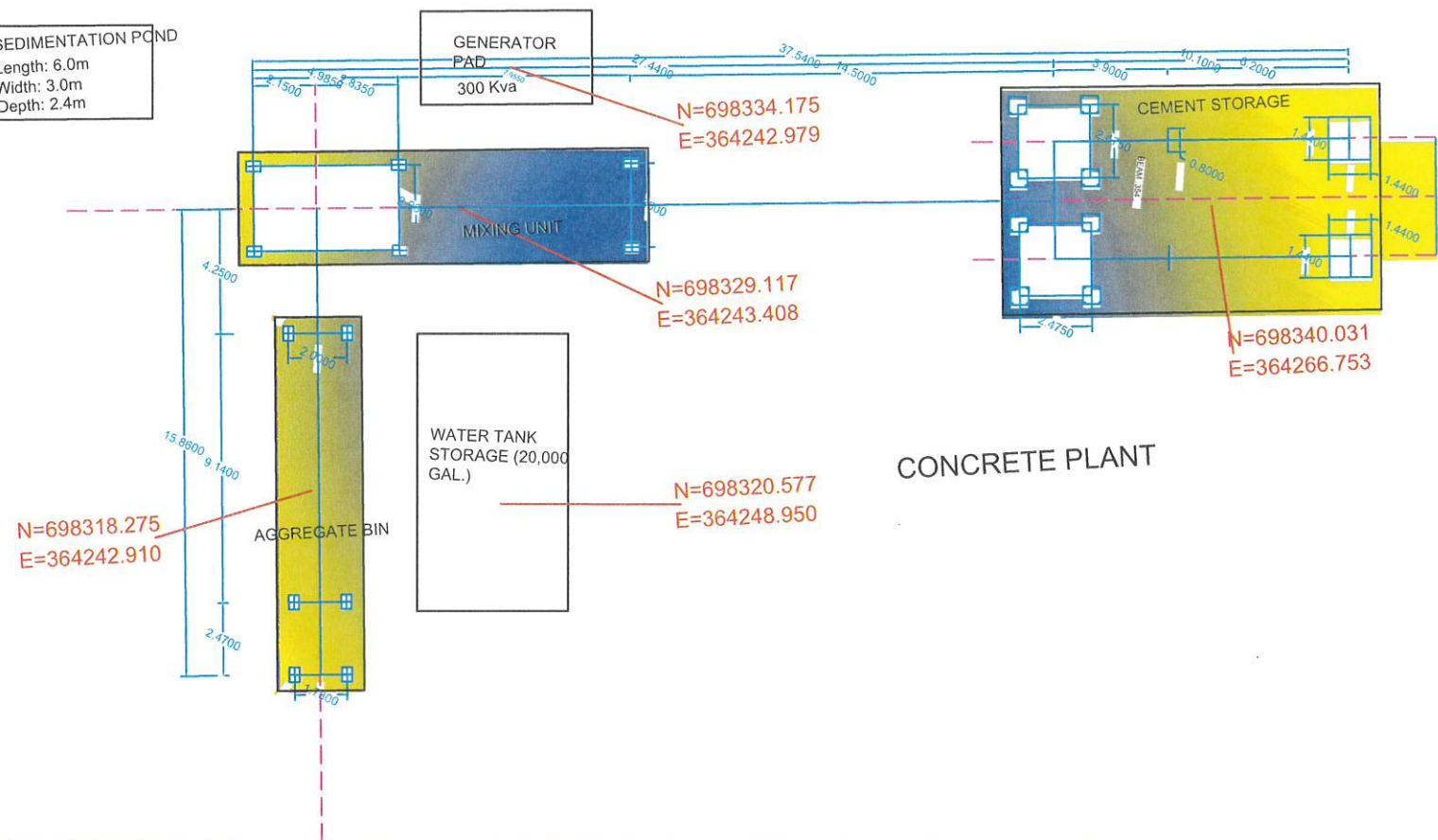
Appendix II – Concrete Batching Plant Brochure

Appendix III – Asphalt Batching Plant Brochure

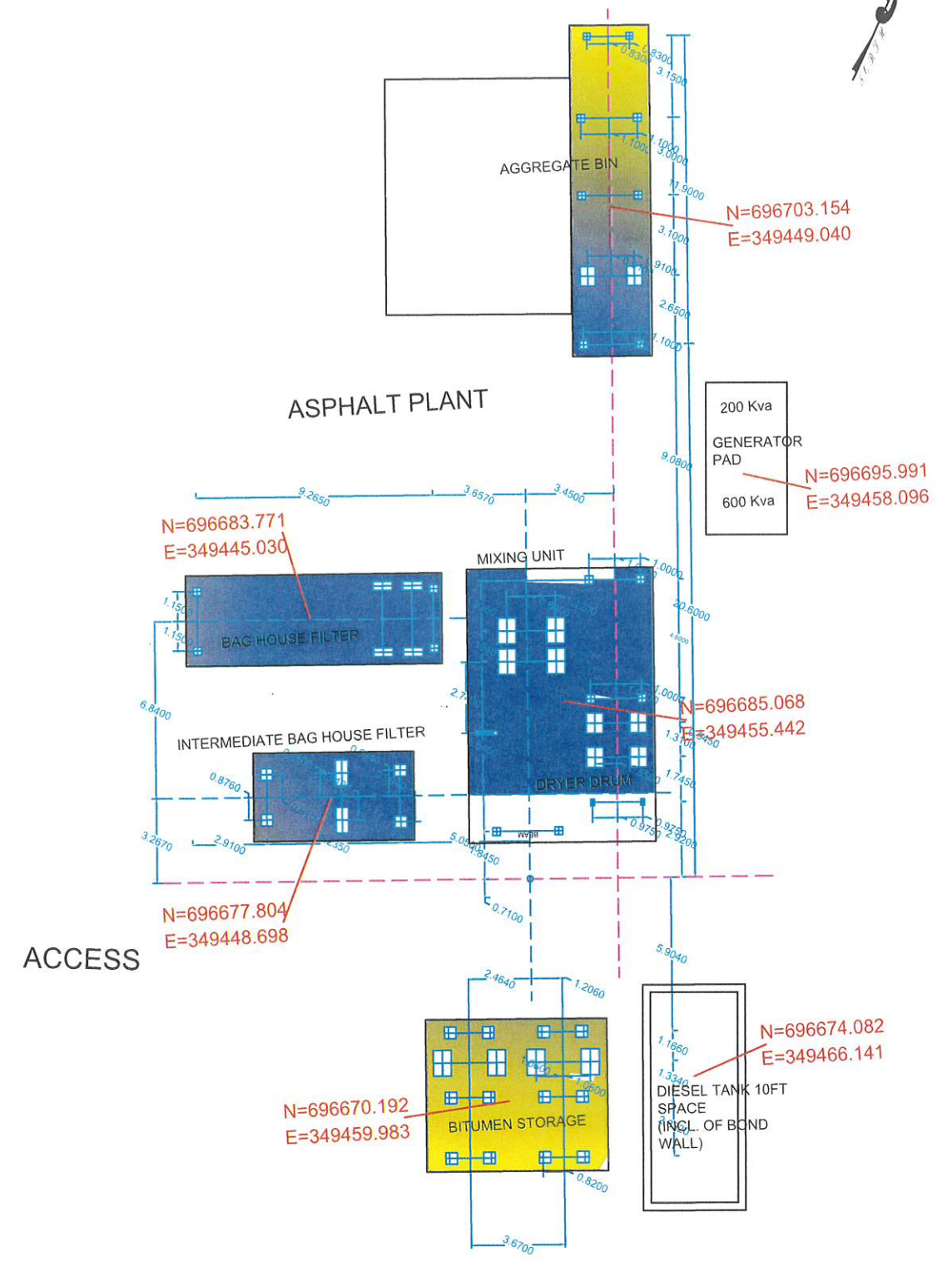
APPENDIX 1 (See Enlarged Plan Attached)

FILTRATION POND
Length: 6.0m
Width: 3.0m
Depth: 2.4m

SEDIMENTATION POND
Length: 6.0m
Width: 3.0m
Depth: 2.4m



ACCESS ROAD

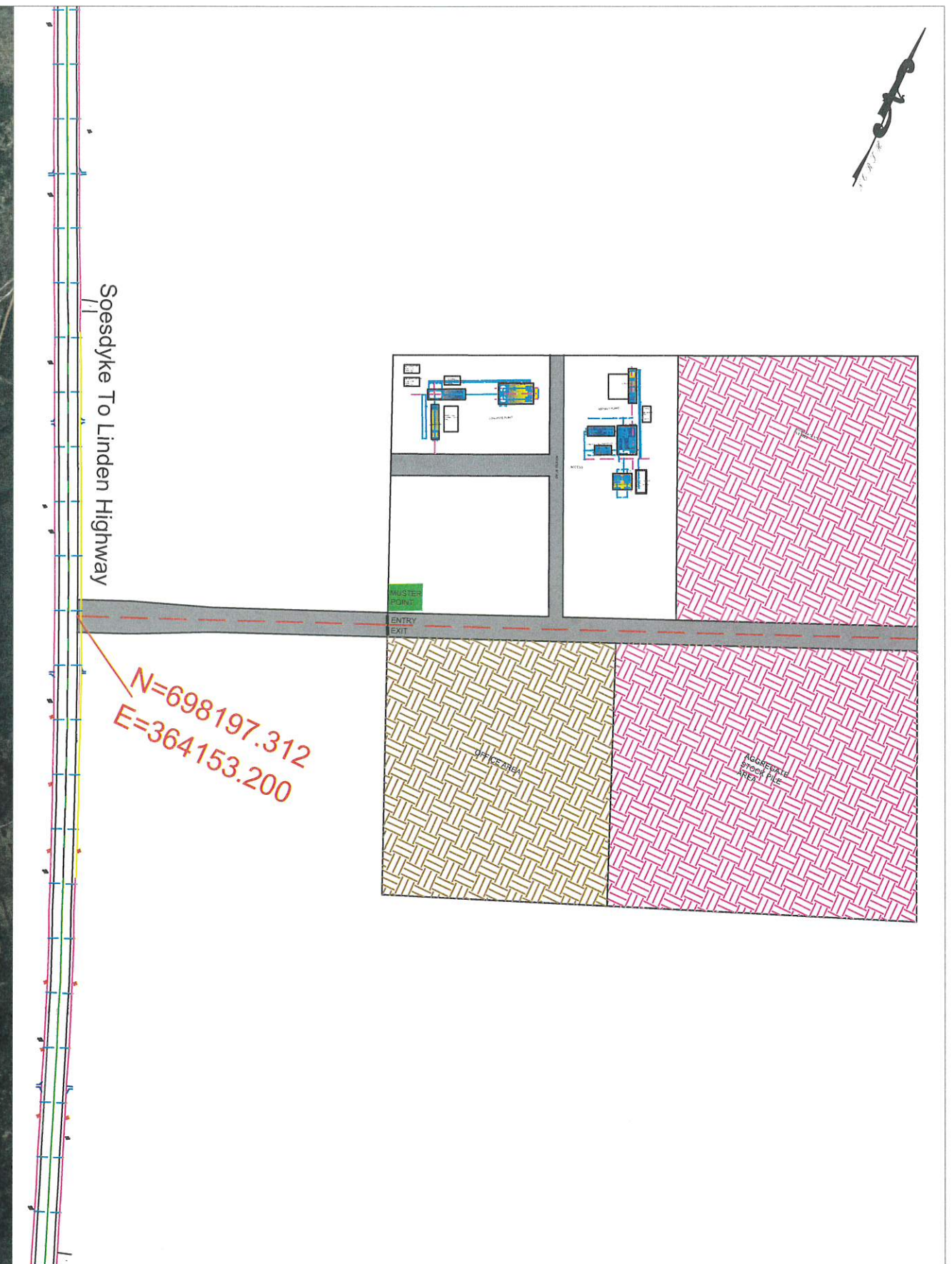


Revisions		
No.	Revision / Issue:	Date:

N 723894.587
E 363405.525
Z 55.145
Coordinates (WGS84)
Georgetown Datum

The Government Of Guyana | Ministry Of Public Infrastructure
Namalco Construction Services Ltd | JV | Guyamerica Construction Inc.
CB & Associates Inc. | Soesdyke To Linden Highway Rehabilitation Works

Surveyed By:	A.J.	NAMALCO Site Facility	
Drawn By:	A.G.	Long Creek (Layout)	
		Do Not Scale	Metres
			25th / 11 / 2024
Sheet No.:		N.G.LSH.LONG CREEK.FACILITIES.00	



Revisions		
No.:	Revision / Issue:	Date:

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E=363405.925
Z=55.145

Coordinates (WGS84)
Georgetown Datum

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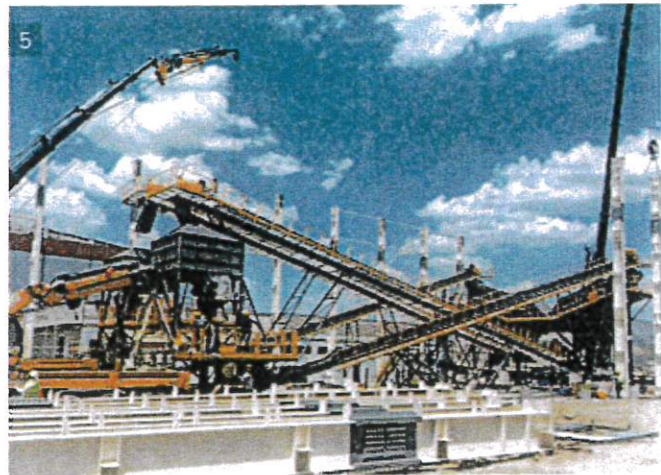
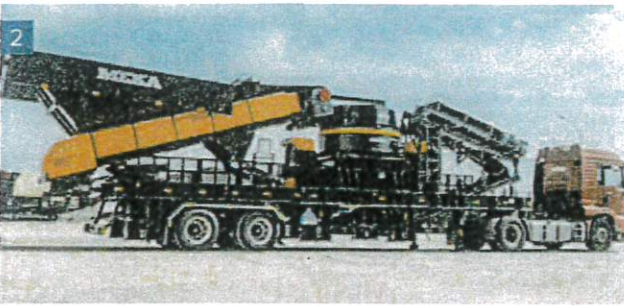
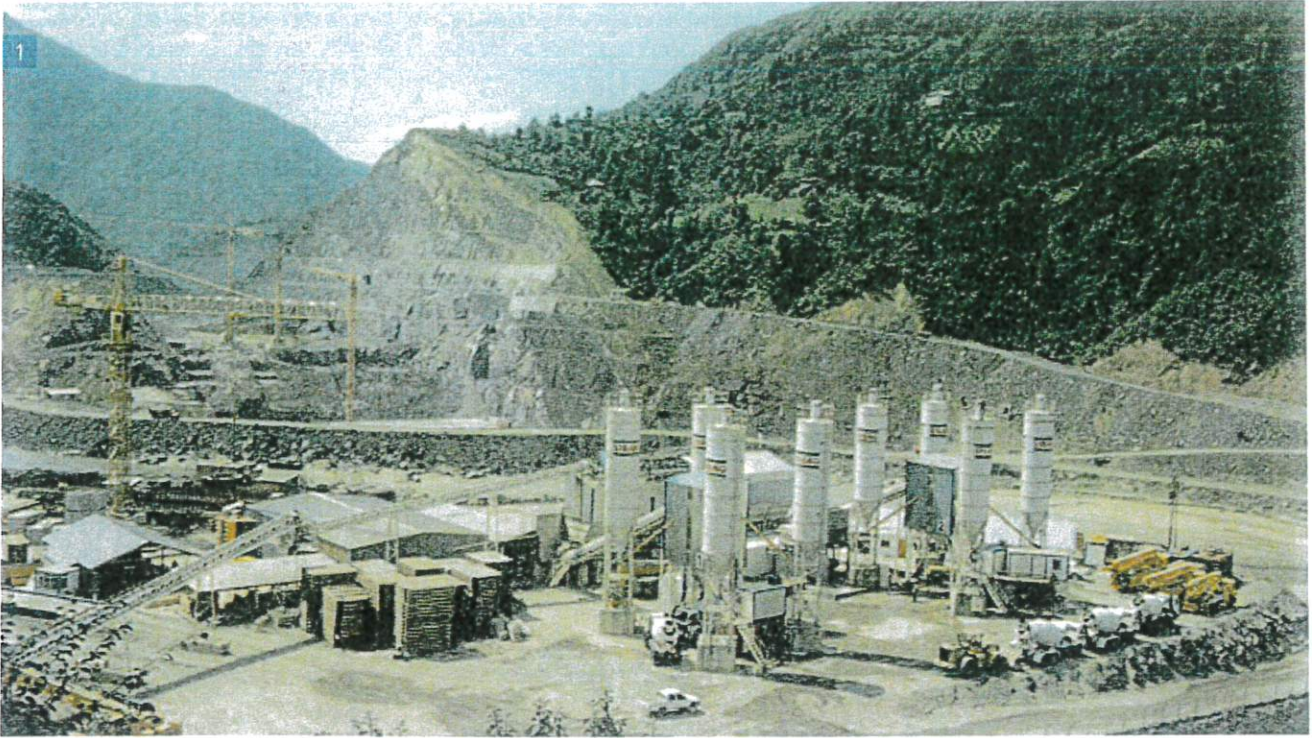
Surveyed By:	A.J.	NAMALCO Site Facility		
Drawn By:	A.G.	Long Creek (General Layout)		
		Do Not Scale	Metres	25th / 11 / 2024
		Sheet No.:	N.G.LSH.LONG CREEK.FACILITIES.00	

APPENDIX II – CONCRETE BATCHING PLANT BROCHURE



CONCRETE BATCHING PLANTS

FOR READY-MIX CONCRETE,
CONSTRUCTION,
AND PRECAST INDUSTRIES



IMAGES

Cover HS2 Project / UK, MEKA Stationary Concrete Plant

1 Meka Stationary Concrete Plants Engineered for Strabag / Dam Construction Project / Turkey

2 Meka Portable VSI Crusher / USA

3 M 100 Meka Mobile Concrete Plant / UK

4 250 TPH Two-Stage Limestone Crushing Plant / CIS

5 Zinc-Lead Ore Processing Plant / Turkey

MEKA AT A GLANCE

WHO WE ARE?

MEKA is a world-class manufacturer and supplier of Complete Plants and Equipment to the Concrete batching plant and Mineral Processing sectors. The name MEKA is synonymous with efficiency and quality in more than 110 countries around the world.

35+ YEARS EXPERIENCE

Founded by an engineer, MEKA is a family-owned company. True to its roots, MEKA excels in engineering of high-end products at the lowest service lifetime costs. Through continuous investment into engineering and manufacturing capacity, MEKA offers the best lifetime value to its customers.

"MEKA is ready to meet the evolving global needs for the ready-mix concrete and mineral processing solutions required for the construction of a better world."

Mehmet Kaybal
B.Sc. ME, FOUNDER & CEO



%100 FULL SERVICE

From sales to final delivery, everyone on the MEKA staff is dedicated to the provision of the highest quality service to our customers.

We provide in-depth details of the process early in the task and update our customers on specific details along the way. Every plant is designed with the customer in mind and is backed by service extending years beyond the delivery of the product through the support of our local partners. Our dedicated spare parts warehouses around the world and our in-house MEKA engineers who are ready to visit our clients' sites.

MEKA



90.000m²+ MANUFACTURING SPACE

MEKA operates three specialized manufacturing facilities, each of which is crafted to provide optimum efficiency and service. When partnered with local service centers, MEKA boasts unparalleled manufacturing power. We currently have 90,000 m² total storage space, with more in planning.

Annual manufacturing capacity for concrete plants: 250+,
for crushing plants: 150+.



500+ EMPLOYEES

MEKA is home to more than 500 employees, and the family is being added to day by day to ensure the provision of even better service to our clients. With the inclusion of our supplier base, our extended family numbers over 2000 people, consisting of hard-working fabricators, quality control engineers, designers, sales staff and more ...



Scenes from MEKA Factories

R&D IS IN THE DNA OF MEKA

MEKA makes difference. We listen to our customers and deliver the products they need.

MEKA is a State Recognized Research and Development Center, which is a privileged position that allows us to set bolder targets for the future. More than 50 R&D Engineers from different disciplines work daily with the best draftsmen to bring you better products. We are currently working on more than 20 new projects that will be ready to meet the challenges that the changing market dynamics will bring.



We work continuously with well-known companies in the world, provide solutions to world-class projects and you with insights.



MEKA



IMAGES

6 300 m³/hour Capacity Stationary Concrete Plant / London/Wembley (The biggest wet plant in UK)

7 2 units K 110 Stationary Concrete Plants / Lyon Port, France



CONCRETE BATCHING PLANTS

FOR READY-MIX CONCRETE,
CONSTRUCTION,
AND PRECAST INDUSTRIES

Concrete Batching Plants are used for manufacturing of high-quality concrete for a variety of construction applications, such as buildings, roads, bridges and airports. MEKA offers a wide range of Ready-Mix Concrete Batching Plants and MEKA concrete mixers. Mobile, Compact and Stationary Concrete batching plants can be configured as special solutions for different kinds of concrete, including Roller Compacted Concrete, Road Concrete, Extra Heavy Concrete, Fiber-Reinforced Concrete, etc., according to the customers' specific requirements.

Our Single Shaft, Twin Shaft and Planetary Concrete Mixers cover a wide range of needs and add flexibility to the manufacturing process. MEKA also offers different components and options for the concrete sector that increase performance, add flexibility, improve accountability and enhance operational characteristics.

MEKA CONCRETE BATCHING PLANTS

- > Stationary Concrete Batching Plants
- > Mobile Concrete Batching Plants
- > Compact Concrete Batching Plants
- > Job-Site Concrete Batching Plants
- > Special Concrete Batching Plants (RCC, Precast etc.)
- > Concrete Mixers
- > Fiber Dosing Systems
- > Plant Automation
- > Other Solutions

COMPACT CONCRETE BATCHING PLANTS

WITH A COMPACT DESIGN,
THESE PLANTS ARE
THE OPTIMUM READY-MIX
CONCRETE SOLUTION FOR
TIGHT SITES.

MEKA Compact concrete batching plants are flexible, durable and provide class-leading productivity. They are the preferred solution of contractors and ready-mix concrete companies seeking an efficient, unique and rapid solution.





MOBILE CONCRETE BATCHING PLANTS TECHNICAL SPECIFICATIONS

	M60	M100	M120
Compacted Concrete Output	60 m ³ /h	100 m ³ /h	120 m ³ /h
Mixer Capacity (Compacted Concrete)	1,0 m ³ /cycle	2,25 m ³ /cycle	3,33 m ³ /cycle
Mixer Type	SS / TS / PL	TS	TS
Mixer Motor Power	37 kW / 2x 18,5 Kw / 45 kW	2x 37 kW	2x 55 kW
Aggregate Bins	4x 10 m ³ / CT	4x 15 m ³ / CT	4x 25 m ³ / Inline Mobile Type
Aggregate Feeding	Ramp or Pre-Feeding System		
Aggregate Transfer	Belt	Belt	Belt
Air Compressor	Piston Type (5,5 kW)	Piston Type (7,5 kW)	Piston Type (7,5 kW)
Cement Weighing Hopper	500 kg	1.000 kg	1.750 kg
Water Weighing Hopper	200 kg	700 kg	1.000 kg
Additive Weighing Hopper	20 kg	20 kg	40 kg
Cement Screw Conveyor	Ø 219 x 11.500 mm	Ø 273 x 15.000 mm	Ø 273 x 15.000 mm

Aggregate Bins : CT (Cross Type), IT (Inline Type)
 Mixer Type : SS (Single Shaft), TS (Twin Shaft), P (Pan), PL (Planetary)

IMAGES

- 13 M 100 Mobile Concrete Batching Plant / Scotland
- 14 M 100 Mobile Concrete Batching Plant / Heidelberg Cement / Georgia
- 15 M 120 Mobile Concrete Batching Plant / Vinci / Turkmenistan
- 16 M 60 Mobile Concrete Batching Plant / Tanzania
- 17 M 100 Mobile Concrete Batching Plant / UK

MOBILE CONCRETE BATCHING PLANTS

MEKA MOBILE PLANTS ARE DESIGNED TO BE MOVEABLE, BEING MOUNTED ON A TOWABLE CHASSIS FOR MAXIMUM MOBILITY AND RAPID SETUP.

Mobile batching plants are perfect for temporary construction sites or construction projects where the equipment is only needed for specific project phases. They can be easily installed dismantled, and require minimal preparation and setup times.

14



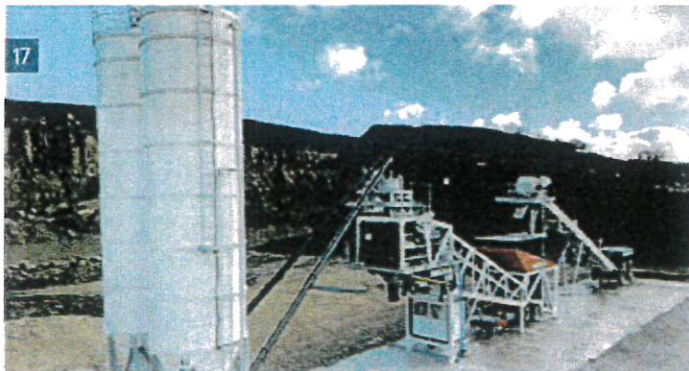
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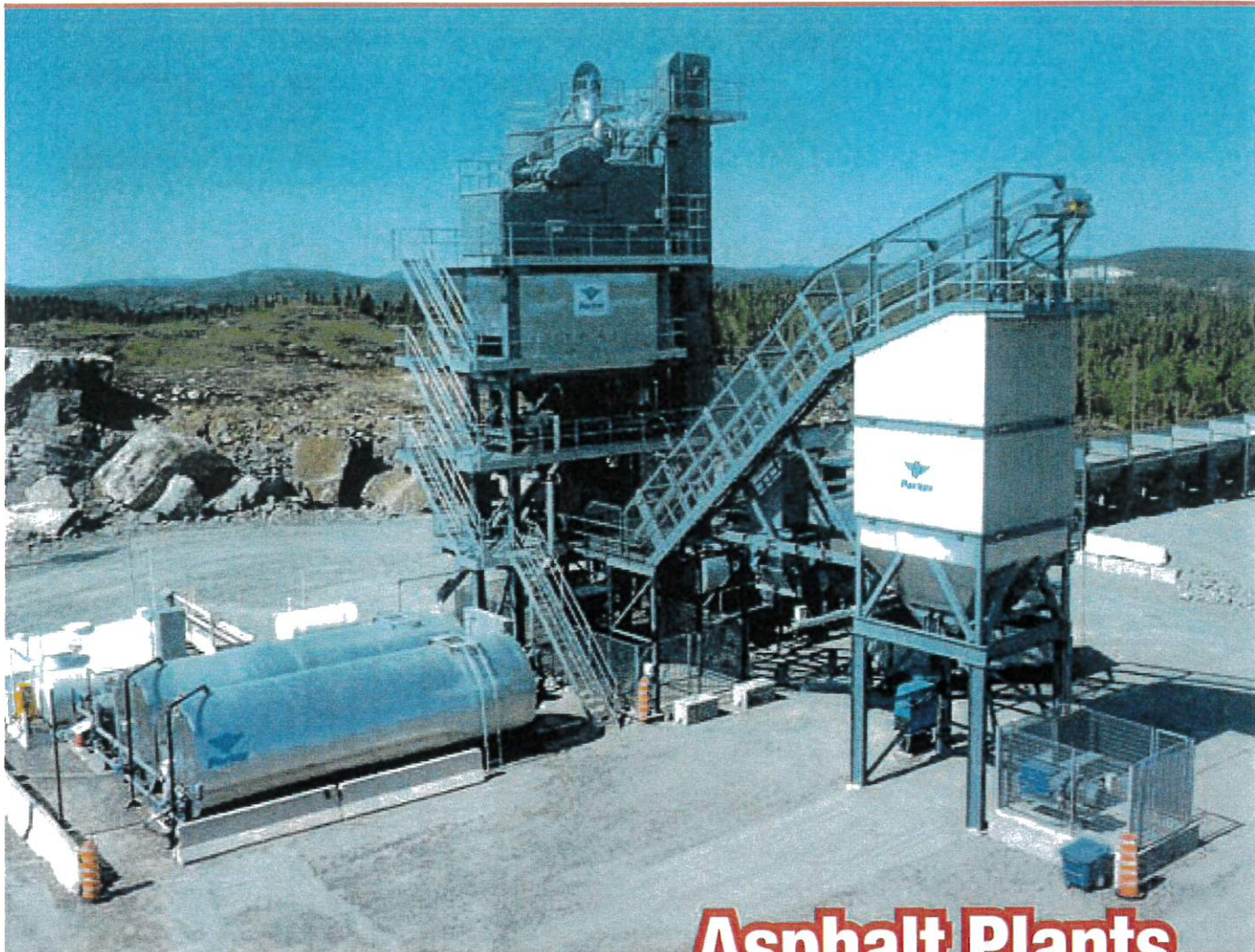
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APPENDIX III – ASPHALT BATCHING PLANT BROCHURE



Asphalt Plants

Quality Engineered
Excellence Since 1911

Quality Engineered Excellence Since 1911



Success in global sales has been recognised by winning the prestigious Queen's Award to Industry on no less than three separate occasions. This achievement recognised Parker's position as one of the foremost exporters of reliable and dependable solutions for crushing, screening, asphalt and concrete applications throughout the world.

The addition of Phoenix Transworld's extensive portfolio of highly reliable and quality engineered asphalt plants has significantly enhanced the comprehensive Parker range, offering a choice of configurations with output capacity ranging from 4 to 400 tonnes per hour, and strengthens Parker Plant's standing as a leading name in the market.



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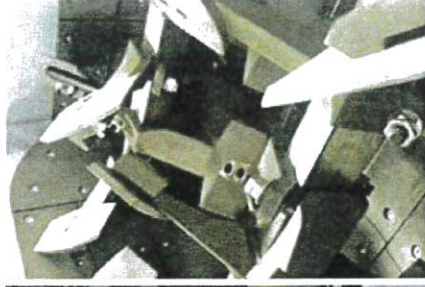
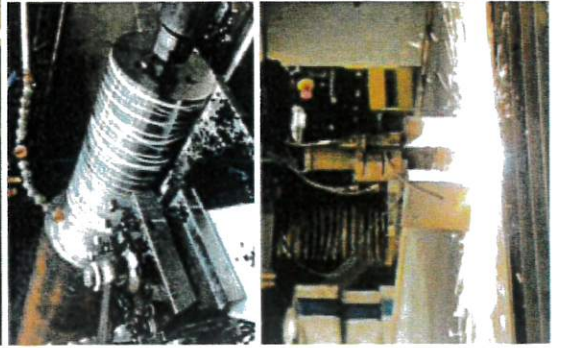
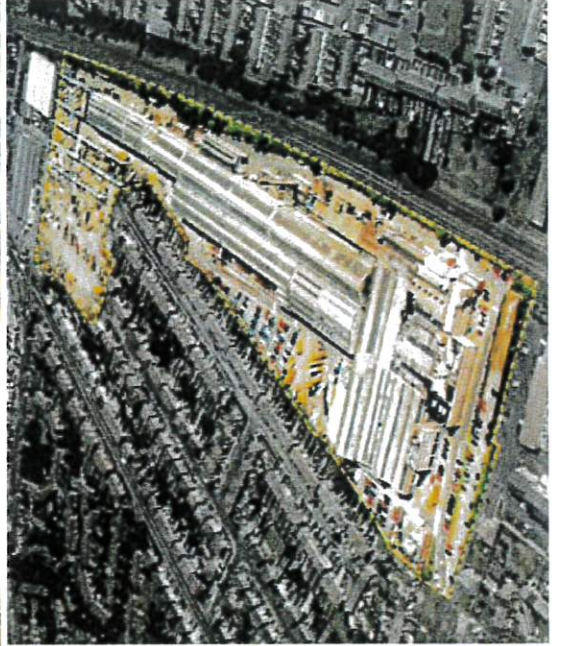
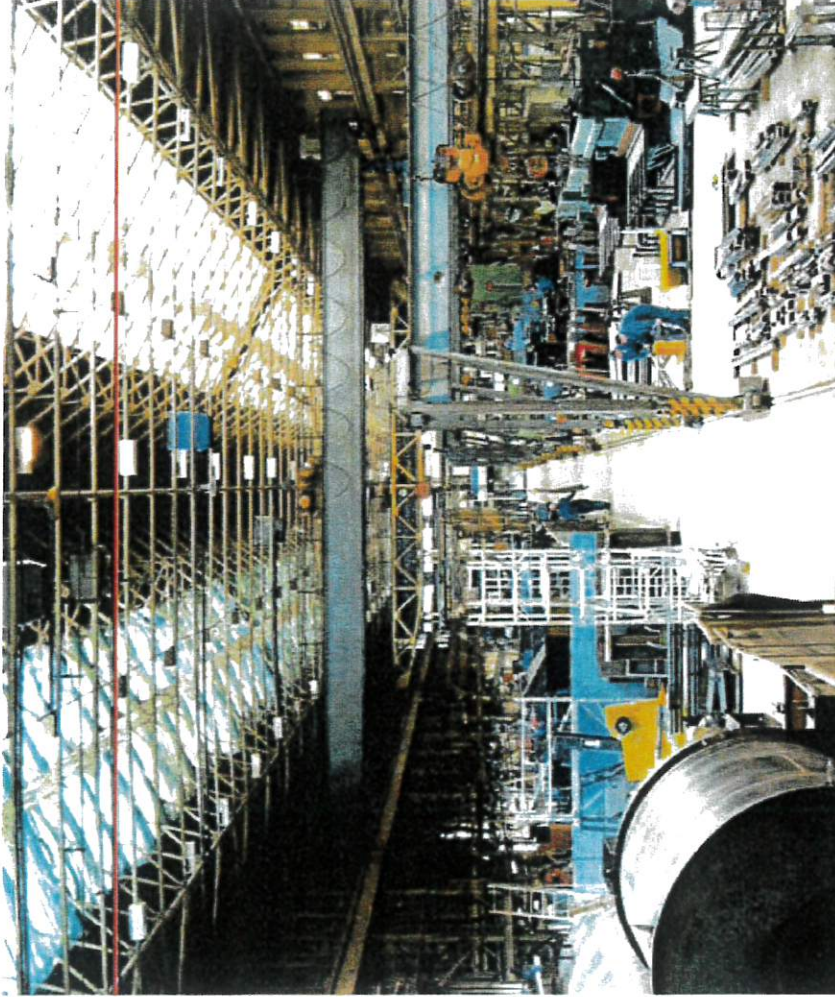


Manufacturing & Assembly

Parker Plant has been operating from the same 18 acre site in Leicester since 1925 and is able to draw upon its extensive facilities, plant & equipment and highly skilled workforce to enable the fabrication, machining, and assembly of its full product range.

In addition to this comprehensive machining and fabrication capability, Parker Plant designs and builds all of its own electrical systems. The factory also incorporates heated and filtered paint spray booths and extensive fitting bays where manufactured equipment

undergoes full inspection, final testing and packing prior to delivery to the client. Internal management procedures ensure quality control is monitored and maintained throughout all aspects of the manufacturing process, resulting in a reliable and quality product.





RoadStar Mini / SpotMix

Mobile Batch Patching Plant

The RoadStar Mini and Spotmix are mobile batch plants which are ideal for road maintenance, patching jobs and small paving contracts. Both units come complete with integrated bitumen decanting systems and have been designed for rapid setup.

Small, compact and easy to set up the RoadStar Mini and Spotmix provide a unique solution to patching jobs and small paving projects. On setup the support legs are lowered to provide stability and the towing arm dropped and removed. The RoadStar Mini is hydraulically driven via a diesel engine and the Spotmix is electronically driven by a generator mounted on the unit.

Aggregate is loaded into the feed hopper via hand shovel to the required specification and level. The RoadStar Mini feed hopper is hydraulically pivoted to transfer the aggregate into the dryer prior to mixing whereas the Spotmix is fed by conveyor. Bitumen is decanted from barrels and heated to the process temperature and pumped to a weigh vessel before discharge into the mixer.



Spotmix 600		
Capacity (tph)	Mixer (kg)	Dryer (m)
18	270	1,1 x 3,7



RoadStar Mini	
Output Capacities (tph)	
Cold Mix @ 65°C	7 - 9
Hot Mix @ 110°C	5 - 7
Hot Mix @ 150°C	4 - 5





Super-Roadmix Series

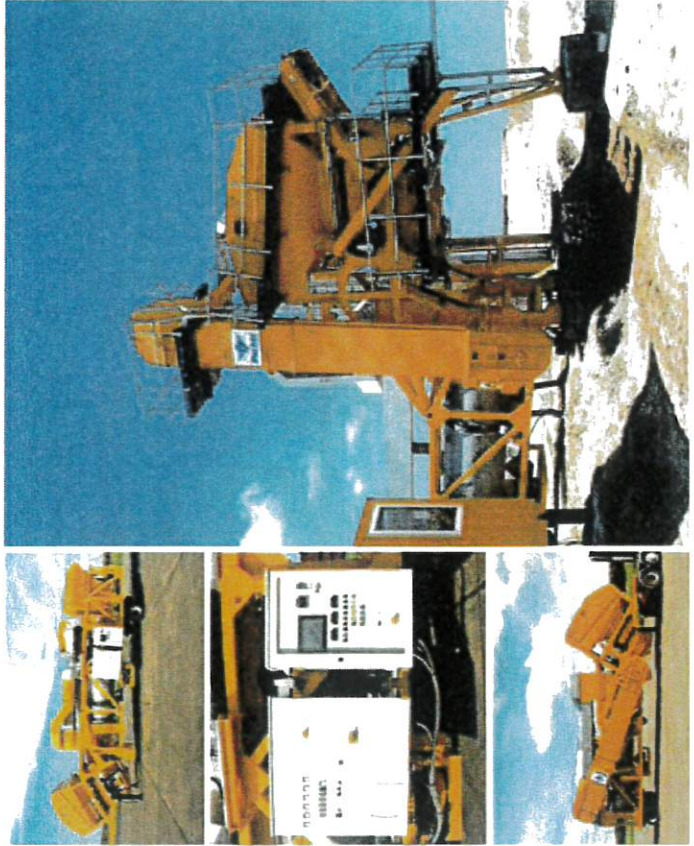
Mobile Batch Plant

The original and successful Parker Super-Roadmix series has now been updated having undergone a re-design with many new features. With a new model added to the range, the Super-Roadmix offers three sizes producing 30, 60 and 90 tonnes/h.

Compact and highly mobile, the Super-Roadmix can be supplied on a single chassis incorporating a twin compartment feed hopper, dryer, fully automatic burner, hot stone elevator, inclined vibrating screen, load-cell weighing system, twin-shaft paddle mixer, primary dust cyclones and PLC controls mounted on the chassis to provide a one-piece asphalt plant.

For greater flexibility of operation and environmental benefits, the Super-Roadmix series can be expanded to include separate mobile three or four bin cold feed units, bag filter and air-conditioned control house to accompany the mixing and screening section.

Super Roadmix Range			
Model	Capacity (tph)	Mixer (kg)	Dryer (m)
SRM30	30	400	1.2
SRM60	60	800	1.4
SRM90	90	1200	1.6





RoadStar 500 / 1000

Mobile Batch Plant

The mobile RoadStar 500 / 1000 is unique in its design with all equipment mounted on two chassis i.e. dryer/burner and four bin feed unit mounted on one chassis with screening and mixing tower, hot stone elevator, control house and bag filter mounted on the other chassis.

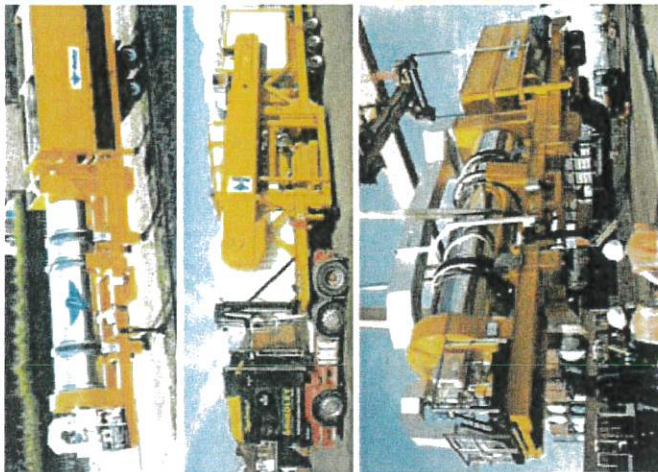
The RoadStar 500 / 1000 units come pre-wired to the control house and the plant is fully tested prior to leaving the factory, thus rendering a rapid installation time of 1-2 days with minimal site foundations and craneage required.

The RoadStar is perfect for asphalt projects that require high mobility, environmental compliance and quality assurance of the final mix.

The RoadStar 500 / 1000 is considered to be the most mobile batch production asphalt plant of its size on the market today and provides the contractor with an asphalt plant that requires minimal foundations, craneage and substantially reduced dismantling and reinstatement costs.



RoadStar 2-Unit Range			
Model	Capacity (tph)	Mixer (kg)	Dryer (m)
RS500	40	500	1.3
RS1000	80	1000	1.5





RoadStar 1500 / 2000 / 3000

Mobile Batch Plant

The Parker RoadStar series of mobile asphalt plants supersedes the extremely successful Parker BlackMobile series launched in 1969 and is considered worldwide to be the most mobile batch production asphalt plant on the market today.

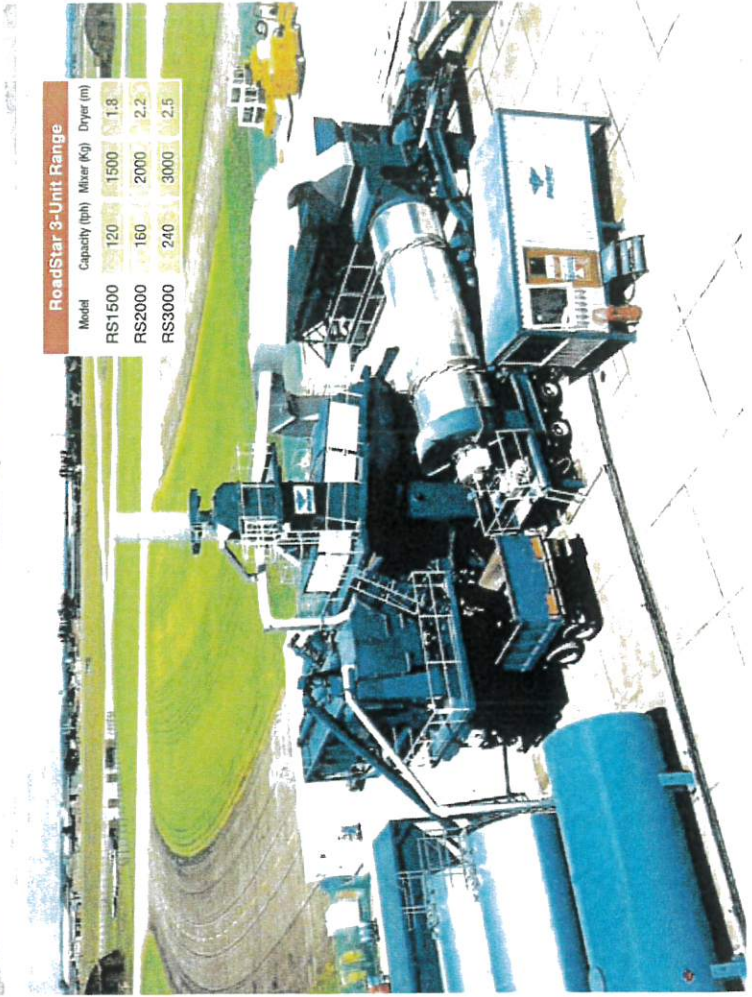
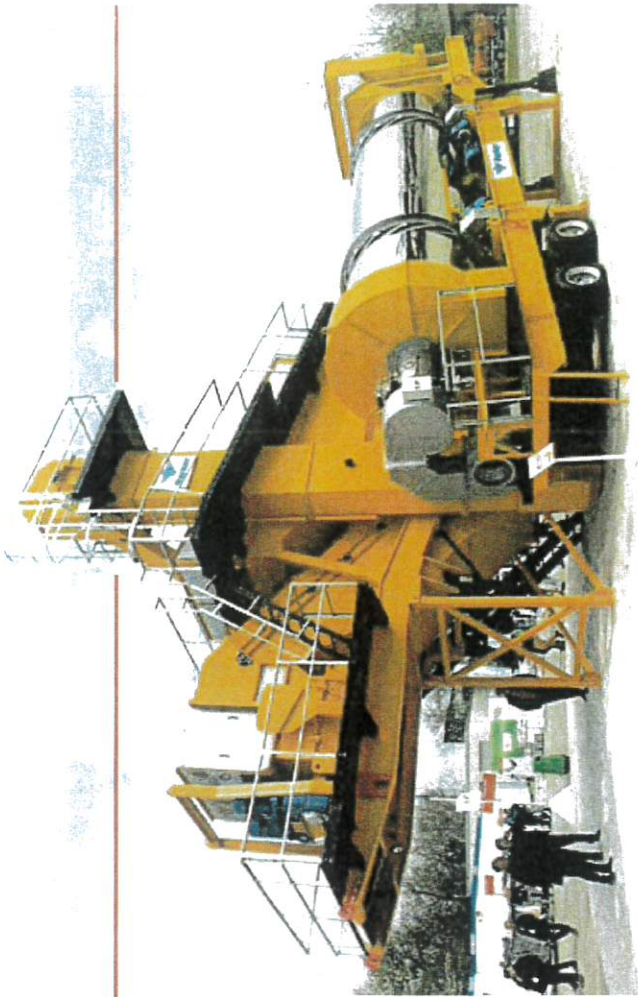
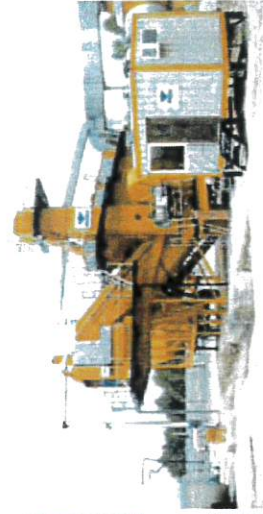
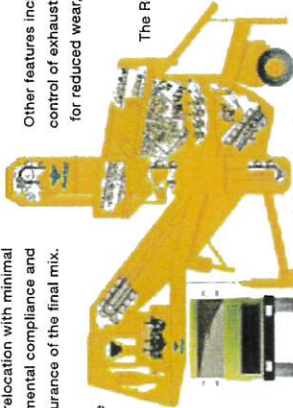
The BlackMobile / RoadStar series was designed to satisfy the needs of contractors demanding high mobility, rapid installation and subsequent relocation with minimal foundations and craneage, environmental compliance and quality assurance of the final mix.

Over many decades the BlackMobile gained the reputation as the only fully mobile asphalt plant available in the market. Its unique design with all units towable, resulted in over 1,000 BlackMobiles being sold and gained it the reputation of being a true contractor's plant.

All mobile units are pre-wired with plug and socket connections and are fully tested prior to despatch.

Other features include direct drives, inverter control of exhaust fan, nylon trunnion rollers for reduced wear, insulated dryer drum and multi-fuel burners.

The RoadStar series is favoured for both commercial and military airports due in part to its speed of installation, reliability and ease of operation.



RoadStar 3-Unit Range			
Model	Capacity (tph)	Mixer (Kg)	Dryer (m)
RS1500	120	1500	1.8
RS2000	160	2000	2.2
RS3000	240	3000	2.5



Containerised Series

Modular Batch Plant

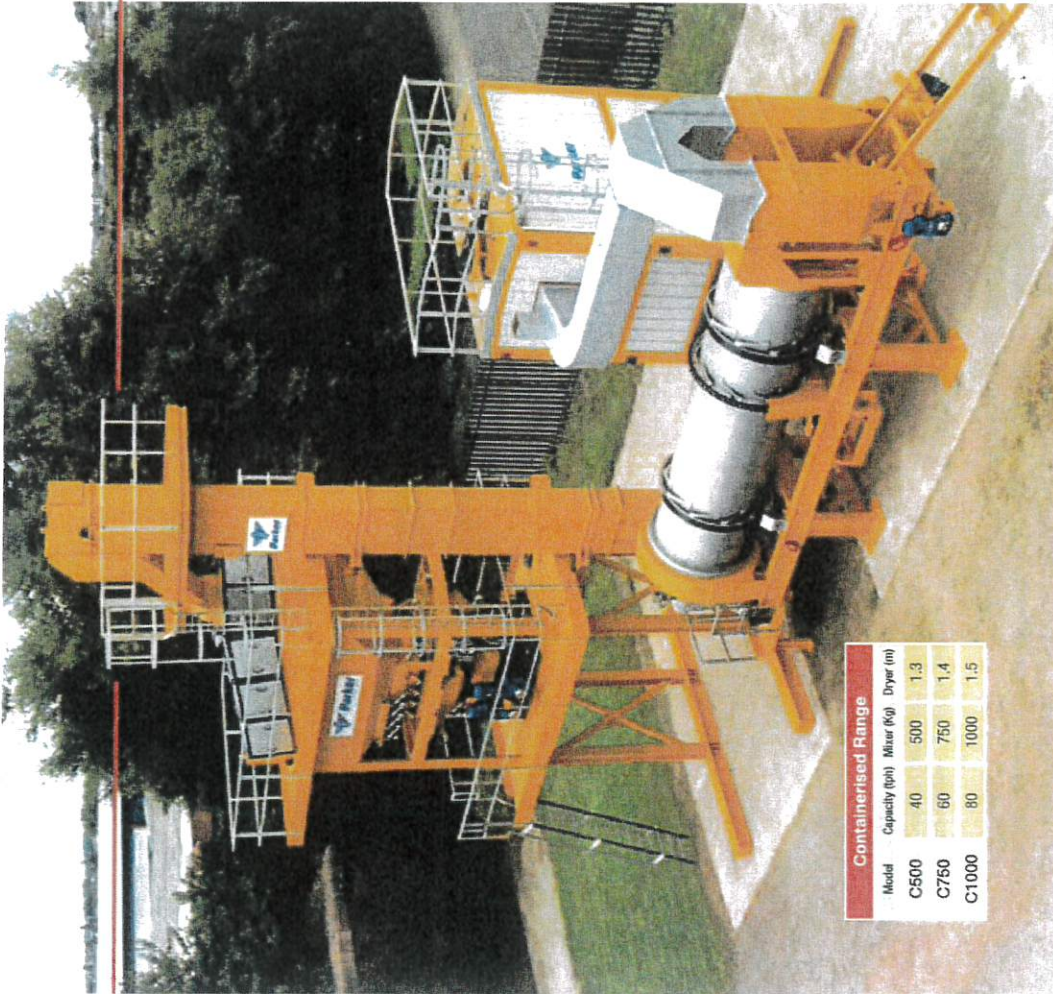
The containerised series has been designed to fit into standard shipping containers to provide low cost transportation by road, rail or sea to remote locations.

Designed to be modular and compact the series offers three sizes producing 40, 60 and 80 tonnes per hour.

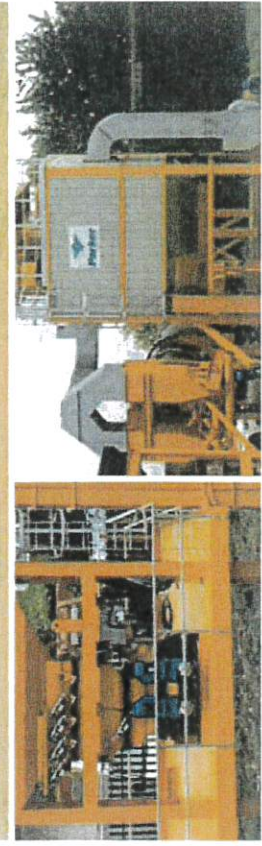
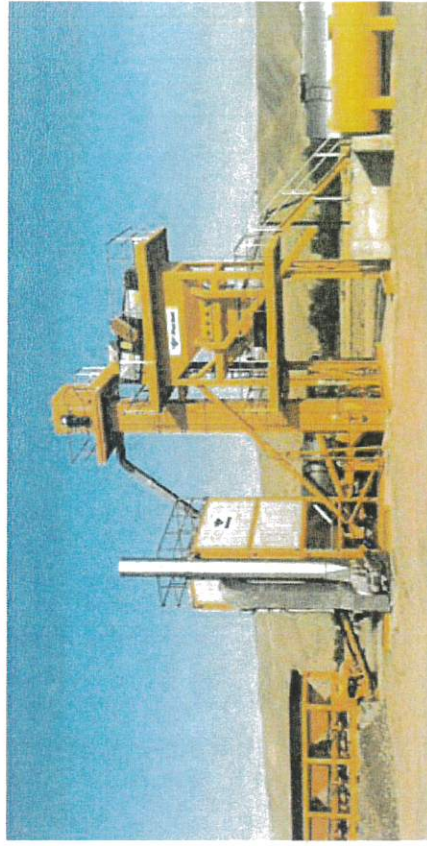
This compact modular batch plant incorporates many of the features found on larger capacity asphalt plants within the range.

Their modular format enables rapid installation on site and subsequent dismantling. The plant is designed to be free standing thus reducing the need for costly foundations and is ideal for remote low volume markets.

On completion of a contract the plant can be reloaded into its containers for security to await transport to the next location.



Containerised Range			
Model	Capacity (tph)	Mixer (kg)	Dryer (m)
C500	40	500	1.3
C750	60	750	1.4
C1000	80	1000	1.5





TransMix Series Modular Batch Plant

The TransMix series was originally designed for rail transportation to reduce freight costs when large overland distances are involved while still providing a high specification asphalt plant.

This modular asphalt plant has been primarily designed for export markets that require high output asphalt plants with ease of transportation. The low-level TransMix has been designed to be free standing to alleviate the need for costly foundations and rapid installation can

be achieved with its modular design. The high-level configuration incorporates mixed material storage modules below the mixer to provide storage prior to truck loading, thus providing greater flexibility.



Transmix Range			
Model	Capacity (tph)	Mixer (Kg)	Dryer (m)
TM1500	120	1750	1.8
TM2000	160	2000	2.2
TM2300	180	2250	2.2
TM3000	240	3300	2.5
TM3400	320	4400	2.8





StarBatch Series

Modular Batch Plant

The Modular concept of the StarBatch is designed to offer a plant that is easy to transport and install, comprising modular sections which are pre-wired and factory tested prior to dispatch.

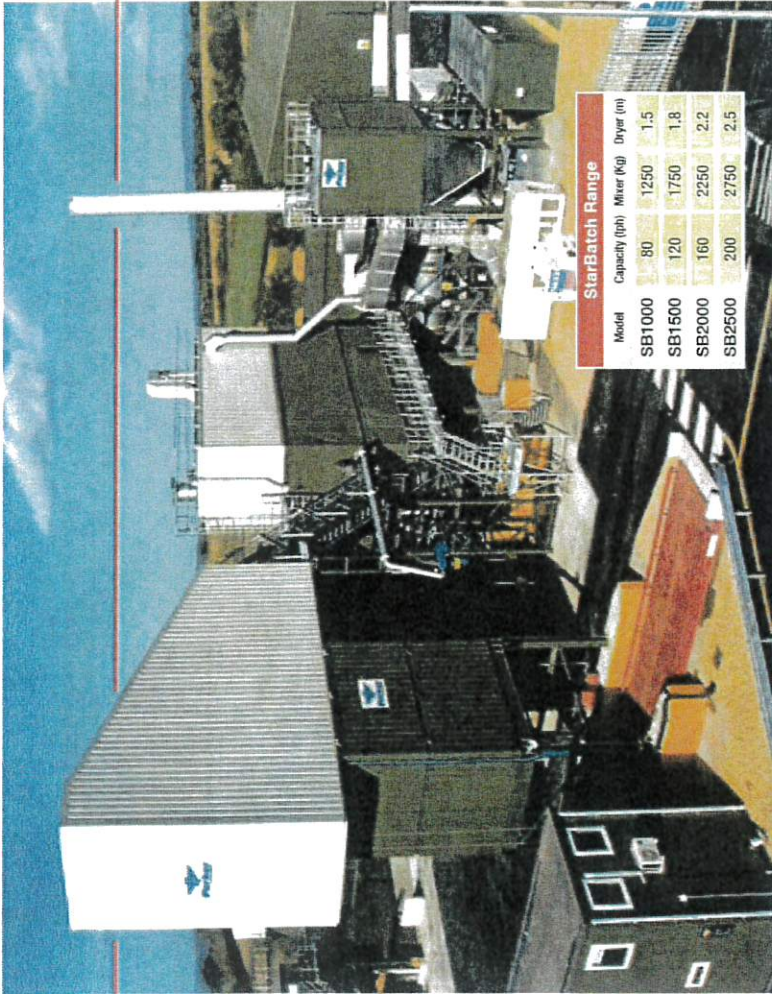
The StarBatch series is available with 4, 5 or 6 hot stone bins for increased material gradation options and in low level or high level arrangements.

The high-level StarBatch incorporates an integral mixed material storage system which can be fed directly from the mixer.

The low-level StarBatch can be configured to be free standing and can be supplied with independent inclined mixed material storage which once again is modularised for ease of installation.

Both low and high-level StarBatch plants can be fully sheathed to meet environmental, operational or planning considerations as required with internal walkways throughout the mixing and screening tower.

StarBatch Range			
Model	Capacity (tph)	Mixer (kg)	Dryer (m)
SB1000	80	1250	1.5
SB1500	120	1750	1.8
SB2000	160	2250	2.2
SB2500	200	2750	2.5





StarMix Series

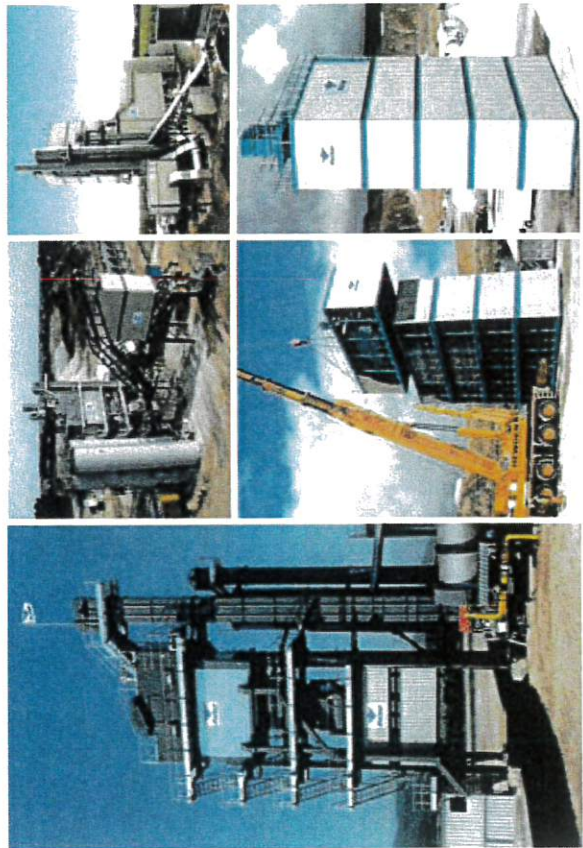
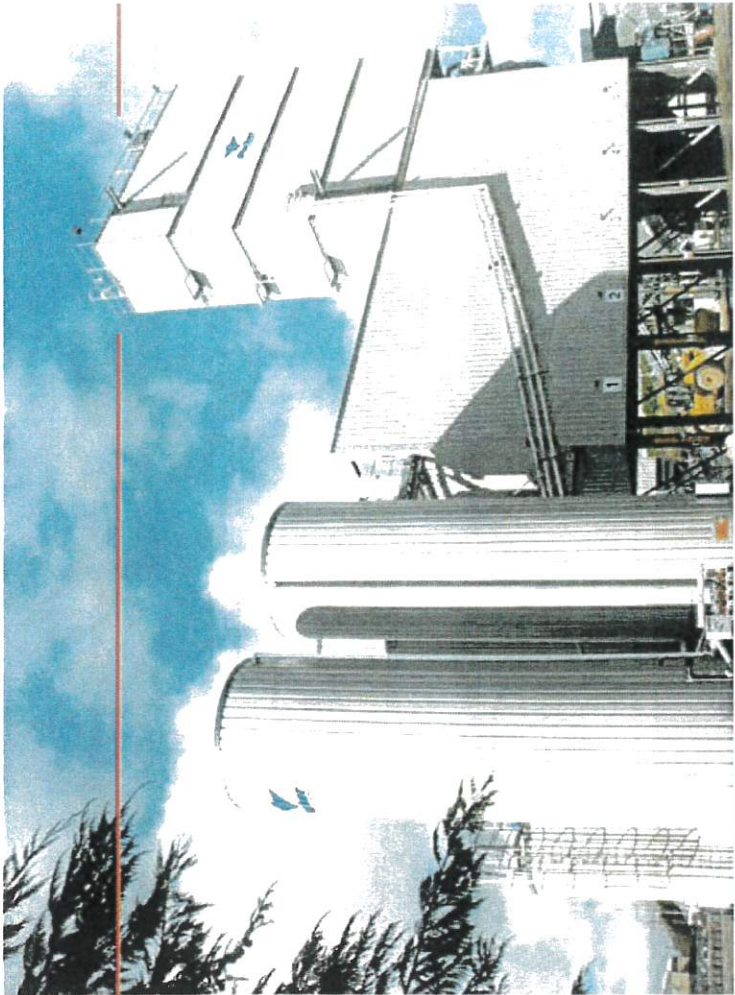
Stationary Batch Plant

Modular in concept, the StarMix meets all the criteria necessary for those considering a substantial investment in high volume asphalt production. The Parker StarMix range of stationary low-level and high-level batch production asphalt plants is available in open and fully sheeted enclosed models.

Designed in the 1960's the StarMix range has been upgraded and refined over many decades to meet today's environmental requirements, quality assurance of the final mix and to comply with current health and safety standards.

The StarMix is available in conventional low-level configuration with inclined skip or drag slat fed hot storage systems. The high-level option has

been designed with load cell mounted mixed material storage silos situated below the mixer and a horizontal travelling skip which conveys the mixed material to the selected storage silo. Both low and high-level StarMix plants can have the access walkways encapsulated in a pre-sheathed mixing tower to improve visual appearance, noise attenuation, heat retention and serviceability. When sheeted, the remaining high-level StarMix support structure and mixed material storage is also encapsulated.



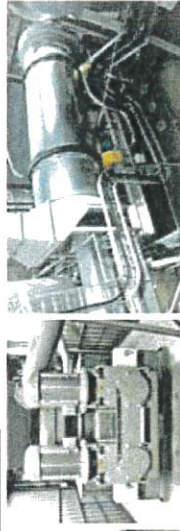
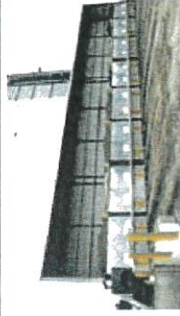
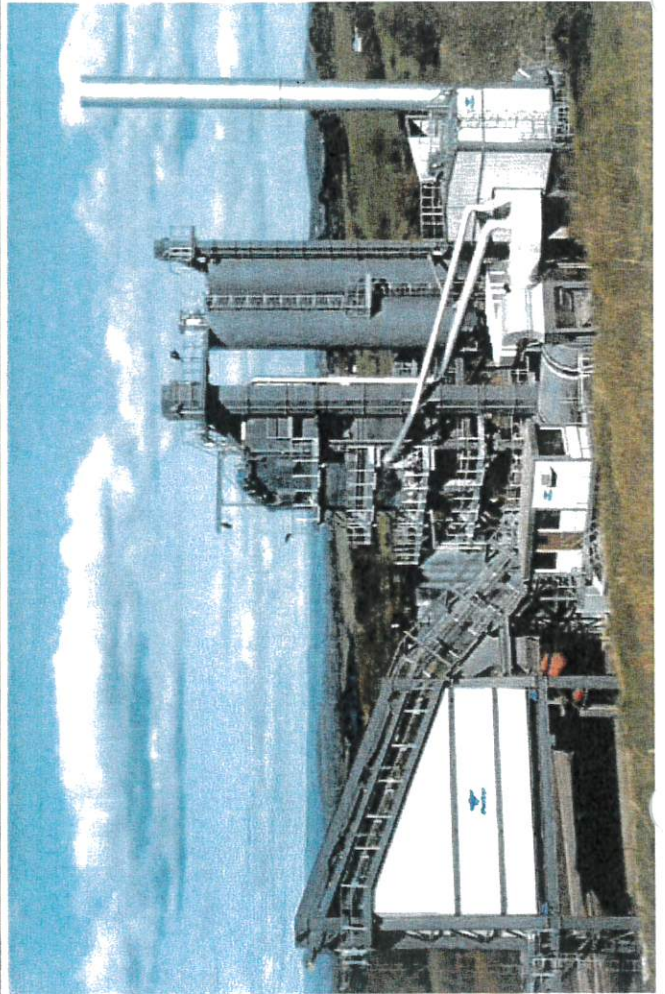


The StarMix range incorporates as standard 4, 5 or 6 hot stone storage compartments above the mixer which can be increased to 13 by installing a modular diverter section beneath the screen.

To further enhance all StarMix models, the hot stone bins and screen housing are insulated with high density mineral wool to aid heat retention.

The efficient performance of the StarMix range with its many leading edge features ensures high volume production, quality assurance of the final mix and compliance with environmental regulations. Fully sheeted, colour coordinated designs can be put forward with a view to minimising and overcoming planning issues.

This top of the range asphalt plant is a market leading design featuring the latest control systems with full online diagnostic capabilities. Low-level and high-level asphalt recycling feed systems (RAP) complement the StarMix range with capacities of up to 30% RAP content.





Mixed Material Storage

Parker's range of mobile and stationary inclined track skip storage systems offer capacities from 25 to 320 tonnes.

The Parker mobile mixed material storage system is specifically designed to provide rapid installation with minimal foundations. The single road towable unit incorporates the insulated storage hopper, skip track, distribution skip and drive winch on one chassis for ease of transportation, ideal for contractors requiring an easily re-locatable mixed material storage solution.

The stationary mixed material storage systems are designed in modular format to provide rapid installation on site with up to four storage hoppers. The storage hoppers are fully insulated with high density mineral wool and externally sheeted to further minimise heat loss. Load cell mounted options are available for truck loading via the plant control system.

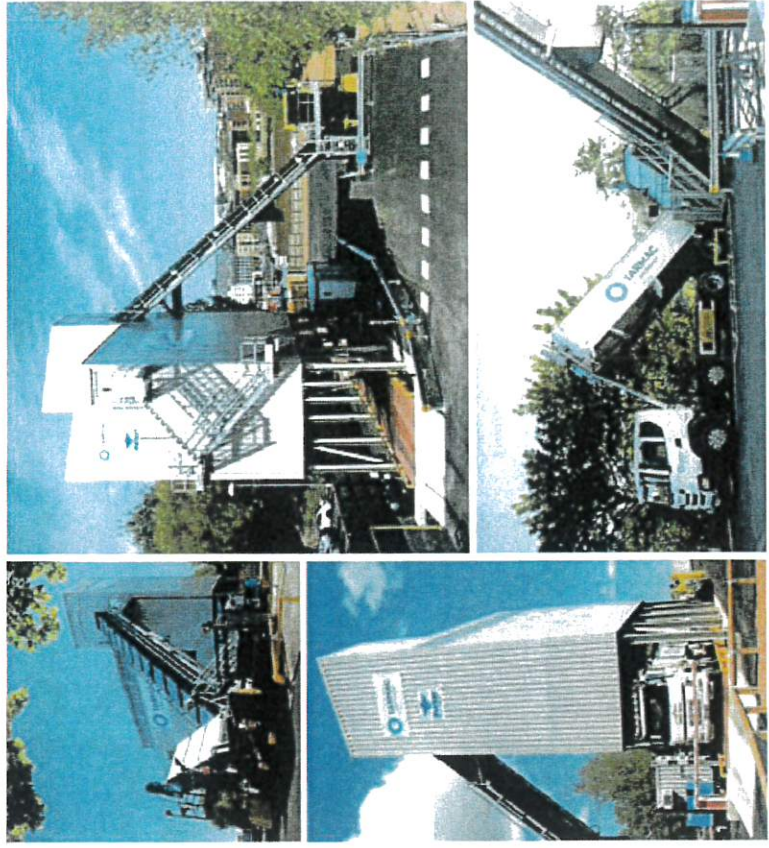


Satellite Mixed Material Storage

Road construction and repair projects are being increasingly hampered by inner city traffic congestion causing delays in transporting material to site. Parker's innovative solution provides rapid inner city access to on demand asphalt.

The system stores mixed material produced by asphalt plants typically located outside the city conurbation, which is delivered to the facility in the early morning or late at night to avoid daytime congestion. The facility stores the "pre-mixed" material at the correct temperature, providing local inner city councils and contractors instant on-demand access to ready-made asphalt.

The modular storage system features an independent truck fed ground hopper. The system has been designed with regard to thermal efficiency throughout and is available in capacities to meet the customer's requirements. The silos and associated equipment are integrated within a fully sheeted structure, further improving thermal and operational efficiency.





High Efficiency Bitumen Tanks

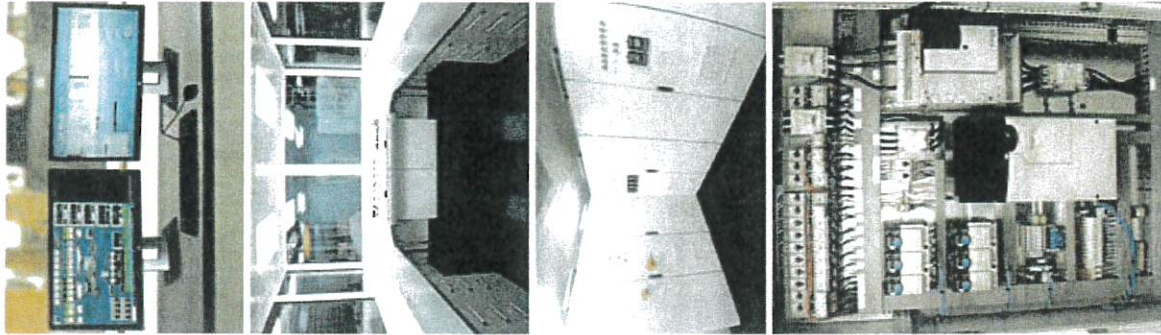
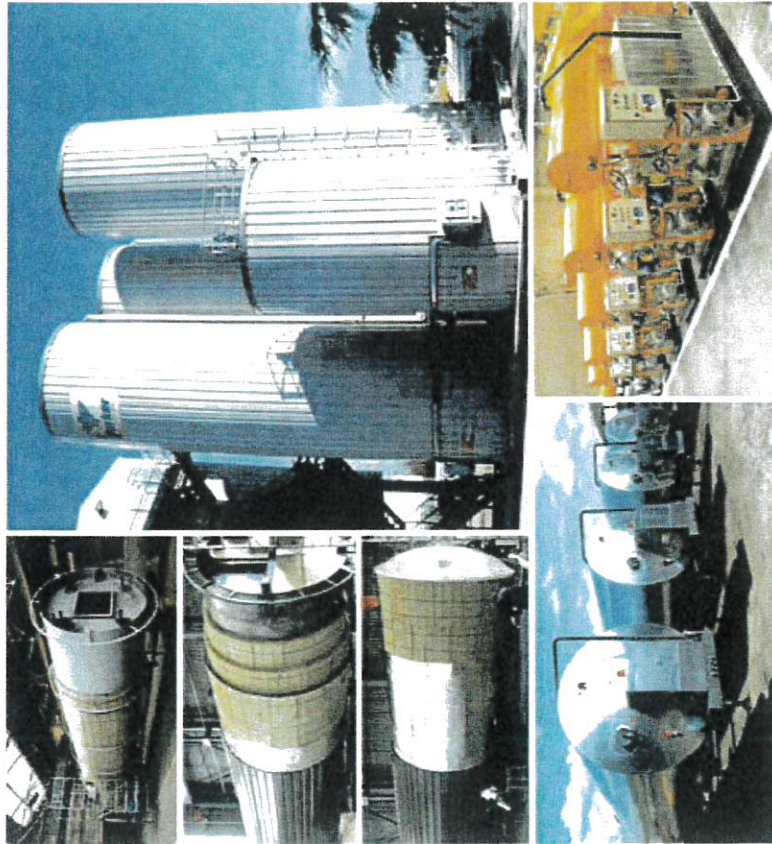
The Parker range of high efficiency bitumen storage tanks is designed to increase thermal efficiency and subsequently reduce operational costs.

All high efficiency vertical bitumen storage tanks feature an industry leading 300mm of high-density, mineral wool insulation applied in three 100mm layers with staggered joints encased in a thermal foil wrap prior to cladding.

The bitumen storage tanks have been designed to meet Refined Bitumen Association guidelines whereby the tank is rated by reference to its safe working capacity rather than by reference to its nominal capacity.

The bitumen tanks can either be covered in a galvanised or plastic coated sheeting to further enhance the thermal qualities.

The tanks are available with electric or thermal oil heating, traffic light indicator, with audible alarm for safe filling operation and optional agitators for PMB storage.



Control Systems

Parker control systems have been developed in both touchscreen and PC models.

The standard control system comprises a robust touchscreen terminal with an easy to use large daylight readable display. The operator can select from multiple languages, unlimited mix recipes and view an animated plant mimic for live information status.

For asphalt plant installations that require greater reporting and online diagnostics a full PC based system is available featuring:

- Enhanced data logging of production and materials
- Alan Bradley hardware
- Industrial grade fanless PC
- Twin high definition wide screen displays that allow multiple functions to be viewed concurrently
- Software specifically designed in house with multiple options
- Online monitoring and full diagnostic support

A full range of mobile, split level and stationary control houses and motor control centres are available.





E3 RAP-Star Series

Counterflow Drum-mixers

The CMI E3 RAP-STAR range of portable and stationary counterflow drum-mixers, with capacities from 200 to 600 tons per hour, combines high productivity and high RAP capabilities due to its unique early entry RAP design.

The E3 RAP-STAR design features three heat transfer zones: convective, radiant and conductive.

The convective zone is fitted with CMI's saw tooth flights and lifters which are made from high strength abrasion resistant steel and produce an aggregate veil tuned for optimum drying and heating of the virgin aggregate.

The radiant zone is located around the burner combustion area where stainless steel aperture plates and lifters transfer heat to the outer RAP shell at approximately 700°F.

The conductive zone which incorporates the early entry RAP outer shell and final mixing section provides the third form of heat transfer.

As the heated virgin aggregate leaves the convective zone, portals in the inner shell allow a proportion of the virgin aggregate to enter the outer shell where the blending and heating of the RAP begins. The remainder of the virgin aggregate continues its passage through the inner shell via special stainless steel lifters in the combustion area which allows the aggregate to be super-heated prior to entry into the final mixing section and protects the burner flame from the aggregate in transit.



ASPHALT CEMENT & FINE DUST

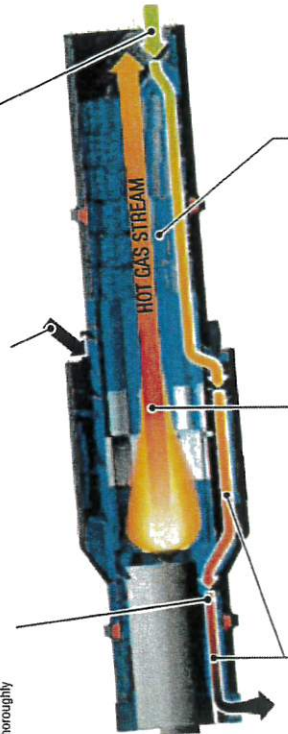
Asphalt cement (bitumen) and fine dust are introduced and all constituents are mixed thoroughly

RAP ENTRY

RAP and hot coarse dust are introduced into the outer shell

VIRGIN AGGREGATE ENTRY

Cold, wet virgin aggregate enters the drying zone



MIXING & BLENDING

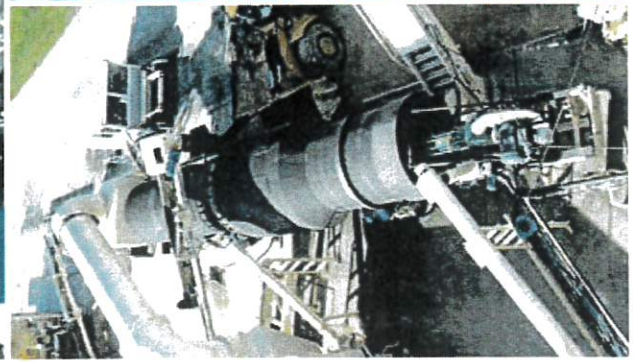
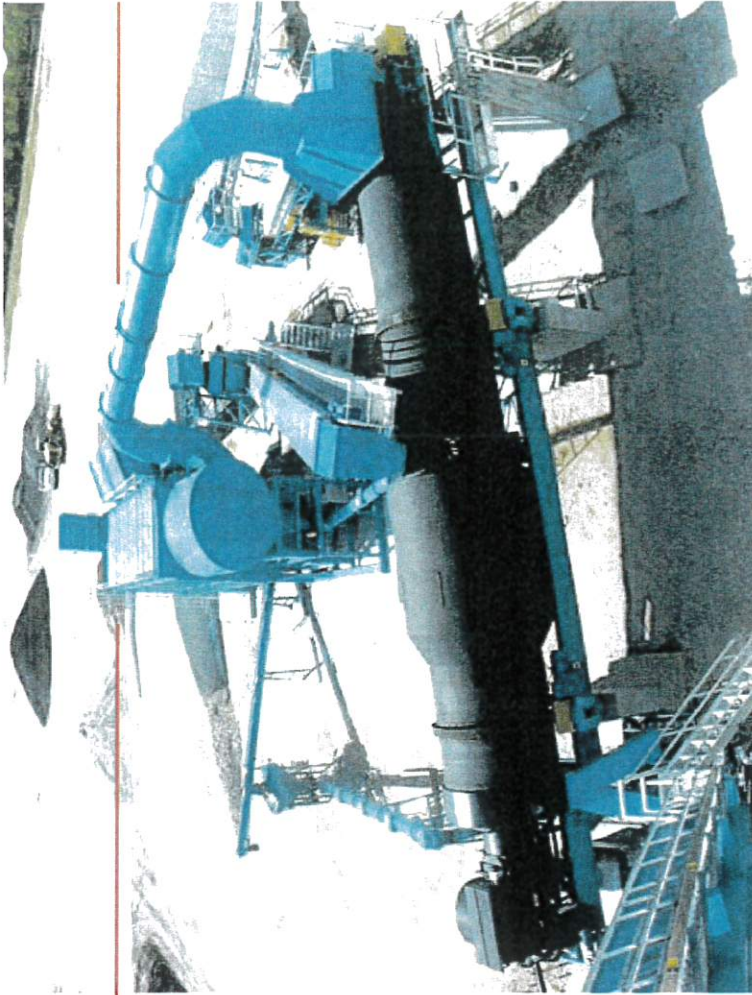
E3 RAP-Stars have the industry's longest material blending zone, where RAP and virgin aggregates mix together

EMISSION CONTROL

Unburned hydrocarbons from the mixing zone are drawn into the exhaust gas stream and incinerated

HEAT TRANSFER

The E3 RAP-Star design features three heat transfer methods: convective, radiant and conductive

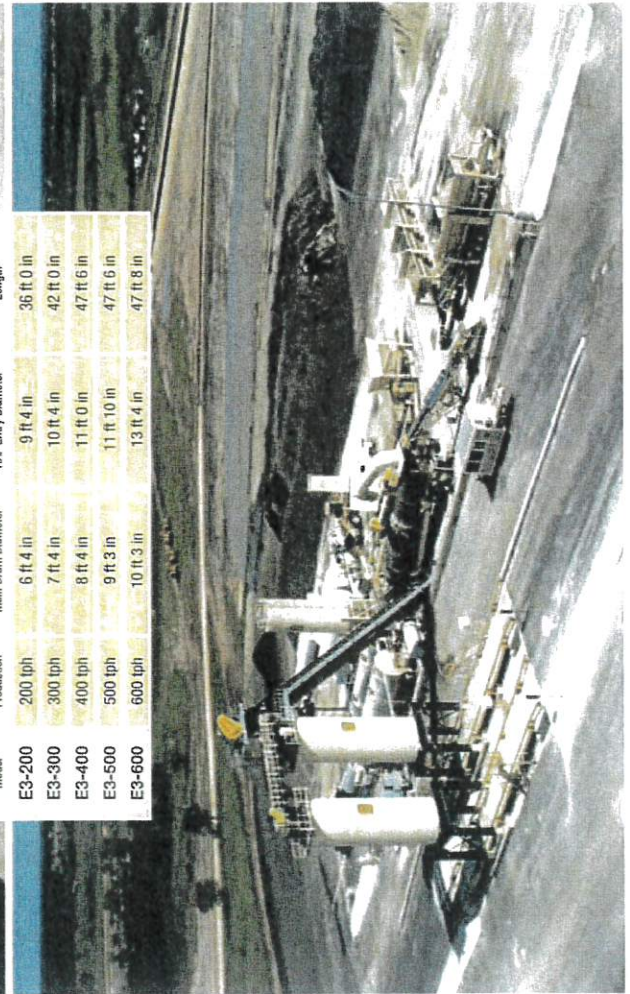
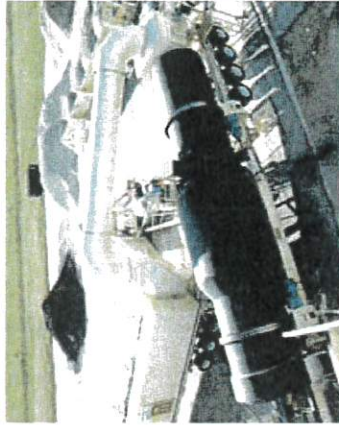




The E3 RAP-Star's combination of early heating and blending of RAP with pre-heated virgin aggregate in the outer shell and introduction of super-heated aggregate

into the final mixing section provides the ultimate in counter-flow drying technology resulting in unrivalled fuel efficiency and positioning the E3 as the industry leader in low emissions.

This CMI early entry RAP design and unique material flow through the industry's longest mixing and blending zone enables the drum to produce premium mix quality with high RAP percentages and substantial fuel savings.



E3 Series Specification				
Model	Production	Main Drum Diameter	RAP Entry Diameter	Length
E3-200	200 tph	6 ft 4 in	9 ft 4 in	36 ft 0 in
E3-300	300 tph	7 ft 4 in	10 ft 4 in	42 ft 0 in
E3-400	400 tph	8 ft 4 in	11 ft 0 in	47 ft 6 in
E3-500	500 tph	9 ft 3 in	11 ft 10 in	47 ft 6 in
E3-600	600 tph	10 ft 3 in	13 ft 4 in	47 ft 8 in



Magnum Series Counterflow Drum-mixers

The Cedarapids / Standard Havens Magnum series of portable and stationary counterflow drum-mixers was the original counterflow drum-mixer and has been proven over many decades.

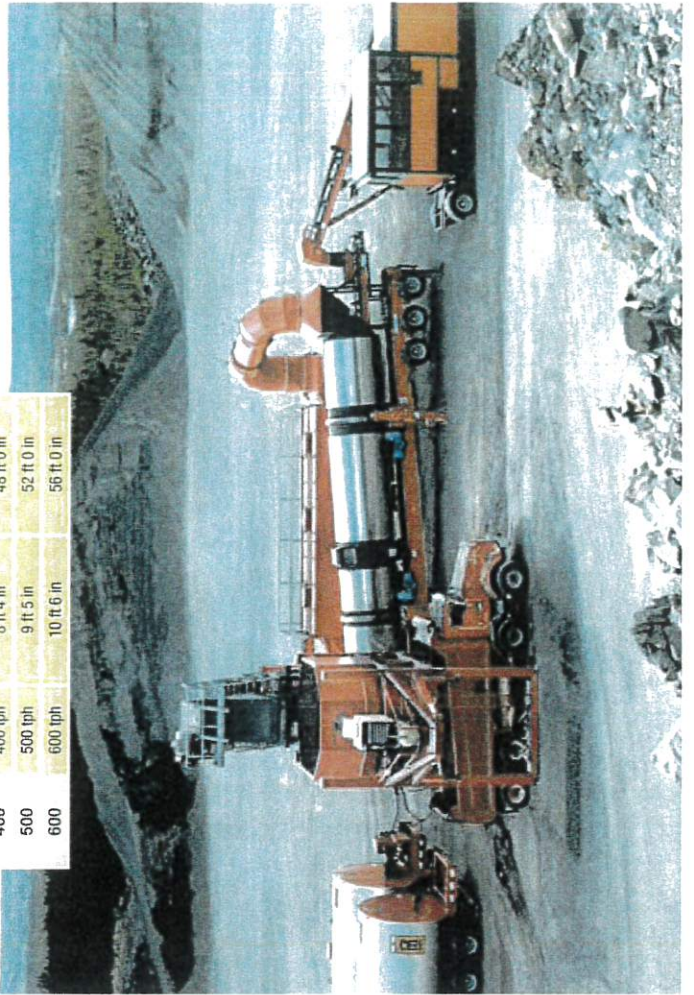
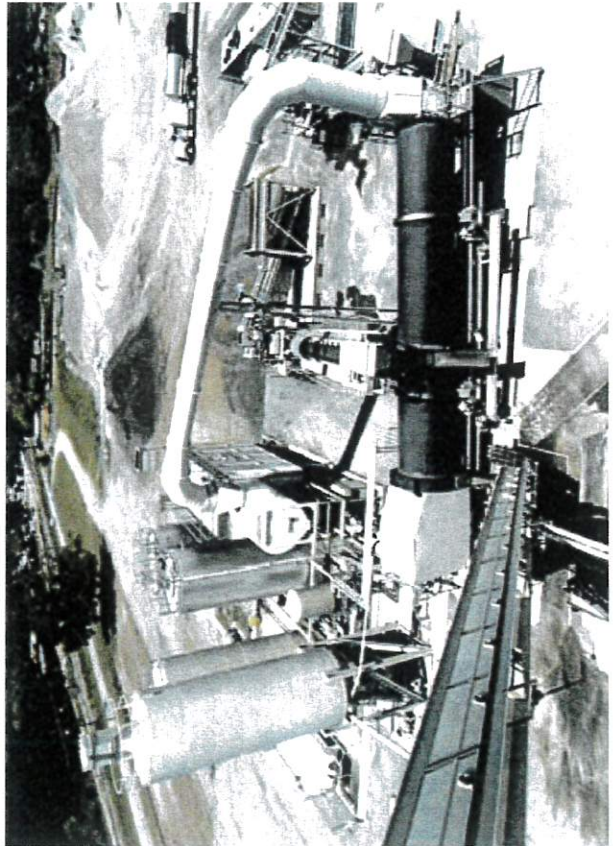
The CMI Magnum range is available in capacities from 150 to 600 tons per hour and a recent extensive design review of this legacy product has resulted in many upgrades including new high efficiency drying and mixing flights in the Magnum drum.

The new CMI Magnum "Bullet" Super-Portable series has been designed with an emphasis on substantially reduced installation time to provide a market leading set up time within 2 days when combined with a portable self-erecting hot mix storage system.

The Magnum Bullet 150, 225 and 275 have been redesigned to accommodate the drum travelling on the chassis in its working position and incorporate manual jacks with large base plates to distribute the load with minimal foundation requirements.

As a result of their greater size and output the all new Magnum Bullet 300, 400, 500 & 600 units have hydraulic erect systems which provide unrivalled set up times. In addition, relocation of the axles on the drum chassis aids the positioning of the drum at its working height.

Magnum Series Specification			
Model	Production	Main Drum Diameter	Drum Length
150	150 tph	5 ft 4 in	33 ft 0 in
250	250 tph	7 ft 0 in	39 ft 4 in
300	300 tph	7 ft 4 in	44 ft 0 in
400	400 tph	8 ft 4 in	48 ft 0 in
500	500 tph	9 ft 5 in	52 ft 0 in
600	600 tph	10 ft 6 in	56 ft 0 in





DrumStar Series Mobile Parallel Flow Drum-Mix

The Parker DrumStar series of parallel flow continuous mix asphalt plants offers economical and highly mobile alternatives to batch and counterflow asphalt mixing plants.

The DrumStar is available in capacities of 75, 100, 150 and 200 tph in both wet and dry configurations, with filter options covering chassis mounted wet scrubber and secondary dust collection.

The DrumStar series is highly mobile and freestanding with rapid installation and substantially reduced relocation costs. All units are pre-wired and fully tested prior to leaving the factory.

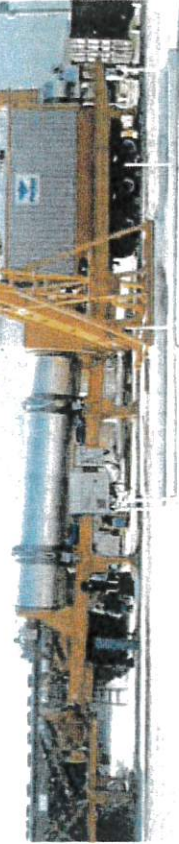
A drag slat with discharge hopper and fold down head section is mounted on the drum-mix chassis for transportation and ease of installation.

In addition, the DrumStar 75 and 100 models are designed such that, if required, they can be shipped worldwide in containers to reduce shipping costs.



DrumStar Range

Model	Capacity (tph)	Dryer (m)
DS75	75	1.4
DS100	100	1.6
DS150	150	1.8
DS200	200	2.0



Parts & Service

Never compromise the reliability and performance of your Parker equipment by fitting non-original spare parts or components.

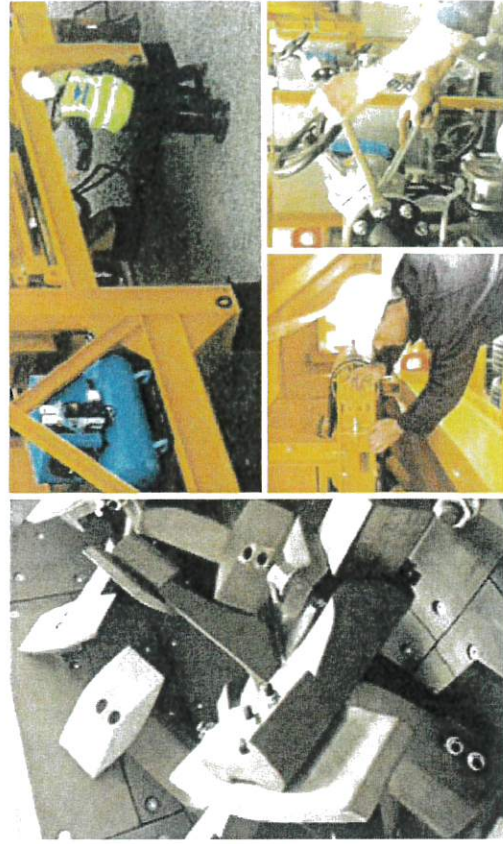


Our dedicated parts department maintains strict and full control over quality and component integrity to ensure each and every part meets Parker's exacting engineering standards.

Email, fax or simply call our Parts Department for experienced and professional advice on maximising your productivity and protecting your significant investment in Parker equipment.

Parker's engineering service team provides further after sales support to the customer covering mechanical and electrical operation.

Contact our Parts Department on:
Tel: +44 (0) 116 266 5999
Fax: +44 (0) 116 261 0812
email: parts@parkerplant.com





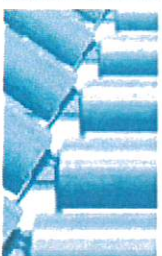
Crushing & Screening



Concrete Plants



Bitumen & Surfacing



Bulk Handling



www.parkerplant.com

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**5. BUSINESS REGISTRATION/CERTIFICATE OF
INCORPORATION**



CERTIFICATE OF REGISTRATION

Organisation

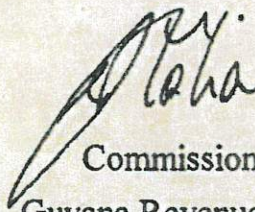
TIN: 050-042-184

Name: NAMALCO CONSTRUCTION
SERVICES LIMITED

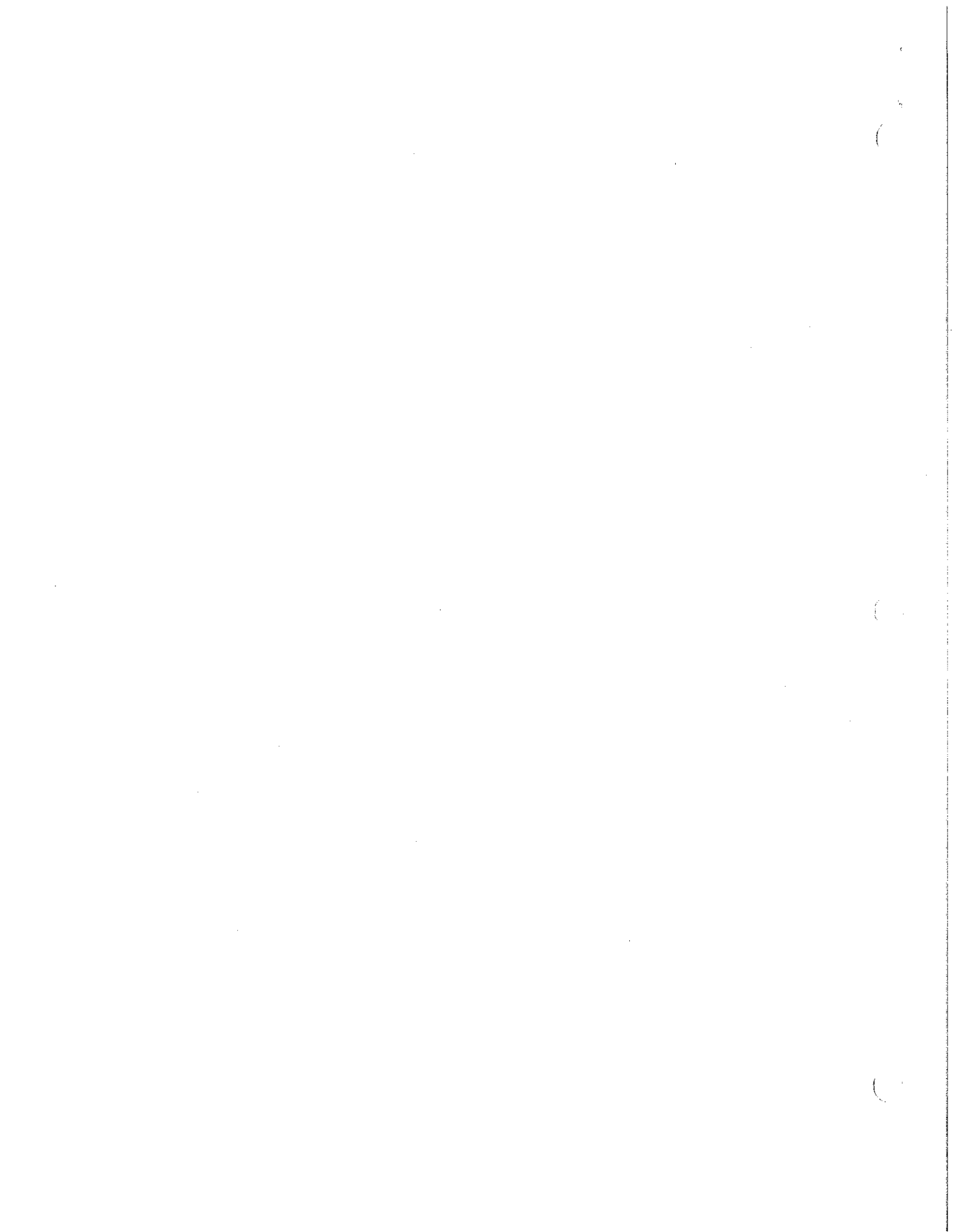
Address: LOT E65 HADFIELD STREET
STABROEK, GEORGETOWN

Date Issued
2024-09-10




Commissioner General
Guyana Revenue Authority

This taxpayer has been registered under the provisions of the Income Tax
(Amendment) (No. 2) Act #15 of 2006





Company No.: 954F

COMPANIES ACT OF GUYANA
EXTERNAL COMPANY
CERTIFICATE OF REGISTRATION
NAMALCO CONSTRUCTION SERVICES LIMITED

I hereby certify that the above-mentioned Company was registered as an external company under the Companies Act of Guyana on the 6th day of September 2024.

A handwritten signature in blue ink, consisting of a large, stylized 'S' and 'R' intertwined, written over a horizontal line.

Registrar of Companies

Dated this 9th day of September, 2024

R.N. 793217AB
Fee \$ 300,000
Copy \$ 700
\$ 300,700
6/9/2024

THE COMPANIES ACT, 1991
(Section 316)

Application by
NAMALCO CONSTRUCTION SERVICES LIMITED
For registration as an external company

1. Name of Company Company No:
NAMALCO CONSTRUCTION SERVICES LIMITED **954F**

2. Address of Registered or Head Office
Lot #39 Labidco Industrial Estate, Vessigny Village La Brea, La Brea, Trinidad and Tobago.

3. Address of Principal Office in Guyana:
C/o Vaughn Business Solutions, Lot E65 Hadfield Street, Stabroek, Georgetown



4. Corporate Structure:
a. Jurisdiction in which Incorporated: Trinidad and Tobago
b. Date and manner of Incorporation: March 3, 1998 as a Private Limited Company
c. Period fixed for duration of company: None
d. Extent, if any, to which liability of Shareholders is limited: Not applicable

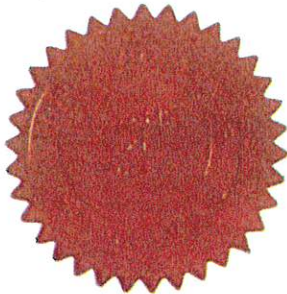
5. Share Capital
a. Amount of authorized, subscribed and paid up or stated Share Capital: 100,000
b. The shares that the company is authorized to issue and their nominal Or par value, if any: 100,000 at TTS1

6. Business of the company
a. The main actual business or businesses of the company:
Developing and executing construction services and engaging in Civil Works, Joint Ventures, and Equipment Rental
b. Date on which the company intends to commence operations in Guyana:
As soon as Registered

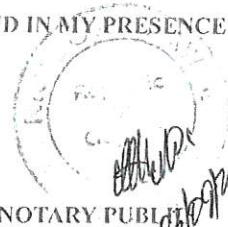


7 Details of Directors: See attached list

8. Date:	Signature:	Title:
August 25, 2024		Director
August 25, 2024	 27/8/24	Director
August 25, 2024	Ryad A.	Director
August 25, 2024	Alibelli	Director



AND IN MY PRESENCE



NOTARY PUBLIC



REPUBLIC OF GUYANA
COUNTY OF DEMERARA

THE COMPANIES ACT, 1991

(Section 316)

Declaration of Compliance by

NAMALCO CONSTRUCTION SERVICES LIMITED

I, **George Thomas**, of Lot 215 South Road, Lacytown, Georgetown, Demerara, Guyana, do solemnly and sincerely declare that I am an Attorney-at-Law of the High Court of the Supreme Court of Judicature engaged in the application by the abovenamed company for registration as an external company, that to the best of my knowledge, information and belief all the requirements of Section 315 of the Companies Act, 1991 in respect of the matters precedent to the said registration of the said company and incidental thereto have been complied with.

AND I make this declaration conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declaration Act, Chapter 5:09




Declared to at Georgetown, Demerara

This 26th day of August, 2024



BEFORE ME

WILLIAM G. PYLE
JUSTICE OF THE PEACE
COMMISSIONER OF OATHS
TO AFFIDAVITS
Sig: 
Date: 26/8/2024

COMMISSIONER OF OATHS

Presented for filing by:

George Thomas
Attorney-at-Law
215 South Road, Lacytown
Georgetown



Certified a True Copy

Certifying Clerk

THE COMPANIES ACT, 1991

(Section 316)

Declaration of Verification
of
NAMALCO CONSTRUCTION SERVICES LIMITED

WE, **NAEEM ALI** of 482 Gulf View, Circular Drive, La Romaine, San Fernando, Trinidad & Tobago, **HOMALA HUMRATIE ALI** of 482 Gulf View, Circular Drive, La Romaine, San Fernando, Trinidad & Tobago, **RYAD NABEEL HASAN ALI** of 482 Gulf View, Circular Drive, La Romaine, San Fernando, Trinidad & Tobago, and **ALISHA RIQUAYAH SHAFEEQAH ALI** of 482 Gulf View, Circular Drive, La Romaine, San Fernando, Trinidad & Tobago, do solemnly and sincerely declare that we are the Directors of the above named company, that the said company is a validly existing company and that to the best of our knowledge, information and belief, the particulars set out in the statement under Section 316 (1) of the above Act in which application is made to register the said company as an external company, are true and correct.

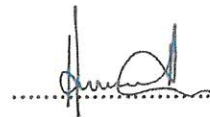
AND that we make this declaration conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declarations Act, Chapter 5:09.

DECLARED to at San Fernando, Trinidad & Tobago

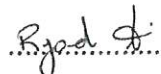
This 22nd day of August, 2024



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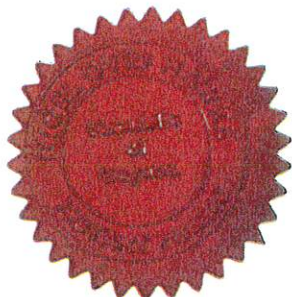
NAEEM ALI

 27/8/24
.....

HOMALA HUMRATIE ALI

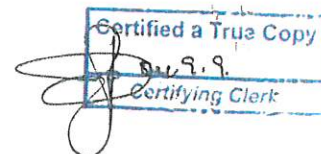

.....
RYAD NABEEL HASAN ALI


.....
ALISHA RIQUAYAH SHAFEEQAH ALI



AND IN MY PRESENCE


NOTARY PUBLIC


Certified a True Copy
03/08/2024
Certifying Clerk

THE COMPANIES ACT, 1991

(Section 316)

CONSENT TO ACT AS ATTORNEY

OF

NAMALCO CONSTRUCTION SERVICES LIMITED

I, **George Thomas**, of Lot 215 South Road, Lacytown, Georgetown, Guyana, hereby consent to act as attorney for the abovenamed company pursuant to Power of Attorney dated August 26, 2024, filed herewith.

This 26th day of August, 2024



GEORGE THOMAS

Witness:

Signature: M. Pumbao
Address: 213 South Road, Georgetown
Occupation: Legal Clerk

Presented for Filing by:

George Thomas
Attorney-at-Law
215 South Road,
Lacytown,
Georgetown

