FACT FILE

Client: **Tasty Bites Eatables Ltd (Mars Food)**
Architects: **C P Consultants**
Structural Consultants: **Delcons Structural Consultants**
PMC: **SNC Lavalin Engineering India Pvt Ltd**
Steel Tonnage: **450 Ton**
Status: **Ongoing**

COMPOSITE STRUCTURE

It is challenging to find inclusive way to cover all aspect of Food Manufacturing facility in Sustainable way while balancing between operational usages & quickly changing business demands. “Pre-Engineered Building with Steel structure plays instrumental role in satisfying all aspects. It provides Longevity, modularity for expansion, faster execution, options to install natural energy generation sources like Solar Panels, creating high rise processing & packaging units with hygiene in place, natural lighting to facility. Overall goal of FIT FOR PURPOSE made through by entire Team with help Global Standards & Prime principles like SAFETY, QUALITY & EFFICIENCY at focal point.

SANDEEP BHANSALI
Project Engineering Lead, Mars Food (Tasty Bite)

INDUSTRIAL SHED FOR FACTORY, PUNE

Modern food production plant demands for modularity at it best. Considering Change in consumer demand & pattern of choices manufacturing scenario keeps on changing. This calls for agility in construction & execution to adapt these changing business demand. Ensuring safety of Environment, people, food & entire asset base with optimum usage of every resource is key aspect of the designing the plant that delivers maximum efficiency to the business & return on investment.

DESIGN COMPETENCE

Term " FIT FOR PURPOSE" suites here the most, while addressing the key aspect of the food factory design, hygiene class from food manufacturing aspect requires high level of attention & while achieving this need to balance between the optimum design & investment cost. This results the overall equation of the project viability for the business.

SALIENT FEATURES

MAIN BUILDING

- Expansion of existing Frozen food product area
- Expansion of existing Refrigeration area
- New Ready to heat product manufacturing facility

The expansion of existing building to form shelter for above three different activities. Its central part consists of utility related activities of refrigeration area (20mx50m) divides two highly hygienic areas of Frozen food product manufacturing unit (29mx31m) and ready to heat food product manufacturing unit (44mx70m) followed by highly wet area of Food preparation & raw material storage.

Refrigeration area is dry type construction using G.I. Chq while plate's mezzanine floor and deck slab for terrace floor 5.5m high each. Conceptually open form all the sides the area consists of foundations for compressors, cooling towers, pipe racks etc. Frozen food product manufacturing unit consist of expansion of existing running factory without compromising on hygiene during construction activity.

Building consists of shell within shell concept having cold storage unit within main building. The ready to heat product manufacturing unit consist of multi-level mezzanine at two levels with S.S. Chq plate construction with high importance to hygienic building construction.

The area consists of network of process drains, retorts foundations, packaging machines and washing area along with hoppers and mixing machines at various levels.

- Rockwool sandwich panel wall and roof construction with 2hr fire rated
- S.S. Chq. plate staircases at various locations
- Geberit system for roof water drainage
- 1.3m high plinth height for loading/ unloading

THE UTILITY BUILDING

- Boiler house, Briquette store, and temporary ready to heat product facility
- Size 87Mx20mX12m
- Pit construction for Boiler more than 5m deep
- Highly hygienic area of Ready to heat product manufacturing in the same building
- Prefabricated fire tanks platform
- Pipe bridge to carry services to main building crossing to village road
- 100mm thick Rockwool sandwich panel wall construction
- Process drains in the floor.

Infrastructure development around the buildings

- Construction of road in paver blocks along with drains, gates, footpaths, and green belts etc.
- Paver block road for heavy traffic movement with self-drain concept.
- Slopes to match existing available infrastructures make the design more complicated.
- Re-plantation of existing trees in newly proposed green belt along the footpath
- Network of underground Hume pipes for present and future road crossing services to plant

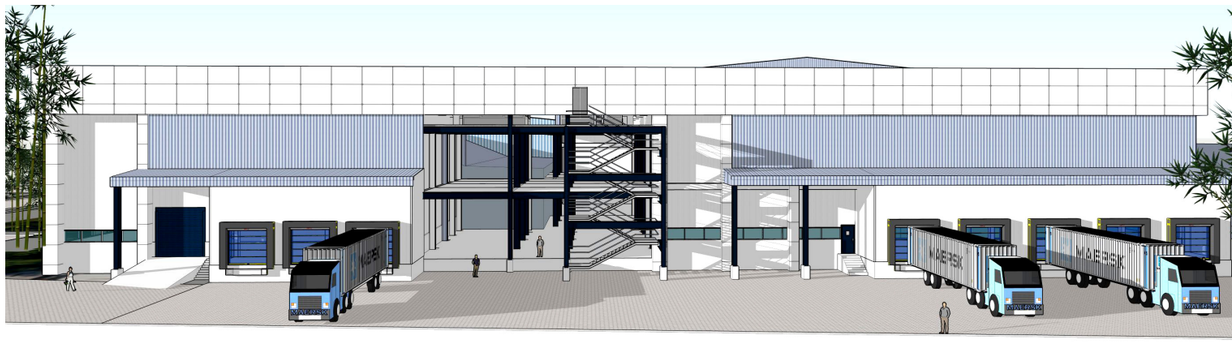
Construction of Loading Dock and Walkway over it for Admin entry

Creating the loading / unloading dock for existing factory and segregating the material movement and man movement to admin are the two-basic requirement behind the design. The entire structure is supported by single column frame due to constrain of space for footing near existing building. Hygienic design for man movement area for entry to admin building and canteen and roof covers walkway as well as loading unloading trucks.

The Loading dock consist of Dock Leveller, Dock Shelter, with 1.3m height plinth for easy truck parking during loading movement and attractive entry for visitor to admin building by making the walkway dynamic with Tasty bites product photos.

Tasty Bite (Mars Food) being a reputed International Brand its factory overloaded with demand and halting the production line for infrastructure development was out of question. The existing composite structure was a typical industrial shed in RCC with a metal roof making it a challenge to accommodate a running unit in the expansion phase. Started with structural audit of the existing structure, structural design focused on extended height of waterproof roof to facilitate connections without disturbing the existing structure. The column sizes and spacing followed the extended height while taking care of maintenance. Plated beam system avoided the dust collection to ensure hygiene of the product – food."

BAL KULKARNI, Chairman, Delcons Structural Consultants



The challenges in this facility was predominantly dry type construction thus Pre-Engineered Building detailing was the key. The execution detailing by structural consultant helped us bring our Ideas into reality. Simplicity in construction detailing along with aesthetic consideration made the proposed planning for efficient man and material movement. This structure became interesting as client had very clear ideas of their requirements and conveyed those to various consultants and execution agencies involved in the project in an articulate manner. Companies Manual for Standardization of various requirements helped us to offer efficient functional design response to match with international standards of company.

GANESH PARKHI, Principal Architect, CP Consultants