

International Conference

“Contribution of sound waste management systems to sustainable tourism and the protection of marine ecosystems”

Contribution of TouMaLi for sound waste management systems and sustainable tourism; 11/10/2022

Dr Gasser E. Hassan, Local Project Manager, TouMaLi AASTMT

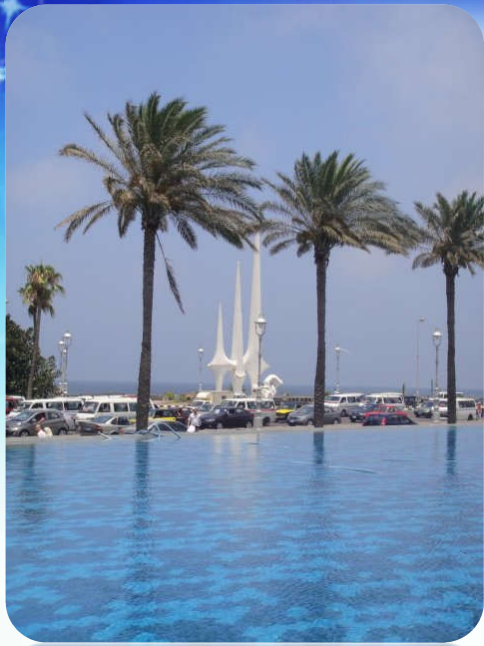
Mr. Ahmed Tawfik, R&D Manager, Nahdet Misr Co.

Alexandria Waste Management System & TouMaLi Company Egypt – An organizational approach towards more sustainable Tourism

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Alexandria city





Nahdet Misr Co. for
Modern Environmental Services
& Solid Municipal Waste
Management

Introduction

- Nahdet Misr is one of the *Arab Contractors* group companies which has been established in October 2011 for Cleanliness and waste management projects.
- After VEOLIA withdraw of Alexandria governorate contract for waste collection, transportation and treatment, Nahdet Misr has been the responsible for work resume.
- Nahdet Misr has been established to solve waste management problems nation wide applying the advanced technologies have been used for years in the world.
- As a start, Nahdet Misr kept all VEOLIA Egyptian well trained staff and workers and established an R&D dept. to keep up with recent researches and technologies.

Chain of Alexandria Contract

- **Manual sweeping.**
- **Municipal waste collection and transportation.**
- **Mechanical sweeping and washing.**
- **Non hazardous industrial waste collection and transportation.**
- **Recycling factories (3 factories with capacity 1000 ton-daily.**
- **Producing (Compost-Recycles-RDF).**
- **Medical waste collection, transportation and treatment.**
- **Hazardous waste transportation).**
- **Landfill (Construction-Operation-Final Cover-Biogas Production)**
- **Indoor cleaning of resorts, companies...etc.**

Urban Cleaning

- Nahdet Misr Company Serve The city of Alexandria of collecting and vacuuming and washing of streets where almost be vacuuming number 12000 Street which are Alexandria Streets also household waste collection that up to 4000 tons / day.
- The company is also concern of doing the special services of the ma in streets and by as many as 54 street stipulated contract as the distinctive Services Section.
- laundering tunnels , bridges , sculptures and also work on the cleanliness of the beaches of the city of Alexandria from sifting the sand for the reception of holidaymakers and visitors to the city and performs this service Number.

Manual Sweeping

- About 2300 well trained sweepers are hired to sweep Alex streets 24/7
- The main factors that influence the service maintenance are:
streets infrastructure
and cars parking.



Mechanical Sweeping Equipments

Bins Washing



Mechanical Sweeping

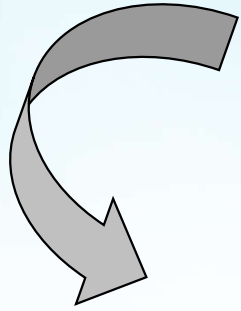


Medical Waste Collection & Treatment

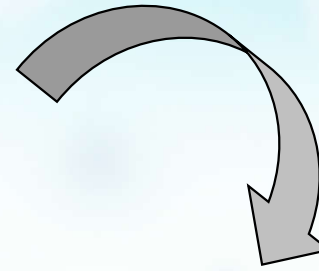
- Bins with different color from that used in the MSW collection are used and distributed in the hospitals and medical centers.
- Special trucks with elevator are used to transport the bins to the treatment center located in the transfer station.
- Autoclaves are used to treat the medical waste by direct exposure to high pressure (3.8 bar) and high temperature (138° C) for one hour and a half then transferred to the landfill.
- Tests are applied frequently by the high institute of the public health – Alexandria University .
to guarantee the efficiency of the used treatment methodology.



Integrated management of solid waste treatment



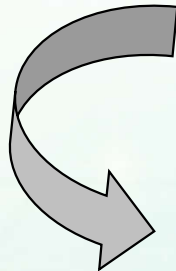
Unloading Collecting Trucks



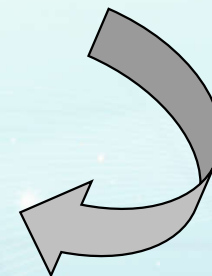
Factory



Transfer Station



Landfill



Integrated management of solid waste treatment

Transfer Stations

➤ Moharam Bek Station

➤ Om Zeghew Station

➤ Montaza Station



Factories & Landfill Activity



Abis 2 Factory



Abis 1 Factory



El Montazah Factory



El Hammam landfill

Recycling Factories

Compost Production phases

Compost Production phases



Receiving Area

Compost Production phases

Feeding the line



Compost Production phases

Manual sorting



Compost Production phases

Screening & homogenization



Compost Production phases

Resulted Organic matter are putted into windrows



Compost Production phases

Treatment fermentation of organic matter during 6 weeks



Compost Production phases

3 weeks of maturation



Compost Production phases

Laboratory tests during fermentation & maturation period



(RDF) PRODUCTION



Input material

**Jupiter- 3200
Pre-shredding**



Output materials RDF



Brief on WASTE CHARACTERIZATION TEST ON THE ALEXANDRIA DIFFERENT DISTRICTS

Waste in developing countries like Egypt characterized by having high percentage of organic matters (remnant of food like bread, vegetables and fruits), that will be evident in this test. The test was carried out during winter season Dec-06 , a season which characterized also by having high percentage of organic matters.

Test description:

- Waste characterization test was carried out at 17 districts. One truck or more from each district discharge their waste at Abis-I compost plant. The discharged waste are well mixed with the help of loader in order to take a representative sample.

- **Density estimation (Kg/L):**

Density was estimated by using a container of 10 L volume. Value of density is average of 10 measures for every truck.

Density = Weight (Kg) / Volume (L)

- **Characterization:**

Waste are separated to nine fractions as described in the follow table:

1.Organic Matter	Wood, carton, paper, fermentescible (food remnant, vegetables, fruits, sugar cane), plants, paper of tree, flowers.
2.Plastic	Bottles, packet for food, plastic bags, plastic pieces.
3.Stones	Stone, debris, bricks, adobe.
4.Metals	Packages on aluminum or steel, cans, food conservation packages.
5.Textile	Clothes, Toilet tissue, cotton, fillet, pampers, hygienic serviettes.
6.Glass	Bottles, Jars, pieces of glass colored and transparent.
7.Medical waste	Syringe, medicament, surgical gloves, perfusions, bandage, dressing.
8.Special waste	Batteries, photographic films, radiograph.
9.Other waste	(Paper for food packaging covered with aluminum), Leather, wire(plastic &metal).



Landfill

Borg el Arab Site



The site area is 107 feddans with an average elevation of 30 meters.
Borg el Arab site receives waste throughout 7 months of the year (1st of October till end of April)
(Closed since March 14th 2011 because of the Bedouin residents of the area)

El Hammam Site



Lies in the middle of a desert zone, with an area of 250 feddans.
This site receives waste all year round (current situation) with a total of
1,100,000 tons per year.

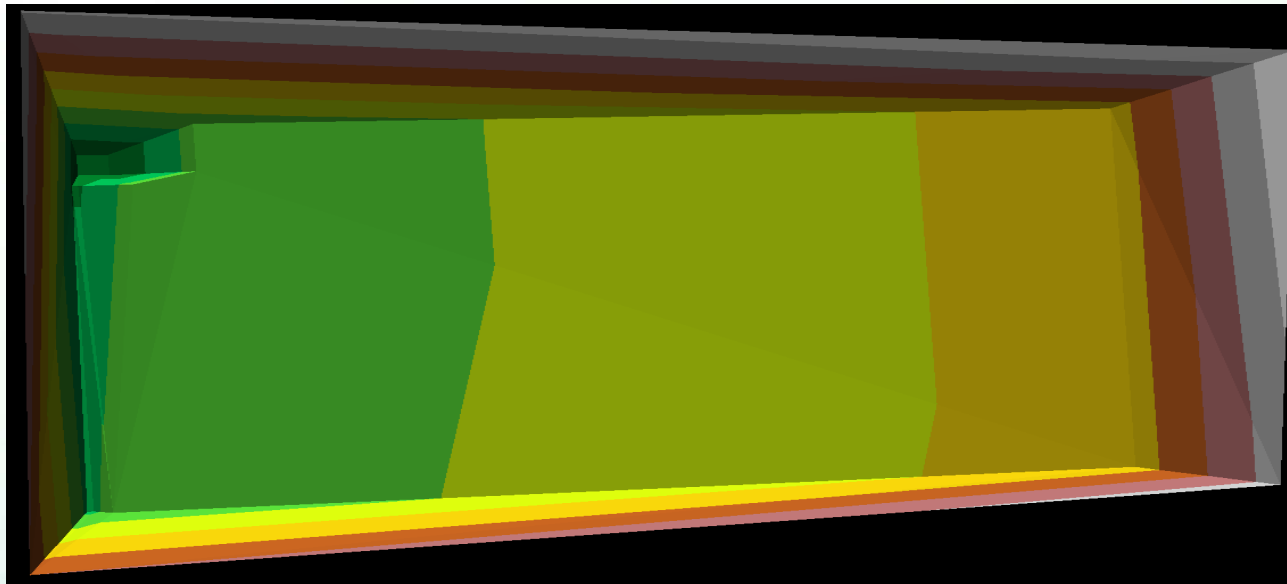


Excavation works and preparing cells to receive waste.





Adjusting and leveling slopes and sides according to engineering designs



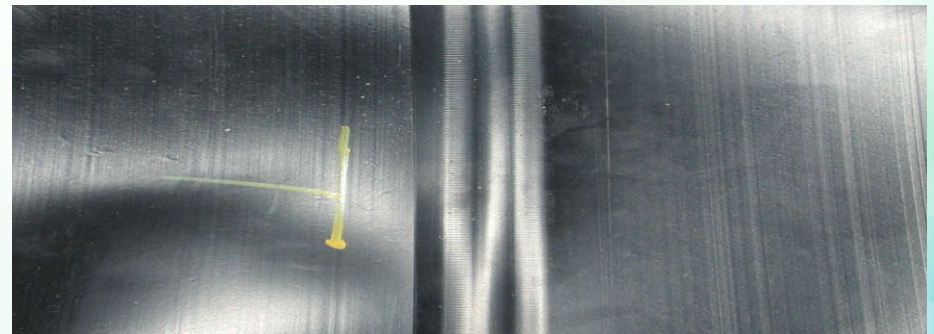


Spreading a layer of highly consolidated low diffusion clay





Installation of 400gm geomembrane and 2mm HDPE and 600gm geomembrane layers.



Double welding and welding quality tests

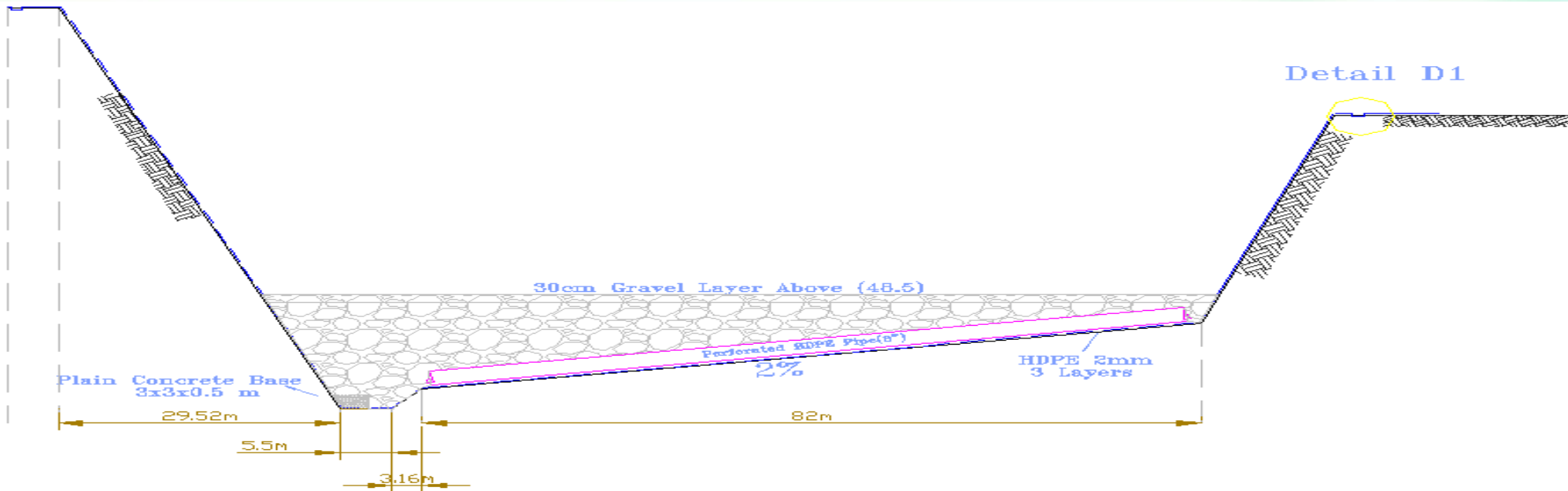


A 30cm thick pebble layer on top of the isolation layer 2% inclination angle to evacuate leachate towards a low level point.



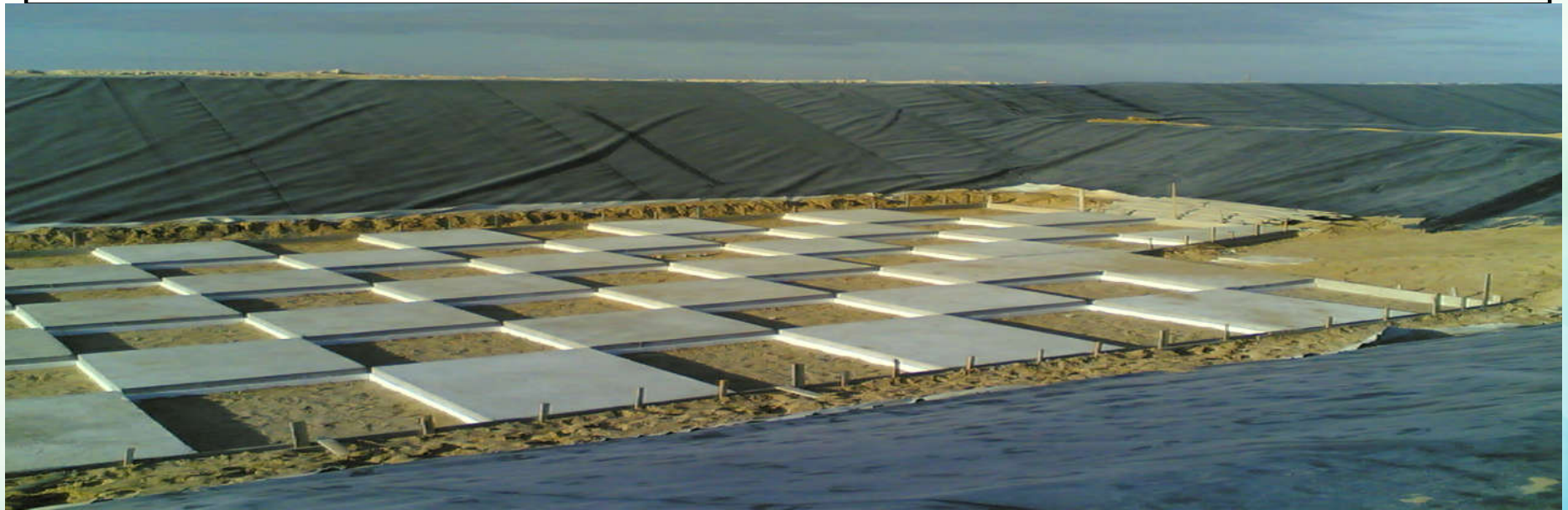


A layer of Geo-textile (180gm density) on top of pebble layer





Liquids resulting from the decomposition of waste and grouped from the cell are pumped towards the leachate basin. A contract with Unico company was made to evacuate those liquids, which is a specialized company in evacuating and treating leachate.



Leachate basin is isolated and equipped according to environmental measures and technical specification to protect underground water and surrounding environment.



Wells positions are determined and fixed over concrete bases on top of pebble layer. Wells are installed (3m tall, 1m diameter) in conjunction with the increase in height of the waste in the cell. After a cell is completely filled with waste, those wells are filled with high density poly ethylene pipes and pebbles.

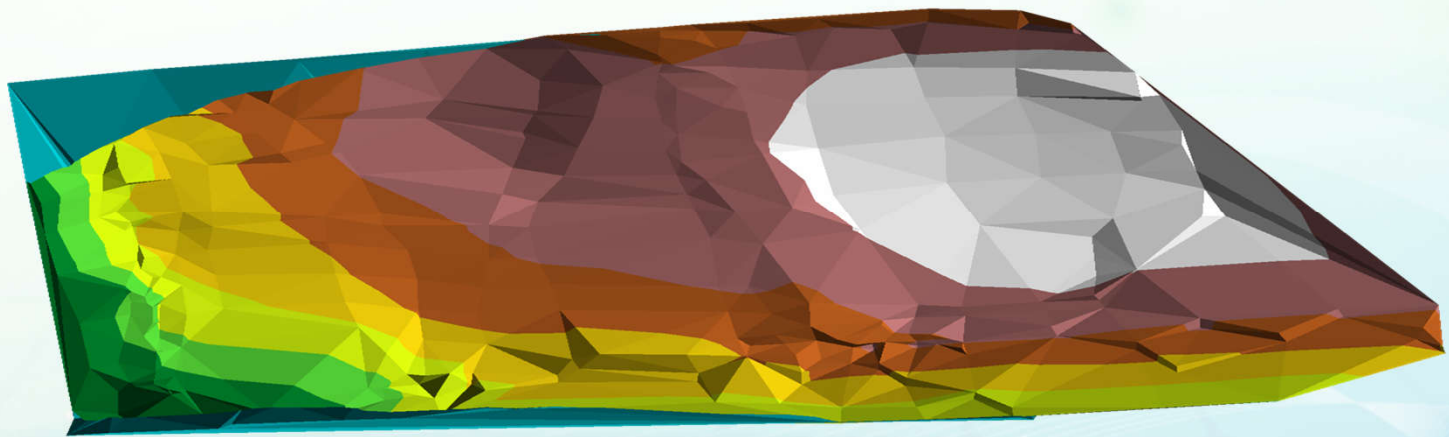


Semi trailers unload the waste over from unloading docks, where supervisors guide them to the unloading area. Waste is then spread and compacted by the means of bulldozers and mashers.





After a cell is completely filled with waste, it is then covered by a layer of mixed sands and clay (120 cm thickness), then another layer of soil, and finally it is equipped with an irrigation network to cultivate the surface.





Wells are connected together and lead back to a central control room, where methane is pumped through main pipes into the torch. This is called the methane (CH₄) network.





**THANK YOU FOR
YOUR TIME.**