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ISH -- NEWS

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THE INDIAN SOCIETY FOR HYDRAULICS

VOL. 24 No. 1 January, 2015

HYDRO 2014 International

"Hydro-2014 International: Conference on hydraulics, water recourses, coastal and environmental engineering" was held on December 18 - 21, 2014 at Maulana Azad National Institute of Technology (MANIT) Bhopal. It represented a link in the chain of such "Hydro" conferences held annually at different places in India since 1995 under the auspices of Indian Society for Hydraulics. This was the 19th HYDRO conference. The various themes of the conference were Effect of Climate Change on water resources, Water Resources and hydrology, Coastal and harbour engineering, Computational hydraulics, hydraulic Instrumentation, Environmental Engineering, Estuarine and Coastal hydraulics, Flood forecasting and protection measures, Fluvial Hydraulics , GIS and Remote sensing applications, Ground water modelling and management, Hydrologic modelling and forecasting, Risk and Reliability – Analysis and Design, and Draught assessment and mitigation. Around 300 delegates representing academic institutions, research labs, consulting engineers and administrative bodies attended the conference. Two hundred

HYDRO 2014 International Proceedings Release by Guest

"ISH Lifetime Achievement Award" to Dr. V. P. Singh

INDIAN SOCIETY FOR HYDRAULICS

ISH R J GARDE LIFE TIME ACHIEVEMENT AWARD 2014

Professor V P SINGH

The Indian Society for Hydraulics is a not-for-profit voluntary organization of professionals working in the area of hydraulics, water resources, ocean and environmental engineering and has it's headquarter located at Central Water and Power Research Station at Pune, India.

*The Indian Society for Hydraulics confers Lifetime Achievement Award: 2014 to Professor **Vijay P Singh**, currently working as Distinguished Professor at Texas A and M University, College Station, USA. This award is being given in recognition of his outstanding contributions made over a period of last half a century to teaching, research, consultancy and leadership in the field of water resources engineering including surface and sub-surface hydrology, hydraulics, irrigation and water quality studies. This Award recognizes his fundamental works in water modeling and flood and drought management as well as his creation of a new branch of hydrology called: entropic hydrology.*

Professor Singh earned his doctorate from Colorado State University in 1974 after completing his Master's and Bachelor's studies from University of Guelph, Canada and UP Agricultural University, India, respectively.

Professor Singh has served as Visiting Professor in nine countries including European nations, Australia and India. He has provided research supervision to more than 40 students and has a publication record consisting of 21 textbooks, 70 technical reports, 750 Journal- and 300 conference-based papers. He works on Editorial Boards of 30 Journals in various capacities. He has won around 70 awards, ranging from Fulbright Fellowship to ASCE's Lifetime Achievement Award: 2013.

Awarded on
December 18, 2014
Place : MANIT, Bhopal, India

M. D. Kudale
President, Indian Society for Hydraulics

Dignitaries and Participants of HYDRO 2014 International

Dr. V. Sriram receiving "R J Garde Research Award"

and ninety research papers were accepted and presented in four parallel sessions. Additionally four experienced researchers from academic institutions and research labs around the world gave invited talks on state of the art works carried out by them in the water sector.

Hydro-2014 International was organised in association with NIH Roorkee, SVNIT Surat, VNIT Nagpur, NIT Kurukshetra, NITK Suratkal, NIT Hamirpur, IIT Bombay and few other reputed organisations.

The S N Gupta memorial lecture was delivered by Professor K.Srinivasa Raju, BITS Hyderabad on the topic "Multicriterion Decision Making in Sustainable Water Resources Planning and Management". Prof.V.P.Singh (USA) was honoured with "ISH Lifetime Achievement Award" while "R J Garde Research Award" was conferred on Prof.V.Sriram, IITM, Chennai. Dr.Dhrubajyothi Sen, IIT Kharagpur donated his award money (Jalvigyan Puraskar) to the corpus fund of ISH.

INDIAN SOCIETY FOR HYDRAULICS AWARDS (HYDRO – 2014)

ISH Lifetime Achievement Award

Dr. V. P. Singh (USA) Professor, Texas A&M University

S. N. Gupta Memorial Lecture

Prof. K. Srinivasa Raju, BITS, Hyderabad

Lecture Topic:
"Multicriterion Decision Making in Sustainable Water Resources Planning and Management".

Prof. R. J. Garde Research Award

Prof. V. Sriram, IITM, Chennai.

G. M. Nawathe Puraskar (Best Paper in HYDRO 2013)

N. Seetha, M. S. Mohan Kumar,
S. Majid Hassanizadeh and **Amir Raoof**

Paper Title:
"Scale Effects On Virus Transport In Porous Media"

Jal Vigyan Puraskar (Best paper in ISH Journal)

Dr. Dhrubajyoti Sen, IIT Kharagpur

Paper Title:
"Real-time rainfall monitoring and flood inundation forecasting for the city of Kolkata" published in ISH JHE, **Vol. 19 (2) 137–14** (2013)".

Prof. U. C. Kothyari Best Ph D thesis Award

Dr. Arunkumar, IITB, Mumbai

Thesis title:
"Multi-reservoir optimization using evolutionary algorithms coupled with chaos".

Prof. U. C. Kothyari Best M Tech thesis Award

Mr. Bharat K Gehlot, MANIT, Bhopal

Thesis title:
"Study of stilling basin models for pipe outlet".

USE OF SAND-FILLED GEOTEXTILE TUBES FOR SUSTAINABLE COASTAL PROTECTION

by
M. D. Kudale
kudale_md@cwprs.gov.in
Central Water and Power Research Station, Khadakwasla, Pune - 24

The rate of coastal erosion in all the maritime states and the union territories of India is considerably increased due to anthropogenic and natural causes. In the conventional way for mitigating the coastal erosion, hard solutions like seawall or groynes are being adopted. These solutions are made up with quarry stones or various types of concrete blocks. These traditional forms of the coastal structures have become expensive to build & maintain because of the non-availability of heavy rock. Also, heavy machineries are required for the construction. Furthermore, the massive rubblemound seawalls are not preferred from aesthetic point of view. More environment friendly structures are need of time.

Recently, geotextile tubes are being increasingly used in the marine structures. These tubes have proven to be economical alternative for the construction of offshore reefs, groynes and seawalls. They have also been used for slope/ bank protection in the riverine problems. The tubes are made up with woven/non-woven polypropylene/polyesters fabrics. The tubes exhibit high strength, while having good workability and physical toughness and are relatively cheap. They are permeable fabrics, which is able to hold back material while water flows through. Geotextile tubes are large tubes filled with sand slurry mix. The mix usually consists of dredged material from the nearby area.

The trends in the design of coastal protection have been transformed into sustainable soft solutions in terms of material used for the hard solution. The adverse effects of hard solution for the coastal protection have been experienced by the coastal community since long. In the recent years, geotextile technology has widely spread all over the world due to its simplicity & less impact on the coastal environment. Despite the lack of proper design criteria such as hydraulic stability, structural functionality and perspective of their behavior during and after construction, the geo-textile technology has attracted the coastal engineers and has become the effective solution for the coastal protection. The field experience is of great help for the engineers to improve the designs of coastal protection works using the geotextile technology. Apart from the geotextile tube design or its hydraulic stability, placement of the tubes plays important role in its functionality.

The sand-filled geotextile tubes are flexible and can be widely used for various marine applications with different sizes, depending upon the requirements of the projects. In the coastal environments, they are used as submerged reef, groynes and for the sand dunes stabilization. They are used as single or stacked and with combinations of other materials. It has been observed that tubes tend to deteriorate and fall apart if not protected from the UV rays. It should be covered with proper medium partly or fully. They can be appropriately covered with sand, if it is being used for sand dune retention or it can be fully submerged in the sea water permanently or periodically. Allowing this, the life span of geotextile tube may substantially increase. The tubes are susceptible to vandalism. Also, they are susceptible to damage if placed on rocky bed.

GEOTEXTILE TUBES IN COASTAL PROTECTION WORKS

In India, the use of geotextile tubes for the purpose of coastal defense started in the last decade. Unavailability of proper design methods tend to depend on the past experiences of the completed geotextile tube projects. Along with the sea wave dynamics, the material properties of the tubes, foundation conditions, local scenario, and alignment of the tubes and experiences of the people involved in the construction projects also play important role for the success of the project. In Indian scenario, the use of sand-filled geotextile tubes for the coastal protection works is in the developing phase. The compilation & analysis of the data regarding success/failure of projects may improve the techniques of using geotextile tubes. The experiences with the few case studies of completed projects using geotextile tubes in coastal protection works are discussed, in the following paragraphs.

Geotextile tubes at Devbag, Malvan, Maharashtra

Coastal stretch at the village Devbag was severely eroded during 2006 monsoon. In order to mitigate the coastal erosion, it was decided to protect the eroded coastline by providing temporary coastal protection works with sand-filled geotextile tubes. It was also proposed to accommodate these geotextile tubes in the core of the rubblemound seawall.

The tubes were aligned parallel to the coast, near the eroded vertical cliff. The total length of protection was about 150 m. In which, 50 m portion lies on the creek side, while 100 m lies on the sea side (Fig.1). A small groyne (25 m long) in a form of 3.0 m dia. tube was also provided on a sloping bed towards sea.

The recommended geotextile tubes are of 3.0 m and 1.0 m diameter and 20 m length each. The tube takes elliptical shape

after the filling of sand as shown in Fig 2. The geotextile tubes installed at the site worked satisfactorily as an immediate temporary protection work for the two seasons. It was proposed to embed these geotextile tubes in the permanent coastal protection work (seawall). Unfortunately, the permanent work was delayed due to some reason. As such, these geotextile tubes suffered some damage. Despite the damage, these geotextile tubes used as a temporary coastal protection measure saved further recession of the shoreline.

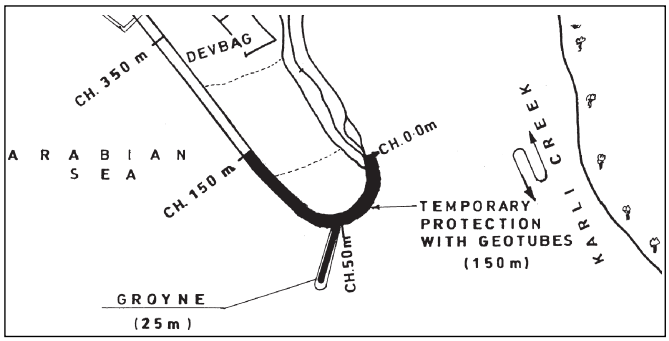

Fig. 1- Layout plan of the coastal protection work at Devbag, Maharashtra

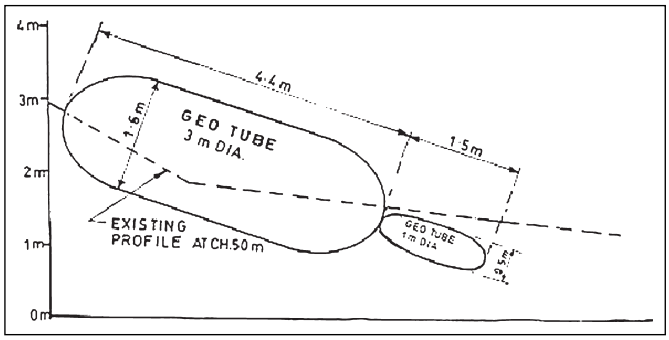

Fig. 2 - Cross-section of sand-filled geotextile tube seawall at Devbag, Maharashtra

Geotextile tubes at Shankarpur, West Bengal

Shankarpur coastal stretch is situated between Dubda creek and Mandarmani creek in West Bengal. About 9 km stretch of the Shankarpur coast has been suffering severe erosion. The erosion is threatening livelihood of the residents and ruining valuable forest land. In order to mitigate the erosion, the project authorities decided to provide geotextile tubes along the coast. About 900 m long construction with geotextile tubes was completed in the year 2007. The geotextile tubes were laid in the stacked form consisting of two 3.0 m dia. geotextile tubes at the base and one 3.0 m dia. tube placed over it.

These geotextile tubes were covered with non-woven polypropylene sheets for extra resistant against UV rays. Immediately after the execution of the tube work, the Shankarpur coast faced severe wave attack during the storm in August 2007. Due to this, about 200 m length of the tube protection suffered damage. The damage was in the form of dislodgment of 6 to 7 tubes and complete removal of the sand from 3 to 4 tubes. Geotextile tubes provided for the scour protection also suffered damage.

Subsequently, the coast faced similar situation during 2008 monsoon period. About 400 m length of geotextile tubes had undergone similar type of damage. In order to reduce the severe wave attack on coastline, the project authorities constructed two rows of wooden bullies filled with hard laterite stones. The bullies structure was placed at about 20-25 m away from the geotextile tubes towards sea side (Fig.3). The purpose of piling row of bullies was to break part of the wave energy brunt before reaching the geotextile tubes. These vertical bullies structure offer a partial resistance to the sea waves and causes reflection of the sea waves.

The geotextile tubes structure is now in somewhat sheltered area. Periodic maintenance of the geotextile tubes has been carried out, as and when damage occurs.

Fig.3 - Geotextile tubes as a coastal protection at Shankarpur, West Bengal (2008)

GEOTEXTILE TUBES USED AS NEARSHORE REEF/BUND

Geotextile tubes are widely used in the construction of the nearshore detached bund/reef parallel to the coast. Requirement of the beach width is the main criterion for deciding the alignment or the depth contour of the bund. The offshore reef structures or nearshore bund have proven to be very good solution for the coastal protection and helps in the formation of the wide beaches. It can be combined with sand nourishment, which helps rapid stabilization of the beach. As such, the offshore reef or nearshore bund could be of dual purpose viz. allowing overtopping of the waves for the sand deposition and secondly, it holds the nourished/deposited sand on the beach. Generally, the emergent bunds for the purpose of holding sand are constructed at the nearshore region without gap and special attention has to be provided for the turbulence created by the breaking waves. Crest elevation/width and the alignment/location of the nearshore bund play key role in deciding the design details. Use of geotextile tubes as a nearshore bund for holding the nourished sand is the new trend adopted in India instead of conventional rubblemound offshore structure.

Nearshore geotextile tubes reef at Candolim, Goa

Candolim beach is situated at about 15 km north of the Panjim, Goa. A ship named 'River Princess' was grounded a few years ago at Candolim's nearshore area. The 300 m long ship was obliquely rooted at about 150 m to 200 m from the coastline. Since then, considerable recession of the beach on southern side of the ship and accretion of the sand on northern side has been observed. Rate of erosion was high and threatening the precious properties located at the coast. In order to combat severe erosion at Condolim, a solution in three different stages was suggested viz. i) Revetment at the eroding coast with 2 t tetrapods in the armour ii) Near shore reef with sand-filled geotextile tubes and iii) Beach–nourishment (CWPRS Technical Report No. 4853). This design was suggested presuming that the work would be completed before the onset of the monsoon of 2009. But, due to monsoon climate & unfavorable working conditions at the site, only one geotextile tubes of 20 m length could be placed in the offshore region.

As such, the sand-filled geotextile tubes in two rows (one of 3 m dia and another of 1 m dia on the seaside) were provided near the shore abutting the eroding cliff. This work was a temporary protection to the eroding coastline (Fig.4). It was decided to accommodate these geotextile tubes along the coastline in the proposed revetment work near the coast. During 2009 monsoon, few geotextile tubes suffered damage and dislodged from its position, however, they avoided the recession of land during the monsoon.

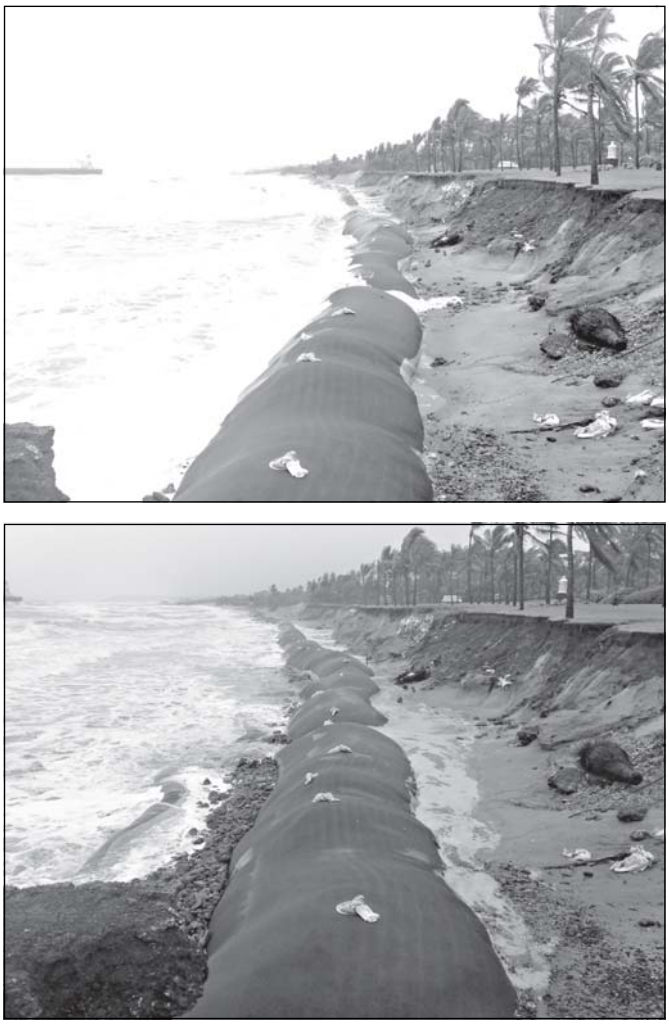

Fig. 4 - Geotextile tubes laid at Candolim beach, Goa (2009)

The construction of the offshore reef with geotextile tubes for a length of 800 m and the beach nourishment work were completed in the April 2010. It was seen that, within a month, considerable sand accreted on the beach (Fig.5). The process of the deposition of sand after completion of the work eventually continued up to 2010 monsoon. In the monsoon, the coast suffered stormy conditions and larger waves attacked the geotextile tubes. Due to this attack of the waves, scouring of sand took place beneath the geotextile tubes. The offshore movement of the sand from the base of the geotextile tubes resulted in damage to the geotextile tubes. The punching action of the scattered stones in the nearshore region on the geotextile tubes due to the large waves also caused damage to the geotextile tubes.

Nearshore geotextile tubes reef at INS Hamala, Mumbai

INS Hamala is the naval establishment located at the Aksa-Marve coast at the mouth of the Manori creek, Malad, Mumbai. The coast at the INS Hamala has been facing sea erosion since last few years. In order to mitigate the erosion, the project

authorities constructed a 900 m vertical UCR wall at the eroding coast along with the beach nourishment.

Later, it was decided to implement nearshore reef and beach nourishment solution. The purpose of the geotextile tubes nearshore reef was to reduce the incident wave attack on the coast (near the proposed revetment) and to hold the nourished sand on the beach.

It was proposed to provide geotextile tubes at the bed level of (-) 0.50 m (approx.) to form a nearshore reef. For placing the geotextile tubes, this level of (-) 0.50 m was selected, so that the operations of placing the geotextile tubes in position, filling the geotextile tubes with sand etc. could be carried out at the low tide level and enough time period would be available for the constructional activities. Two types of U.V. Resistant geotextile tubes, one of 3.0 m dia. and another of 1.0 m dia were laid, parallel to the high water line (parallel to the alignment of the proposed Revetment) and about 50 m away from the coast line. The height of the 3.0 m dia and 1.0 m dia. geotextile tubes after the sand filling was approximately 1.60 m and 0.50 m respectively. The 3.0 m dia. tube was mainly provided to take main brunt of the wave attack and to hold the nourished sand. The 1.0 m dia. tube placed on the sea side of the 3.0 m dia. tube was expected to act as the toe and was provided to take care of the probable scour on the seaside of the geotextile tubes. The area behind the geotextile tubes and the proposed revetment was nourished with sand with its elevation near the nearshore reef as +1.10 m (approx) and that at the revetment as +3.00 m (approx.).

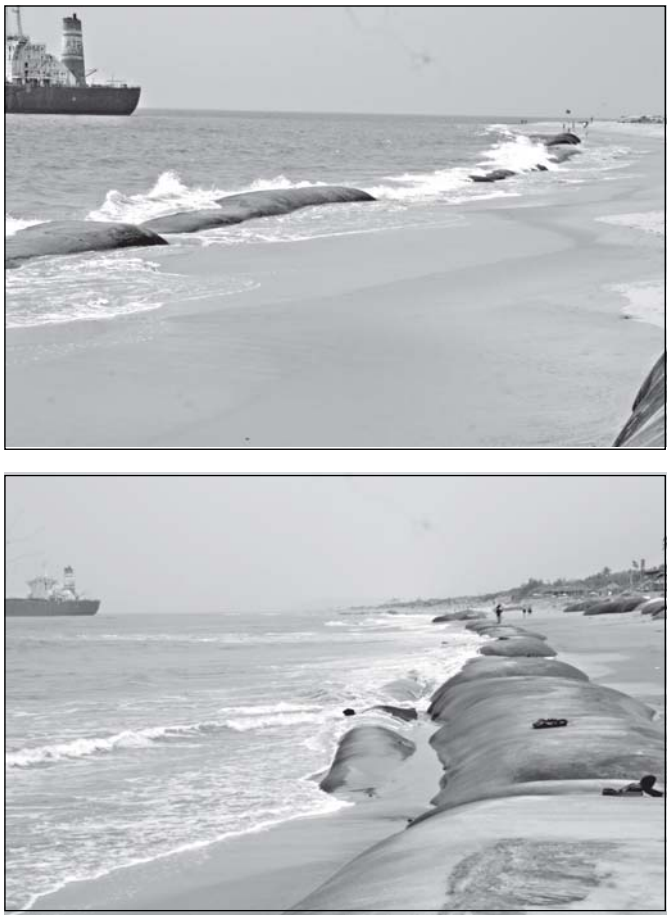

Fig. 5 - Near shore geotextile tubes reef at Candolim beach, Goa (2010)

The construction of the offshore reef with geotextile tubes for a length of 800 m and the beach nourishment work were completed in the April 2010. It was seen that, within a month, considerable sand accreted on the beach (Fig.5). The process of the deposition of sand after completion of the work eventually continued up to 2010 monsoon. In the monsoon, the coast suffered stormy conditions and larger waves attacked the geotextile tubes. Due to this attack of the waves, scouring of sand took place beneath the geotextile tubes. The offshore movement of the sand from the base of the geotextile tubes resulted in damage to the geotextile tubes. The punching action of the scattered stones in the nearshore region on the geotextile tubes due to the large waves also caused damage to the geotextile tubes.

Nearshore geotextile tubes reef at INS Hamala, Mumbai

INS Hamala is the naval establishment located at the Aksa-Marve coast at the mouth of the Manori creek, Malad, Mumbai. The coast at the INS Hamala has been facing sea erosion since last few years. In order to mitigate the erosion, the project authorities constructed a 900 m vertical UCR wall at the eroding coast along with the beach nourishment.

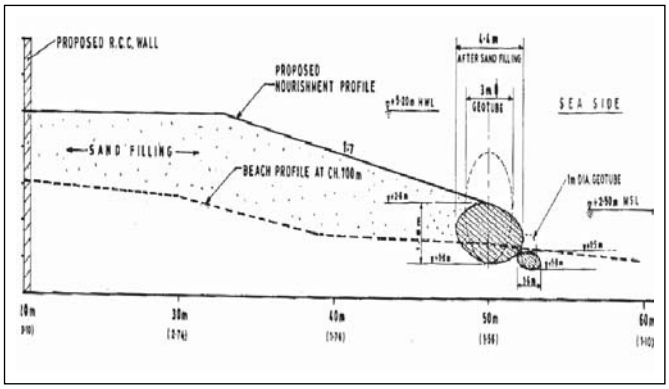

Fig.6 - Beach nourishment & near shore geo-tube, reef at INS Hamala, Mumbai

In order to hold the beach nourishment, a 3.0 m dia. geotextile tubes with top at MSL (+ 2.6 m) and 1m dia. tube at the toe level as a scour protection were provided. In order to attain a top level of + 2.6 m, a series of tubes was placed at the bed level of +1.0 m. and 50 m away from the proposed retaining wall (Fig.6).

The geotextile tubes laying and beach nourishment work were completed in the month of March 2010. Within a month's period, beach was stabilized and geotextile tubes were buried up to el. +1.5m. (Fig.7).

Nearshore Geotextile tubes Reef at Dahanu, Maharashtra

Dahanu is situated at a distance of about 110 km North of Mumbai. The beach at Dahanu is extensively used by the tourists for the recreational activities

About 400 m length of the beach is protected by constructing PCC retaining wall with steps towards sea side to facilitate the tourists. The beach is also enhanced by providing beach nourishment.

In order to hold the nourished sand, a series of offshore reefs with sand-filled geotextile tubes was constructed in the year 2010-11. A row of 3.0 m dia. geotextile tubes were placed with top level at the MSL (+3.5 m) at a distance of about 120 m away from the coast. 1.0 m dia. geotextile tubes were placed at the toe of the 3.0 m dia. tubes as a scour protection. The height of the 3.0 m dia. and 1.0 m dia. geotextile tubes after the sand filling were 1.60 m and 0.50 m (approx) respectively

Fig. 7 - Near shore geotextile tube reef at INS Hamala, Mumbai (2010)

(Fig.8). The series of geotextile tubes placed with their top at Mean Sea Level is helping in arresting the sand on the beach. The performance of the geotextile tubes as an offshore reef is impressive and has served the purpose.

Fig. 8 - Offshore reef with geotextile tubes at Dahanu, Maharashtra (2011)

DISCUSSIONS

The beach width is mostly dependent on the crest level of the nearshore reef structure. Greater the depth of placement, larger the height of the structure. Stacked geotextile tubes structure may be one of the alternative solutions for deeper reefs. However, placement of the sand-filled geotextile tubes at deeper depths requires sophisticated machinery and instrumentation. Furthermore, this machinery is not readily available. The cost of these structures is high and it may be the major constraint for smaller projects.

In certain circumstances, the geotextile tube technology has been used at the eroding coastline. Geotextile tube structure placed abutting to the eroding coastline may not perform effectively and get damaged at an early age. This has been experienced at Devbag, Candolim and at the Shankarpur coast. However, geotextile tubes placed on the eroding coast covered by rubble protection may enhance the life of the structure. Geotextile tubes may be used in the partially protected environment or away from the severe wave attack.

Geo-bags filled with coarser materials and arranged with gentle slope may be one of the alternatives for protecting the eroding coastline.

On the other hand, nearshore bunds /reefs with geotextile tubes have greater advantage over the geotextile tubes at the eroding coastline. It may be used as a barrier for the waves and for holding the nourished sand. The beach is likely to stabilize after a few years. The recurring periodic expenditure of the beach nourishment would also decrease after the beach stabilization within 2-3 years. Later, the sand would be deposited by natural process. The row of nearshore geotextile tubes is to be placed well below the MSL & may be allowed to act as submerged reef structure.

The damaged geotextile tubes could be replaced. Damage to the geotextile tubes does not result in spoiling the beach, like in the case of other hard solutions. Sandy bed is essential for placing of the geotextile tubes. The bed with rocky outcrops may damage the geotextile tubes.

CONCLUDING REMARKS

From the experiences of sand-filled geotextile tubes used for coastal protection, the following broad remarks are drawn:

The sand-filled geotextile tubes abutting to the vertical cliff of eroding coastline can be used in partially protected areas. Near shore reef with geotextile tubes combined with beach nourishment appear to be an appropriate solution for beach protection. The crest of the reef needs to be at or below the Mean Sea Level.

Geotextile tubes are the flexible units for the coastal protection work. It has no adverse environmental impact on the aquatic habitats at the site. The success depends on the right design and learning from the behaviour of the geotextile tubes structures in the coastal environment.

ACKNOWLEDGMENT

The author is thankful to Director, Central water & Power Research Station, Pune for his continuous encouragement & kind consent for presenting the article.

REFERENCES

CWPRS Technical Report No. 4853 (2011). Studies for the design of coastal protection work at Candolim, Goa.

Pilarczyk Krystian W. Geosynthetics and Geosystems in Hydraulic and Coastal Engineering Published by A.A. Balkema/Rotterdam/Brookfiled/2000.

Minutes of Nineteenth General Body Meeting

The 19th Annual General Body meeting of The Indian Society for Hydraulics (ISH) was held on 18th December 2014 at 1730 hrs at Maulana Azad National Institute of Technology (MANIT) Bhopal, during HYDRO-2014 International conference. About 70 members attended the meeting. The meeting started with a welcome address by Er.M.D.Kudale, President, ISH. The minutes of the 18th General Body meeting held on 4th December 2013 at IIT Madras was confirmed. It was informed that 9 ISH members obtained IAHR membership through ISH for the year 2014 as per the agreement of ISH-IAHR. Secretary, Treasurer and Editor presented their reports in the meeting.

The proposal from Prof. Z. Ahmad, IIT Roorkee, was put up before the General Body for hosting HYDRO-2015. After discussions, it was approved to hold HYDRO-2015 at IIT Roorkee as per the terms and conditions laid by ISH. A Proposal from Prof. E. Venkata Rathnam from NIT Warangal to host speciality conference in association with ISH was also approved (To be held during July 2015). The audited accounts of the society for the year 2013-14 was circulated and approved by the General Body. The meeting concluded with vote of thanks to the Chair.

IAHR Membership Notice

All the interested ISH Life Members are requested to send their Annual Membership fee of Rs. 1200/- towards International Association of Hydraulic Engineering and Research (IAHR) membership for the year 2015 to the Secretary, ISH latest by 10th February, 2015. Cheque or DD should be drawn in favour of 'Secretary, Indian Society for Hydraulics' payable at Pune.

ISH will be remitting the fees collected to IAHR Secretariat in a single consolidated payment on or before 1st March, 2015.

The details of ISH Life Membership Number and email address should be sent along with the payment.

THE BOMBAY PUBLIC TRUST ACT, 1950
SCHEDULE VIII [vide Rule 17 (1)]

Name of Public trust: **INDIAN SOCIETY FOR HYDRAULICS** Registration No: **F - 7555 (PUNE)**

BALANCESHEET
As at 31st March 2014

FUNDS AND LIABLITIES	Amount ₹	Amount ₹	PROPERTY AND ASSETS	Amount ₹	Amount ₹
Trust Funds or Corpus			Immovable Properties(at cost)		0.00
Opening Balance	13,38,132.00		Fixed Assets		
Add: Life Membership fees recd during the year	36,000.00	13,74,132.00	Laptop		6,593.60
			Printer		4,952.00
Other Earmarked Funds			Investments		
R. J. Dadre Research Award	1,59,500.00				
Reserve Fund	25,000.00		F D with Canara Bank	35,47,334.00	
Endowment Fund	1,15,000.00		F D with SBI	5,44,215.00	40,91,549.00
S N Gupta Memorial Fund	2,50,000.00	5,49,500.00			
			Tax Deducted at Source		49,324.00
Loans (Secured or Unsecured)					
From Trustees		0.00	TDS recoverable from Ace enterprises		2,049.00
From Others		0.00	Interest Accrued but not received		1,93,091.41
Liabilities			Cash & Bank Balances		
Loan to Mr. Ranganathan	2,800.00				
For Expenses	9,118.00	11,918.00	Cash in Hand		89.25
			Canara Bank A/C		1,58,973.48
			State Bank of India savings A/c		65,023.00
Income & Expenditure A/c					
Balance as per Last B/S	23,68,590.35				
Add: Surplus for the year	2,67,504.39	26,36,094.74			
	Total ₹	45,71,644.74		Total ₹	45,71,644.74

As per our Report of even date

For Sharad A Vaze & Co.
Chartered Accountants

Sharad A Vaze
Proprietor.
Date : 11/08/2014
Place : Pune

The above Balancesheet to the best of our belief contains a true account of the Funds and Liabilities and of the Property and Assets of the Trust.

President
Indian Society for Hydraulics

Secretary
Indian Society for Hydraulics

Treasurer
Indian Society for Hydraulics

Date : 11/08/2014
Place: Pune.

THE BOMBAY PUBLIC TRUST ACT, 1950
SCHEDULE VIII [vide Rule 17 (1)]

Name of Public trust: **INDIAN SOCIETY FOR HYDRAULICS** Registration No: **F - 7555 (PUNE)**

Income & Expenditure Account
For the year ending 31st March 2014

EXPENDITURE	Amount ₹	Amount ₹	INCOME	Amount ₹	Amount ₹
To Expenditure in respect of Properties		0.00	-		
To Establishment Expenses			-		
Advertisement	75028.00				
Printing & Stationery	72794.50		By Interest on Savings A/c		16347.00
Postage & Courier	10366.00				
Account writing charges	5000.00		By Interest recd on FDs		
Conveyance	11766.25		Canara Bank	289932.54	
Bank Charges	571.00				
Miscellaneous Expenses	11124.00		State Bank of India	49065.00	
Refreshment expenses	3696.00				338997.54
Depreciation	17318.40				
		207664.15			
			By Workshop Registration Fee		0.00
-			By Sponsership		75000.00
To Legal / Professional Expenses		4000.00			
To Audit Fees		5618.00	-		
			By Donation in Cash or Kind		0.00
To IAHR Membership		2958.00			
To Expenditure on Object of the Trust			By Instituional Membership		8,400.00
Awards and Prizes		32000.00			
Conference Expenses		0.00	By ISH Membership		81,000.00
To Amount transferred to Reserve					
To Excess of Income over Expenses		267504.39			
	Total ₹	519744.54		Total ₹	519744.54

As per our Report of even date

For Sharad A Vaze & Co.
Chartered Accountants

Sharad A Vaze
Proprietor.
Date : 11/08/2014
Place: Pune.

President
Indian Society for Hydraulics

Secretary
Indian Society for Hydraulics

Treasurer
Indian Society for Hydraulics

Date : 11/08/2014
Place: Pune.

THE INDIAN SOCIETY FOR HYDRAULICS

(FIXED DEPOSIT AND SAVING BANK BALANCE STATEMENT AS ON 12.12.2014)

1 Canara Bank(S.B A/c No. 25801010000822) Rs. 138253

2 State Bank of India (S.B. A/c No. 30633921394) Rs. 84445

Total in Saving Bank Accounts **Rs. 222698**

Sr. No.	Name of Bank	Date of Deposit	Date of Maturity	Amount Rs.	Rate of Interest
1	Canara Bank, Khadakwasla, P.O. R.S., Pune - 411024	23-May-12 02-Jan-14 02-Jan-14 27-Aug-12 07-Mar-12 07-Mar-12 08-May-13 02-Jul-13	23-May-15 27-Sep-16 27-Sep-16 25-Aug-15 07-Mar-17 07-Mar-17 08-May-16 02-Jul-16	150000 324178 192184 800000 200000 150000 900000 500000	9.00% 9.05% 9.05% 9.00% 9.25% 9.25% 9.00% 9.00%
Total FD amount with Canara Bank Rs. 3216362					
2	State Bank of India, DIAT, Girinagar, Pune-411025	28-Jun-14 08-May-13	28-Jun-15 08-May-16	444215 100000	9.00% 8.75%
Total FD amount with State Bank Rs. 544215					

Grand Total Rs. 3983275

(Rupees Forty two lakhs eighty seven thousand & thirty three only)

INDIAN SOCIETY FOR HYDRAULICS

BUDGET FOR THE YEAR 2015-16

Income	Rs.	Expenses	Rs.
Membership Fee			
Life Member & Fellow Member	1,50,000	Payment for online Journal/Special Issue	
for Bulletin	3,20,000	& Printing charges Postage	50,000
Contribution from Corporate Members	20,000	Website charges	20,000
Bank Interest on Fixed Deposit	3,00,000	Stationery & Electronic Accessories	40,000
HYDRO 2015 Workshops & Seminars	4,00,000	Audit & A/c. writing charges	5,000
Grant-in-Aid (INCH – AICTE/DST)	1,30,000	Secretarial Assistance charges	25,000
		Assistance for IAHR Participation	30,000
		Prizes & Trophies &	
		S N Gupta Memorial Lectures	60,000
		Workshops /Seminars etc.	50,000
		Miscellaneous including Transport Expenses	
		for meeting etc.	1,00,000
		Provision for Income Tax	25,000
			7,25,000
		Balance over year	**2,75,000**
	10,00,000		**10,00,000**

OBITUARY

Dr. L. K. Ghosh, former Additional Director, Central Water & Power Research Station, Pune, (b. November 2, 1944) passed away on January 14, 2015. He had also served as Development Advisor (Ports), Water & Power Consultancy Services Limited (WAPCOS) till his untimely demise.

After completing his studies at the University of Calcutta, where he obtained the degree of BE (Civil), obtained M.Tech (Advanced Hydraulics) from IIT Kharagpur in 1971 and **Dr. L. K. Ghosh** joined as Assistant Engineer Ganga Basin Water Resources Organisation, Ministry of Irrigation and Agriculture (1971 – 1974). He joined Central Water & Power Research Station in 1974. He did his MS (Ocean Engineering) from University of California Berkeley, USA in 1982 under UNDP Fellowship. He obtained the degree of Ph.D. (Civil Engineering) from IIT Bombay in 1987. He has completed 120 client sponsored projects related to Coastal Morphology, Harbour Developments and Pollution Dispersion in Water Body.

Dr. L. K. Ghosh had expertise in Computational Hydraulics and Coastal Engineering. He was instrumental in initiating and setting up Mathematical Modeling Centre at CWPRS. He has developed several software's (TIDEWAY-2D, SEDIM etc,.) to tackle coastal engineering problems. He was instrumental in solving salinity intrusion problem of one of Asia's biggest lake Chilika in Orissa.

Dr. L. K. Ghosh was recipient of the C-DAC PARAM Award for the work "Parallel Hydrodynamic Model for a Class of Coastal Engineering Problems" in 1992 and was also awarded "Award of Merit" at Platinum Jubilee of CWPRS in 1992. He was also recipient of "Jalavigyan Puraskar" for the paper published in the Journal of ISH, September 1997.

List of ISH Life Members from 1st July 2014 to 31st December 2014

LM No.	Name
1093	Prof. Milind Jayavantrao Patil
1094	Prof. Shrikant P. Jadhav
1095	Shri Akhil Sood
1096	Shri J. Harsha
1097	Dr. Abdul Qayoom Dar
1098	Shri Sanjay Ramchandra Kulkarni
1099	Dr. Ajit Pratap Singh
1100	Shri Anuj Kanwal
1101	Ms Monica Chandmal Dhoka
1102	Ms Snehal Manohar Kadgaonkar
1103	Ms Rituparna Choudhury
1104	Shri Anand B. Kudoli
1105	Ms Biraidar Swati Ankushrao
1106	Shri Ajinkya Sharadrao Kadam
1107	Shri Vishal Dinkar Shinde
1108	Mrs Komal Sanjay Vighe
1109	Mrs. Shivani Sahu
1110	Ms Vaibhawi Roy
1111	Ms Smita Sudhakar Hailkar
1112	Ms Pushpa Kalyan Bhairi
1113	Dr. Flemming Jakobsen
1114	Shri Ajay Kumar Vashisht
1115	Dr. Mukesh Kumar Verma
1116	Sm Ulka Joshi
1117	Prof V. R. Desai
1118	Dr. Anil Kumar Sharma
1119	Dr. S. Suresh
1120	Tanweer Sultanah Desmukh
1121	Dr. Charu Parashar
1122	Amarsinh Babanrao Landage
1123	Basavaraj A. Konnur
1124	Rahul Kumar Jaiswal
1125	Gowri Shankar C.
1126	Jincy Rose M. A.
1127	Adit Kumar Shah
1128	Dr. Rajesh Babu Katiyar
1129	Mahendra Balwant Nakil
1130	Dr. C. Gnanaseelan

With Wishes for the New Year 2015

FORTHCOMING CONFERENCES/SEMINARS

Sr.No.	Title of the Conference	Date	Venue
1.	36th IAHR World Congress	28 June - 03 July 2015	The Hague/ Delft, the Netherlands www.iahrworldcongress.org
2.	RCEM 2015, River Coastal and Estuarine Morphodynamics 9th Symposium	30 August - 03 September 2015	Iquitos, Peru http://www.crearamazonia.org/rcem2015/
3.	PIANC-SMART Rivers Conference	07-11, September 2015	Buenos Aires, Argentina http://www.pianc.org.ar
4.	8th International Conference on Asian and Pacific Coasts (APAC 2015)	07-10, September 2015	Chennai, India http://apac2015.com/index.php
5.	ICEC 2015 Fifth International Conference on Estuaries and Coasts	02-04 November 2015	Muscat, Sultanate of Oman http://conference.squ.edu.om/Default.aspx?alias=conference.squ.edu.om/icec2015&
6.	HYDRO-2015 20th International Conference on Hydraulics, Water Resources, Coastal & Environmental Engineering	December 2015	IIT Roorke, India
7.	River Flow 2016 - 8th International Conference on Fluvial Hydraulics	10-14 July 2016	Saint Louis, Missouri, United States http://www.iihr.uiowa.edu/riverflow2016/
8.	IAHR 20th Congress of the Asia & Pacific Division	29-31 August 2016	Colombo, Sri Lanka http://iahrapd2016.info/
9.	13th International Symposium on River Sedimentation (ISRS2016)	19-22 September 2016	Stuttgart, Germany
10.	37th IAHR World Congress	14-18 August 2017	Kuala Lumpur, Malaysia
11.	International Conference on Cohesive Sediment Transport Processes (INTERCOH2015)	07-11, September 2015	Leuven, Belgium http://bwk.kuleuven.be/apps/intercoh2015/

BOOK - POST

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