PROJECT SUMMARY

Company name: Associated Packers Industry

Address: Lot 555 Plantation Little Diamond, EBD.

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Table of Contents

Description of Site

Associated Packers Industry (API) is a distribution and soon to be packaging company located at Lot 555 Plantation Little Diamond. It is situated on 96,154 square feet of land with the building structure occupying 20,840 square feet. A visual representation of the area can be seen below in figure 1.0.

The boundaries are as follows: North by a canal that drains the industrial area of Little Diamond; South by two warehouses type structures; one fully completed and other in the process of being constructed, East by warehouse foundation in the course of construction and west by the access road.

Figure 1.0: Layout of API and its surroundings

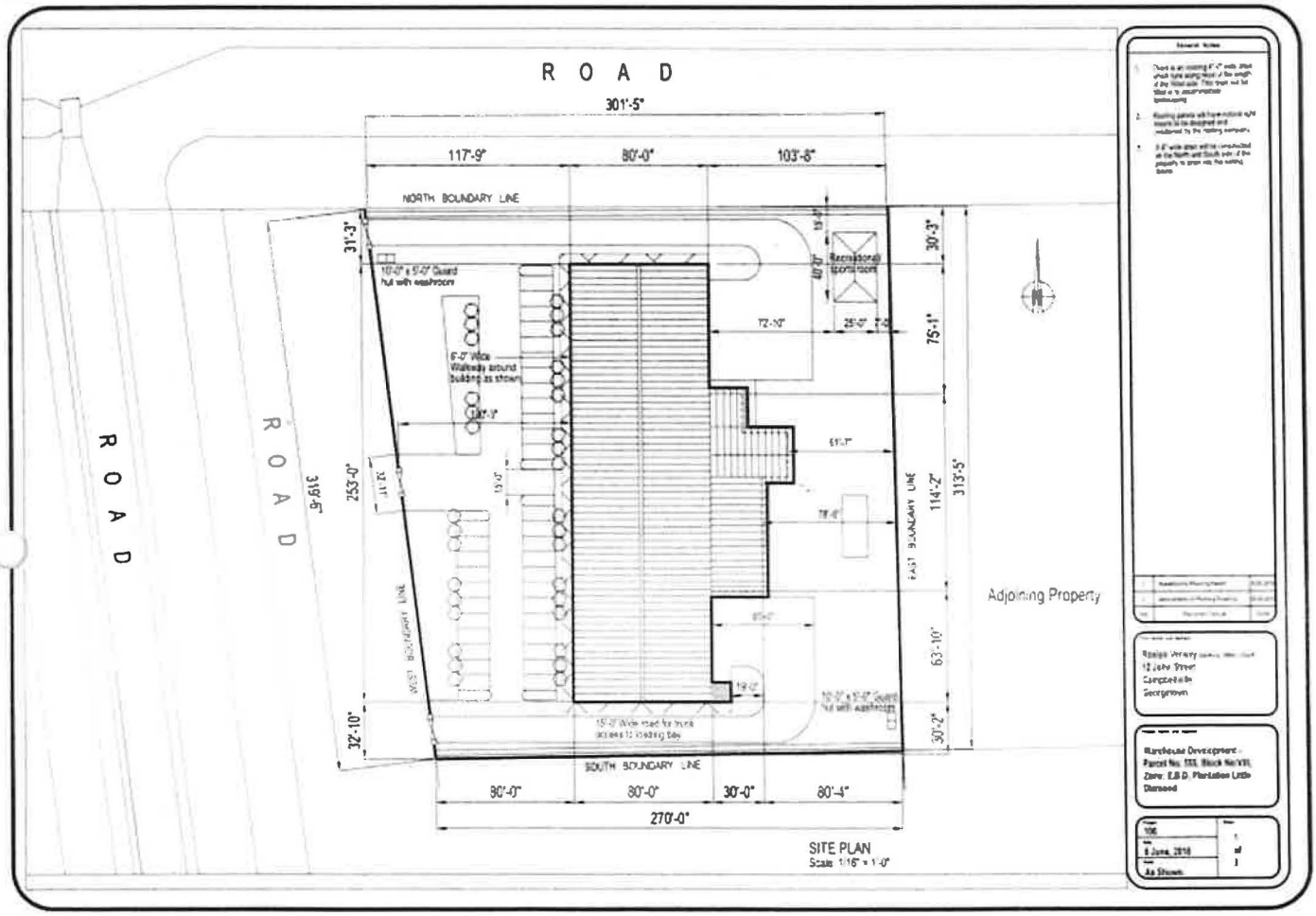


Figure 2.0: API building frame

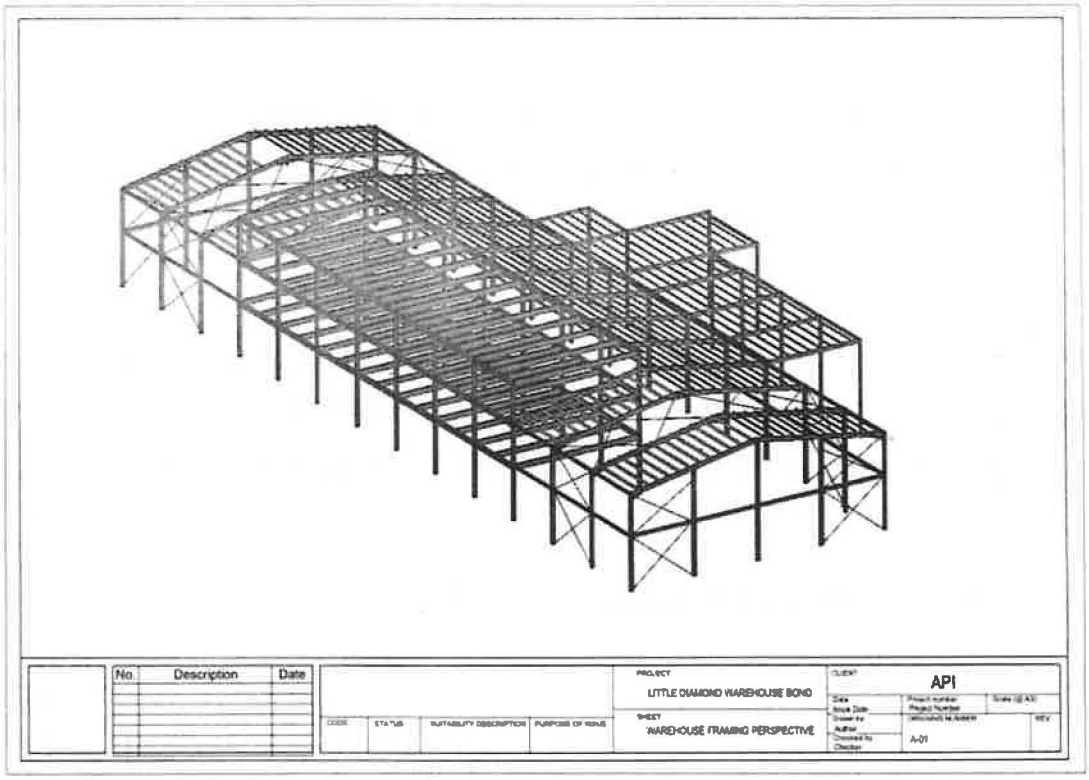
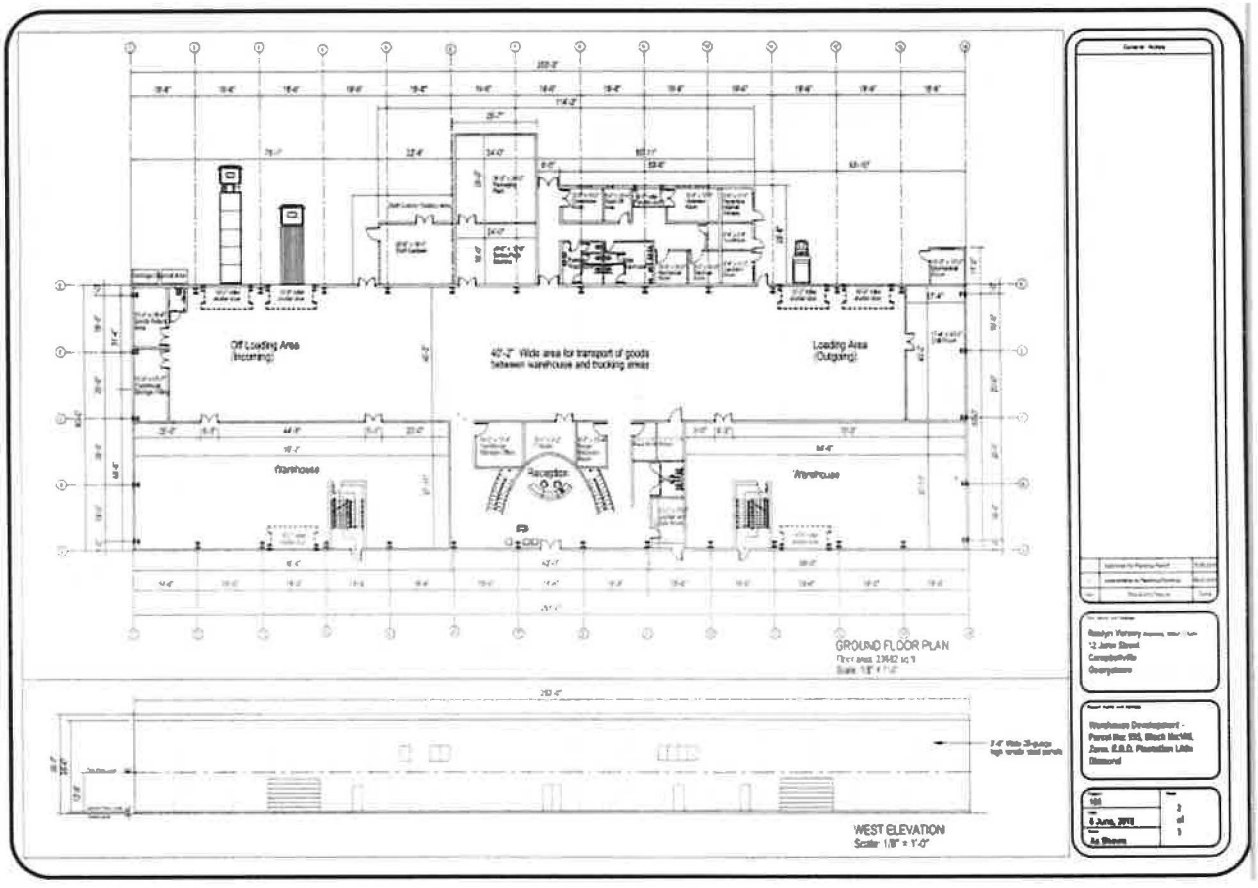


Figure 3.0: Building floor plan and design



Project Design

Developmental Stages

- Construction of the site begun in January 2018, by excavation and land filling.
- In 2020, 188 Green Heart piles being 65 feet long (14 inches diameter-head and 8 inches on the tail) were driven into the ground for the foundation of the intended building.
- The main building which is a steel structure was done in 2022, with part of the warehouse and office fully completed in February 2023.
- The remaining construction of the building, yard and perimeter fencing are works in progress. This final phase of construction is expected to be completed by December 2025.

Utilities

Water Supply: Water is received via Guyana Water Inc. by means of a main line (parapet) from the road running into the compound approximately 30 feet from the southern land boundary.

Electricity - provision of electricity is accessed from GPL main lines on the western access road 1 foot from the southern land boundary. In the event of a power outage, we are equipped with a generator. The generator will be approximately 160 kVA and will be equipped with a silencer to reduce noise emission.

Telephone – provided by One Communications Guyana.

Internet – provided by Enet.

Waste management - We currently have a contract for a twice-weekly garbage pickup in the 4*6 bins done by Cevons Waste Disposal. Our garbage typically is made up of day to day office and warehousing waste such as paper, cardboard boxes, plastics bottles and poly (rice) bags, etc. Eventual waste form the packaging plant will include, cardboard boxes, polyethylene/polypropylene (plastics) rolls, ink rolls, thread reels, scotch-tape, spilled product of packaged food such as rice, milk powder, chick peas, split peas, black-eye, etc.

Project Size

Capital invested is approximately G$267,000,000 with an annual turnover of in excess of G$1,000,000,000. API currently employs 31 persons and will expect to extend to 42 as the fill form and seal packaging facility start to fully function by September 2025.

Non- technical Explanation of the Process

API is a medium size distribution and packaging business located at the above mentioned address. The core function at this time is distribution of food products such as wheaten flour, rice, chic, peas, split peas, etc. Most of the items are imported from external packagers/manufacturers overseas and locally. The intention of reopening of the packaging is to add value and reduce dependence on these packagers/manufacturers by bringing quality packaged products on our local market. API have acquired a Hayssen fill, form and seal machine that will package the products. The packaging machine can package free flow and non-free flow products in polyethylene bags at 60 bags per minute.

Technical Explanation of the Process

List of Machines

1. Sortex Machine
2. Hayssen Packaging Machine
3. Volumemetric Filler
4. Auger Filler
5. Dust Collectors

EQUIPMENT	DECIBELS
Sortex	40
Elevators	90
Motors/Gearbox	110
Dust collectors	80
Hayssen Packaging Machine	70
Volumemetric Filler	60
Auger Filler	60
Air Compressor	100

Table showing the list of equipment and the amount of decibels produced by each

EQUIPMENT	STATUS
Sortex	Decommissioned
Elevators	
Motors/Gearbox	
Dust collectors	
Hayssen Packaging Machine	

Volumemetric Filler	Active
Auger Filler	
Air Compressor	

Table showing the equipment and their current status

Function(s) of each machine

1. Sortex – The Sortex machine is an advanced optical sorting system used primarily in the food processing industry, as well as in other sectors such as recycling. Its main function is to automatically sort products based on specific characteristics, such as color, size, shape, and defects. At API we use this machine to sort rice grains, broken and block grains are removed to obtain the best quality possible.

2. Elevator – this machine is made up of a series of belts and cups. Its main function is to transport the rice to different points, for example to the sortex machine and from the sortex machine to bins collecting the finished or damaged product.

3. Motor/Gearbox – is used to drive the elevator to take products to various parts are required. A motor is a device that converts electrical energy into mechanical energy that is used to drive the elevator.

4. Dust Collector – is used to extract dust such as paddy shell, straws etc.

5. Hayssen Machine – is a type of packaging machine used for for vertical form fill and seal (VFFS) packaging. This machine fills bags/pouches with rice and seals it. It is also equipped with a printer that is responsible for printing the best before date and batch number onto the finished product.

6. Volume metric filler – is responsible for ensuring the accurate weight is placed into each bag/pouch. It can be used a variety of products such as rice, beans, etc. but we use it primarily for rice at the moment.

7. Auger filler – this machine is responsible for the accurate weight or measurement of product and can be used to packaged powder product such as flour and milk.

8. Air compressor – is used to supply air to the machines, both Sortex and Hayssen require air and electricity to function to full capacity.

The Packaging Process

- Product (rice) is obtained from suppliers locally and is delivered to the warehouse in in 45kg or 40.9kg sacks. It is placed on pallet for storage in cool and dry place.

- The rice is the loaded into stainless steel bins elevators driven by motor and gearbox will take the product from the bin to the Sortex machine, where processing begin.

- With the use of cameras present in the Sortex machine, the block and broken grains are separated from good grains.

- Block and broken grains goes to a bin as damaged or bad product and good grains goes another bin as the finished product to be packaged.

- During this process he dust collectors connected to the sortex machine is used to remove dust particles such as the paddy shell and straw.

- The clean, sorted product is then placed into a large stainless steel bin for packaging.

- The product can either be packed automatically by the Hayssen machine in small pouches of 1kg, 2kg, 4kg or 9kg rice or it can be packaged manually into larger bags (10kg or 45kg).

- The manually packaged bags are sealed by a handheld machine and a tag containing the necessary information is attached.

- The finished product is then packed onto pallets and stored in our warehouse facility until it is sold.

No.	Types of Vehicle	Vehicle specification	Engine Capacity	Fuel Type	Vehicle Number
1	Bus	Toyota Dyna	2498 hp	Diesel	GPP 3493
2	Bus	Toyota CBF-TRH200 V Hiace	1998 hp	Gasoline	GPP 4562
3	Truck	Isuzu PA-NPR81N(ELF)	4775 hp	Diesel	GVV 6604
4	Truck	Isuzu PKG-NPR75N(ELF)	5200 hp	Diesel	GVV 7982
5	Truck	Isuzu Box Truck	5000 hp	Diesel	GXX449
6	Truck	DAF Box Van	3920 hp	Diesel	GRR 793
7	Truck	45 DAF LF	165 hp	Diesel	GXX 3495
8	Bus	Toyota Dyna Route Van	4000 hp	Diesel	GXX 3945
9	Bus	Toyota Dyna Route Van	4009 hp	Diesel	GXX 4120
10	Bus	Nissan KR-VWE25 (Caravan)	2953 hp	Gasoline	GPP 2072
11	Forklift	Caterpiller Truck model #: P6000-LP	50 hp	Propane	24367

Table showing the list of vehicles and specifications

The vehicles are washed on a weekly basis by Mr. Persaud who is employed by Associated Packers Industry as a driver. The vehicles are washed in the company's compound at the eastern end close to a drain.

Duration of the project

Prior to startup, setup is expected to take one month and packaging is expected to be fully operational January 2025.

Potential environmental effects

Packaging Waste

- Single-Use Plastics: The use of plastic packaging can lead to significant waste, contributing to pollution and landfill issues.
- Recyclability: Many packaging materials are not easily recyclable, leading to more waste.
- Biodegradable Options: Limited use of biodegradable or compostable materials can exacerbate waste issues.

Carbon Footprint

- Transportation Emissions: Distribution often involves transportation by vehicles, contributing to greenhouse gas emissions.

Food Waste

- Inefficient Distribution: Poor logistics can lead to food spoilage and waste, impacting both the environment and food security.
- Short Shelf Life: Packaging that does not preserve food effectively can increase waste.

Mitigation Strategies

To reduce these impacts, API will consider long term solutions such as:

- **Sustainable Packaging**: Transitioning to biodegradable, recyclable, or reusable materials. An option we can explore is the use of biodegradable plastics such as PLA (Polylactic Acid) and PHA (Polyhydroxyalkanoates) for packaging purposes.

- **Energy Efficiency**: Implementing renewable energy sources and optimizing logistics to reduce transportation emissions. At some point in the future we plan to use solar energy to cover some/all of our electrical needs. This will be done by installing solar panels on the roof of the building. Additionally, improving the efficiency of our goods delivery system by grouping deliveries will help to reduce our carbon footprint.

- **Waste Reduction**: Improving supply chain efficiency to minimize food waste. This will be done by using statistical techniques to calculate the minimum amount of inventory needed and also focus primarily on fast moving goods. By doing this we will have less slow moving inventory in stock and therefore reduce the risk of expired items, infestation and by extension wasted goods.