Annexure 2

TANZANIA INVESTMENT CENTRE.

DAR ES SALAAM.

PROGRESS REPORT.

(Information required for the project's progress report after every six months or for amendment of Certificate of Incentives).

1. Planned activities for the period.

   A). Sustainability and Environmental Compliance

- **Developing and producing low-carbon concrete:** This includes using alternative binders like fly ash and slag to replace a portion of traditional Portland cement.
- **Incorporating recycled materials:** Utilizing crushed concrete, glass, and other waste materials as aggregates to conserve natural resources and reduce waste.
- **Investing in carbon capture and utilization (CCU) technologies:** Implementing systems to capture

  CO2CO sub 2

  CO2

  emissions during the production process.
- **Adhering to stricter environmental regulations:** Ensuring compliance with government-mandated emission reduction initiatives and obtaining green building certifications (e.g., LEED, BREEAM).
- **Implementing waste and water management systems:** Utilizing wastewater treatment and dust suppression systems in batching plants to minimize environmental impact.

  B). Digital Transformation and Technology Integration
- **Adopting integrated digital technologies:** Using advanced software for managing operations from quotation to delivery, including Building Information Modeling (BIM) for precise planning.

- **Implementing AI and machine learning:** Utilizing AI for optimizing mix designs, demand forecasting, and predictive maintenance of equipment.
- **Integrating IoT and sensors:** Employing real-time monitoring of equipment, vehicle locations (GPS), and concrete properties (temperature, slump) during transit to ensure quality and optimize logistics.
- **Leveraging automated batching systems:** Using computerized control systems to ensure precision, consistency, and reduced human error in mix proportions.
- **Utilizing mobile applications and customer portals:** Providing real-time tracking, updates, and digital tickets to enhance communication and customer service.

C). Operational Efficiency and Quality Control

- **Optimizing supply chain and logistics:** Using predictive analytics and dynamic route optimization to ensure timely delivery, reduce fuel consumption, and minimize idle time.
- **Prioritizing proactive equipment maintenance:** Shifting towards condition-based and predictive maintenance strategies to reduce downtime and improve reliability of plants and mixer trucks.
- **Enhancing quality assurance:** Implementing advanced testing methodologies, such as non-destructive testing, and automated quality control systems to ensure consistent, high-quality products.
- **Focusing on workforce development and training:** Training employees to use contemporary technology and adapt to new construction practices to ensure a skilled workforce.

D). Product Innovation and Market Expansion

- **Developing high-performance concrete (HPC):** Producing advanced formulations, such as self-consolidating, fiber-reinforced, and ultra-high-strength concrete for specialized applications (e.g., high-rise buildings, marine structures, infrastructure projects).
- **Exploring new applications:** Investing in the use of RMC for 3D printing in construction, allowing for customized designs and reduced labor.
- **Expanding into emerging markets:** Capitalizing on the rapid urbanization and large-scale infrastructure investments in regions like Asia-Pacific and the Middle East.

2. Achievements made on the project implementation to date.

- **Enhanced Project Efficiency and Speed:** RMC, being pre-mixed and delivered ready-to-use, has dramatically reduced project timelines by eliminating on-site mixing time and labor requirements. This allows construction teams to focus solely on pouring and finishing, ensuring faster project completion in high-rise buildings, roads, and other infrastructure.
- **Superior and Consistent Quality:** Production in controlled batching plants with automated systems ensures a precise mix of ingredients, leading to uniform strength, durability, and reduced human error. This consistency is vital for the structural integrity and longevity of major projects like bridges and dams, where quality is paramount.
- **Cost Reduction:** By minimizing material waste through precise quantity delivery, reducing labor costs, and speeding up construction schedules, RMC has proven to be a cost-effective solution for large-scale construction projects.
- **Logistics and Coordination:** The integration of digital project management platforms, GPS tracking, and real-time monitoring systems into delivery fleets has streamlined logistics, ensuring just-in-time delivery and optimal coordination between plants and construction sites. This reduces idle time and avoids project delays.

Innovations and Material Advancements

- **High-Performance and Specialty Concretes:** Projects are increasingly implementing high-performance concrete (HPC), ultra-high-performance concrete (UHPC), and self-consolidating concrete (SCC) to meet specific, demanding structural requirements. These materials offer enhanced strength, flowability, and resistance to environmental factors.
- **Sustainability Achievements:** The industry has made strides in environmental responsibility through:
    - **Incorporating Supplementary Cementitious Materials (SCMs):** Using industrial byproducts like fly ash, slag, and silica fume as partial cement replacements significantly reduces the carbon footprint and enhances durability.

    - **Recycling Practices:** Many plants have implemented systems to recycle washout water and use recycled aggregates from demolished structures, minimizing waste and conserving natural resources.
    - **Carbon Capture:** Technologies are being explored and implemented to capture and inject CO_2 into the concrete mix, effectively storing it and enhancing the concrete's properties.
- **Advanced Construction Techniques:** Innovations such as 3D printing with RMC have enabled the construction of complex and customized structures with reduced material waste and faster construction times.
- **Smart and Self-Healing Concrete:** Research and development have led to the use of "smart" concrete with embedded sensors for real-time structural health monitoring and "self-healing" concrete that uses internal agents to repair micro-cracks, significantly extending a structure's lifespan and reducing maintenance costs.

3. Provide updated information on the following aspects:

S/No.	Information	Description	Current Project Status
1	Shareholder's Information.	**Previous** Shareholders names, nationality and percentage of ownership. **Current** Shareholders names, nationality and percentage of ownership.	JIAZHENG HUANG, YIHUI CHEN. JIAZHENG HUANG, LIN XU.
2	Company communication Information.	Email address. Mobile Number. Land Line Telephone Number. Physical Address (Plot No. Block No. Street, District and Region.	anbocompanyltd@gmail.com 0769088324. +255769088324 PLOT NO,35 GEREZANI INDUSTRIAL AREA,TEMEKE-DAR ES SALAAM.
3	Contact Person.	Name. Position. Communication details (Email, Mobile and telephone.	YAHAYA-K-SALUM ASS.HR Yahayasalum204@gmail.com 0769088324

			0620391600
4	Incorporation.	Certificate of Incorporation	155340193
5	TIN Information.	TIN Certificate No.	155-340-193.
6	Project Objective.	Project Core Activity.	To establish and manufacturing building materials(mixed concrete)
7	Capacity.	Project capacity per year.	8000 cubic meter
8	Direct Employment.	Foreign Men. Foreign Women. Local Men. Local Women.	**13** **02** **44** **05**
9	Indirect employment.	Type/areas of Indirect employment	-

4. Project Financing Expenditure to date (USD).

	Foreign (USD)	**Local (USD)**	**Total (USD)**
Land and Buildings.	130,000	-	-
Plant and machinery.	180,000	-	-
Vehicles/Aircrafts.	160,000	-	-
Furniture.	50,000	-	-
Office equipment.	140,000	-	-
Insurance Cover.	50,000	-	-
Pre-operational expenses.	210,000	-	-
Working sub-total capital.	80,000	-	-
Grand Total.	1,000,000	-	1,000,000

5. Project Financing.

Explain how the project is being financed e.g. equity, loans, sources of loans, conditions etc. see table below:-

	Amount (USD)	**Source Country**
Local equity.	1,000,000	TANZANIA
Local loans.	-	-
Foreign equity.	-	-
Foreign Loans.	-	-
Total Investment.	1,000,000	1,000,000

6. Problems and Solutions.

A) Inconsistent mix ratios

- **Problem:** Manual mixing can lead to inaccurate ratios, weakening the final product.
- **Solution:** Use ready-mix concrete from a controlled batching plant for precise, consistent measurements.

B) Weather and site conditions

- **Problem:** Hot weather causes rapid evaporation, cold weather slows curing, rain can wash away cement, and site dust can contaminate the mix.
- **Solution:**
    - Monitor weather forecasts and plan deliveries accordingly.
    - Use ice in hot weather mixes, or additives in cold weather to control temperature.
    - Protect the concrete from rain with covers.

C) Transportation and delivery delays

- **Problem:** Traffic, equipment malfunction, and long-distance deliveries can cause delays, leading to premature setting.
- **Solution:**
    - Optimize logistics to ensure timely delivery.
    - Use retarding admixtures to delay setting time, especially in hot weather.
    - Have a sufficient number of trucks and a well-maintained fleet.

D) Material and supply chain issues

- **Problem:** Labor shortages, especially with experienced workers retiring, and raw material shortages impact production and delivery.
- **Solution:**
    - Increase automation and technology to address labor gaps.
    - Diversify suppliers and use supply chain management software to mitigate disruptions.

E) Quality and durability issues

- **Problem:** Issues like shrinkage, segregation, and cracking can occur due to poor workmanship, materials, or mix design.
- **Solution:**
    - Ensure proper aggregate grading and a low water-cement ratio to prevent segregation.
    - Minimize concrete handling to prevent separation.
    - Use high-performance concrete and appropriate admixtures for specific applications.

7. Future Plans.

➢ Sustainability and environmental impact

- **Low-carbon and carbon-neutral options:** Developing concrete mixes that use alternative binding agents or incorporate CO2 to reduce the carbon footprint.
- **Recycled materials:** Increasing the use of recycled aggregate to reduce waste and conserve natural resources.
- **Renewable energy:** Powering production facilities with solar or wind energy to lower operational costs and environmental impact.

- **Electric vehicles:** Transitioning to electric or hybrid trucks for delivery to reduce emissions.

➢ **Technology and automation**

- **AI and machine learning:** Implementing AI for fully automated batching plants, quality control, and supply chain optimization.
- **Smart concrete:** Embedding sensors in concrete to provide real-time data on structural health, enabling continuous performance optimization.
- **Advanced concrete types:** Producing more high-performance concrete (HPC) for infrastructure projects, and exploring innovative materials like self-healing concrete.
- **Energy-efficient equipment:** Investing in new mixing equipment and motors that consume less energy.

➢ **Efficiency and market growth**

- **Supply chain optimization:** Using AI and predictive analytics to improve logistics, manage costs, and ensure timely delivery.
- **Modular and prefabricated construction:** Meeting the increased demand from prefabrication, which requires ready-mix concrete with stable quality.
- **On-site mixing:** Utilizing portable batching systems for more flexibility, especially in remote locations.
- **Market growth:** Driven by increasing government infrastructure projects and residential development globally, particularly in the Asia-Pacific region.

7. Recommendations and any other comments.

❖ **Technological Solutions and Recommendations**

- **Automation and Digitalization:** Implement automated batching systems and computerized control panels to ensure precise mix proportions, minimize human error, and increase production speed.
- **Real-Time Monitoring:** Utilize IoT-enabled sensors and GPS tracking in mixer trucks to monitor concrete temperature, slump (consistency), and location during transit. This allows for real-time adjustments and ensures timely, quality deliveries.
- **AI and Data Analytics:** Employ AI-driven software for mix design optimization and demand forecasting. Analyzing performance data helps identify trends, improve efficiency, and plan capacity effectively.
- **Advanced Formulations:** Use high-performance concrete (HPC), self-compacting concrete (SCC), and fiber-reinforced concrete (FRC) for specific project needs, enhancing strength, durability, and ease of placement.

- **3D Printing:** Explore 3D concrete printing for customized designs, reduced material waste, and faster construction times, especially for complex architectural structures.

❖ **Sustainability Recommendations and Solutions**

- **Supplementary Cementitious Materials (SCMs):** Replace a portion of standard Portland cement with SCMs like fly ash, silica fume, or ground granulated blast-furnace slag (GGBS) to reduce the carbon footprint and improve long-term strength and chemical resistance.
- **Carbon Capture and Utilization (CCU):** Adopt technologies that inject recycled CO_2 into the concrete mix, which mineralizes and improves compressive strength, allowing for further cement reduction.
- **Recycled Aggregates:** Use crushed concrete and other recycled materials as aggregates to conserve natural resources and minimize landfill waste.
- **Efficient Water Management:** Implement closed-loop water recycling systems in batching plants to conserve water and manage the disposal of washout water responsibly.
- **Sustainable Curing:** Encourage proper curing techniques, such as using curing compounds or wet coverings, which improves strength and durability, extending the structure's lifespan and reducing future environmental impact.

❖ **Operational and Quality Control Solutions**

- **Rigorous Quality Control:** Establish strict quality assurance protocols, including regular testing of raw materials (aggregates, water, cement) and the final product (slump, air content, strength) to ensure consistency and compliance with standards.
- **Optimized Logistics:** Use route optimization software to minimize delivery times and avoid traffic delays. Set up mobile batching plants near large projects to reduce transport distances and ensure concrete arrives in optimal condition.
- **Workforce Training:** Invest in comprehensive training for all personnel, including batch plant operators, drivers, and on-site crews, to mitigate the impact of labor shortages and reduce human error.
- **Proactive Maintenance:** Implement predictive maintenance programs for all equipment (mixers, trucks, batching plants) using sensor data to anticipate failures, reduce downtime, and improve operational reliability.
- **Effective Site Preparation:** Ensure construction sites have clear access routes, stable ground for trucks, and are prepared to pour upon arrival to prevent delays and premature setting of the concrete.