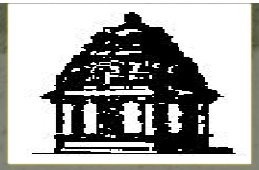
ARRESTING THE SHEARING IN EXISTING EMBANKMENT OF SANKEY TANK IN WARD NO-35,MALLESHWARAM CONSTITUENCY



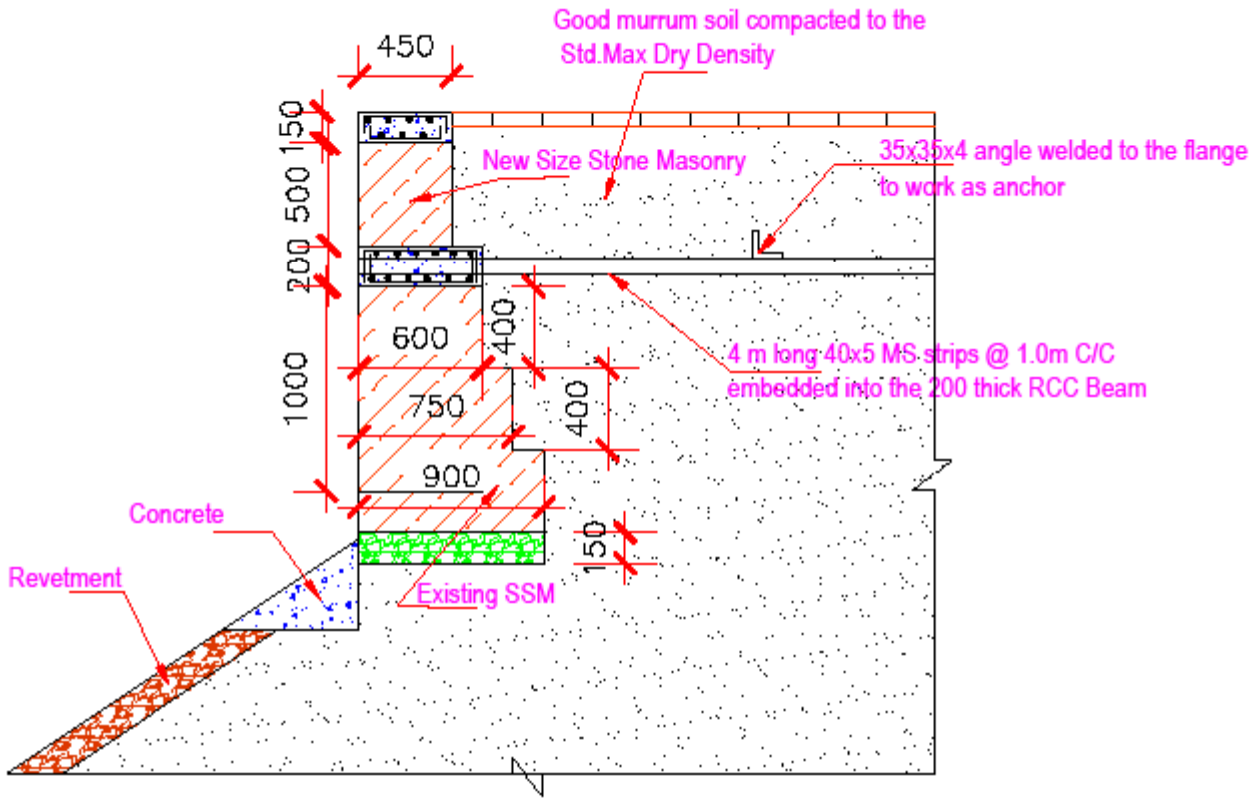
Histroy of Sankey Tank

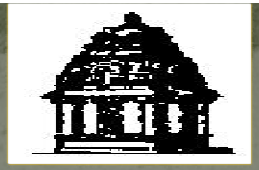
- Sankey reservoir /Tank was constructed in 1882 to safeguard against water shortages, such as that experienced in the Great famine of 1875-77 .
- During the latter half of the 19th century to fulfill the water supply to then Bangalore city it was up graded by col. Sankey
- BBMP rejuvated the lake in 2005 at cost of Rs 3.5 crores
- In 2005 ,The BBMP raised the waste weir height by 0.6 mts to restore the tank to its original depth of 30ft as per the records of the Basin, Arcavati series record and subsequently the existing embankment of East, West and Southern side of the lake is raised by 2mts by constructing size stone masonry at water edge at cost of Rs 1.90 crores.

Sketch Showing the Sankey Tank in Ward no-35,Malleshwaram Constituency

NOTE:
All dimensions are not to scale.

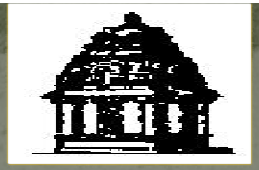
TYPICAL CROSS SECTION OF THE EXISTING BUND OF SANKEY TANK





Sankey tank is bounded

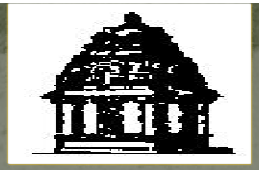
- East- Sadhashiv nagar
- North-Private Property
- West- Malleshwaram
- South – Road
- Sankey Tank comes under Malleshwaram constituency, BBMP Ward no-35 in Bangalore.



Problem

- Sankey tank embankment settlement caused shearing of the embankment ,revetment displaced and size stone masonry shearing occurring ,pathway interlock blocks shearing due to flow of seepage water and this resulted in poor shear strength as well as bearing capacity and contributed to the distress of the embankment.

Picture showing the existing Embankment Shearing



Solution

- The conventional method for strengthening the embankment are

1. Dewatering the lake and constructing the Toe wall and embankment in slope of 1:1.5 or 1:2.

2. To arrest the shearing of the existing embankment by constructing the RCC Retaining wall with required coffer dam.

- Gabion Box Technology

1. To arrest the shearing of the existing embankment by removing the existing revetment stones and reusing the same by filling the gabions. Spreading Non-Woven geo textile material along the embankment ,Placing sack gabion ,gabion box and gabion mattress filled with the revetment stones of size 150 to 200 mm.

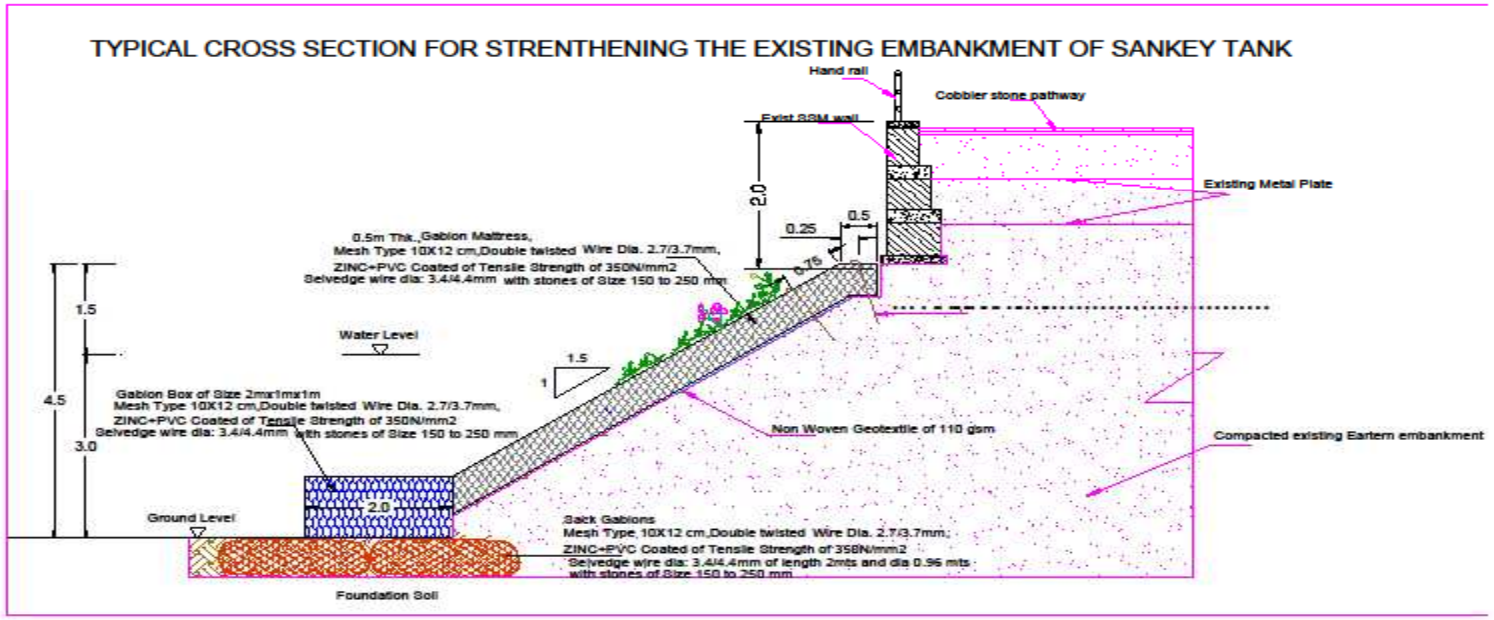
Merits & De Merits

Sl No	Methods	Merits	De -Merits
1	Constructing the Toe wall and embankment in slope of 1:1.5 or 1:2,	• Embankment is strengthened and seepage will be arrested. •Revetment stones will be reused.	• Dewatering of Lake have to be done . • Water body of the Lake will reduced by two Acre and Twelve Gunta(6148 Sq mt) • The work should be tackled during summer season. • The work is Tedious
2	Constructing the RCC Retaining wall with required coffer dam.	• Embankment is strengthened and seepage will be arrested.	• The Ground water table is high. Hence water should be pumped out continuously until RCC raft foundation and retaining wall reaches above the water table level. • Revetment stones won't be reused. • It is Costlier. • The work is Tedious.

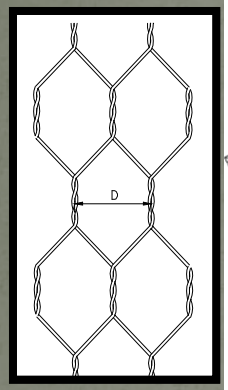
Merits & De Merits

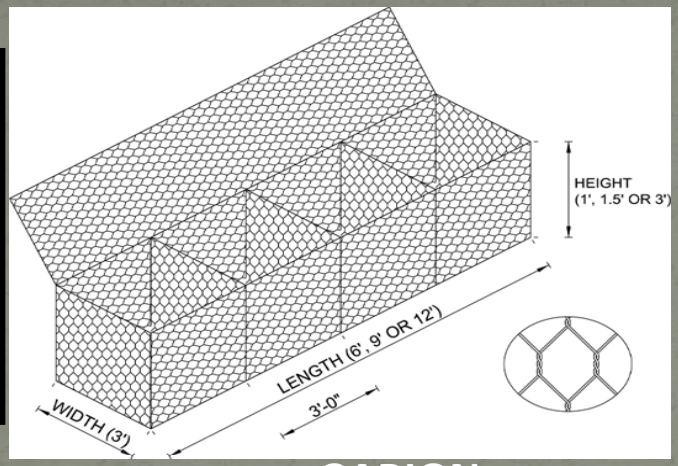
Sl No	Methods	Merits	De -Merits
3	Laying of Non Woven Geo textile material, Sack Gabion, gabion box and gabion mattress filled with the revetment stones of size 150 to 200 mm.	• The work can be tackled in water y condition without any De watering . • Work can be tackled in any season. • Seepage will be arrested. • Revetment stones of size 150 to 200 mm will be reused for filling the Gabion box. • Cost is Economical. • Work can be executed at faster rate.	• The revetment stones of size less than 150 mm to 200 mm cannot be used.

Proposed typical cross section of the embankment by placing an gabions



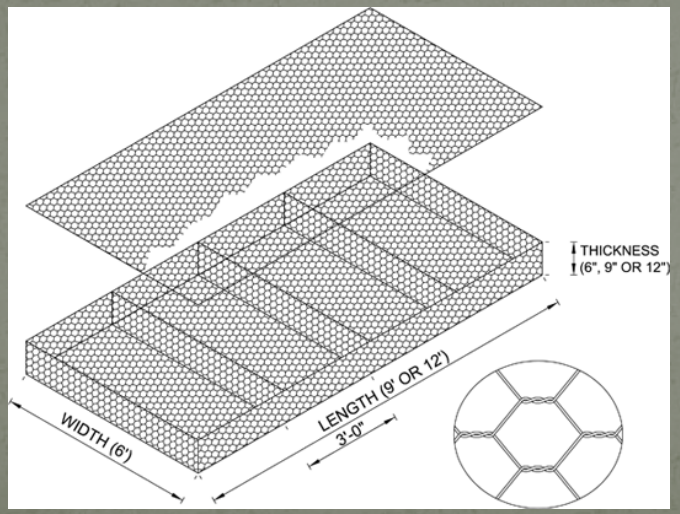
Proposed strengthen the embankment by Gabion



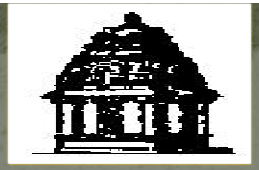


GABION

- Hexagonal, Double twisted ,Steel Wire Mesh of Galvanized and PVC coated.
- Depth is small in proportion to its length & width
- Divided into cells by panels positioned at 1m centers.
- Maintains intimate contact with the foundation soil.



RENO MATTRESS



APPLICATIONS OF GABIONS IN MAJOR AREAS

GABIONS

- Earth Retaining Structures
- Slope Stabilization
- Embankments in Rock fall Protection
- River Training Structures

RENOMATTRESS

- Channel lining-for bank and bed protection
- Launching apron
- Slope protection
- Basal mattress

Laying of Non woven Geo textile material to Protect the slope of river TAPI in Surat

Providing & Placing of Gabion Mattress as revetment in river TAPI, Surat

Placing of Gabion box in water

Bank Protection at River Mahanadi - Orissa

- Irrigation Department-Orissa

Bank Protection at River Mahanadi - Orissa

Gabion Retaining Wall For Embankment, D. P. Road Nashik, Maharashtra India

- BBMP is proposing the Gabions technology to arrest the shearing of the Sankey tank embankment.
- Suggestion are requested by the public regarding any method for arresting the shearing of the embankment is socialized with in October 06,2012.
- Feed back is requested through BBMP website.