SHORE PROTECTION ALONG THE COASTAL STRETCH OF KOVALAM

DETAILED PROJECT REPORT

Client

Project Division, Chennai

Tamilnadu Fisheries Department

Consultant

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PROJECT COST : Rs.18.30 Crore

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JUNE 2015

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1.0 INTRODUCTION

Kovalam is a fishing village about 40 km south of Chennai, on the East Coast Road en route to Mahabalipuram. The Kovalam shore is subjected to seasonal erosion since 1986 and, during the last decade, there was heavy erosion has been observed resulted in loss of over 150 coconut and palm trees. About 13 houses were destroyed in due course of time. The livelihood of the fishermen in the villages is severely affected. The shoreline has advanced towards the village rapidly about 130m since 2002 to till date. Department of fisheries has approached Department of Ocean Engineering, I.I.T Madras for a consultancy proposal to protect the shore of Kovalam village. I.I.T Madras in turn accepted the consultancy proposal and conducted bathymetry survey and shore line analysis during 21-05-2015 and 22-05-2015, to study the shoreline behavior and its effect over the years. The local villagers welcomed the decision of shore protection using groins and extended full support and cooperation for the team during survey. On the study of various factors influencing the erosion, it has been finalized to construct six short groins and two training walls along the shore starting from the Narasimha temple on the south to North covering 1860m length of shore. The layout of groins are designed so as to form accretion in between these groins and hence, to win over the eroded areas.

2.0 LOCATION

Kovalam or Covelong Beach is situated at (12° 47' 34.29''N -80°15'0.70''E) on the way to Mahabalipuram, from Chennai. It is located on the Coromandel Coast of Bay of Bengal, is known for its fishing activities and water sport events and, it is a good tourist destination nearby Chennai and every year a large number of people visit Kovalam. Fig. 1 shows the location of Kovalam on the Google map.

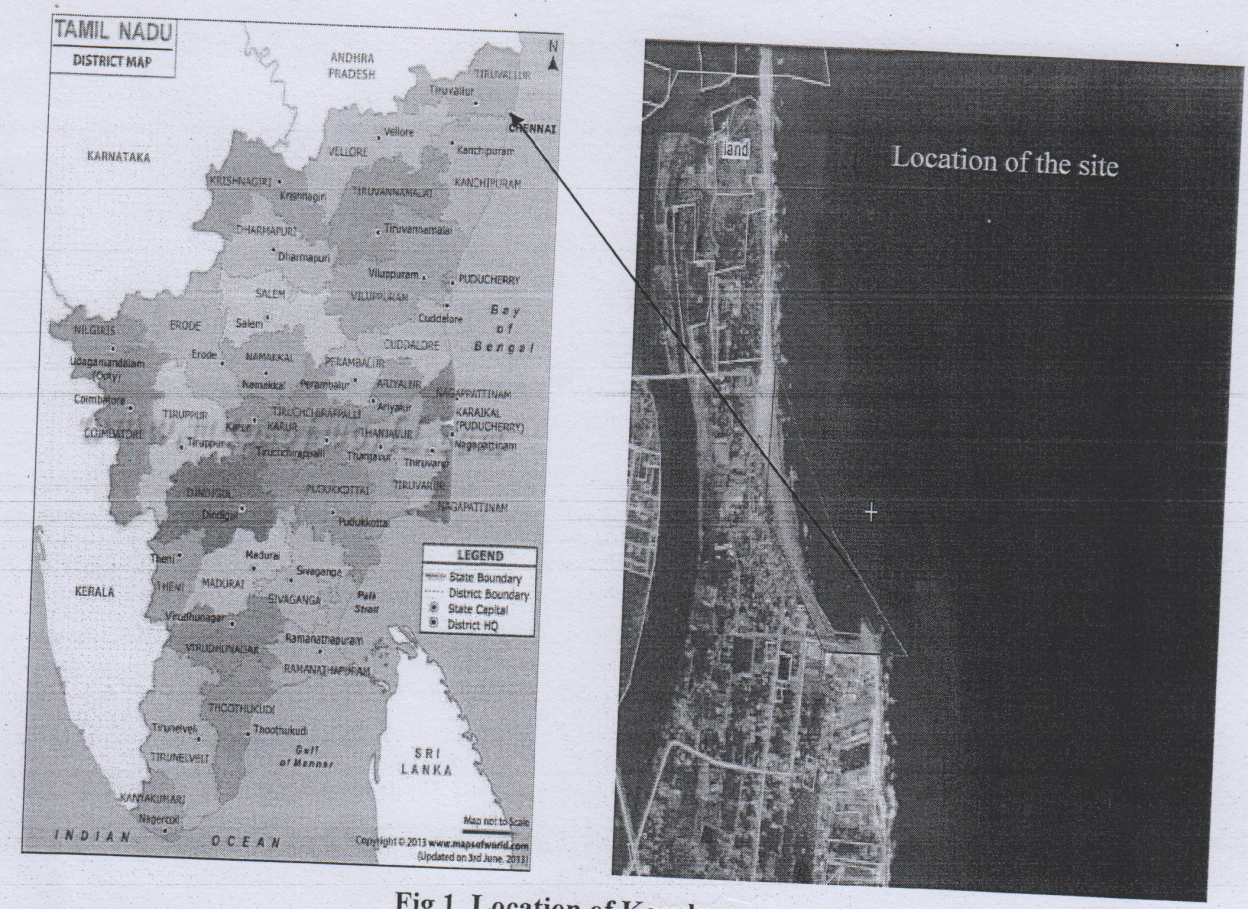

Fig.1. Location of Kovalam

3.0 AREA OF INTEREST

The area of interest is likely to start from the Narasimha temple near the existing beach up to 300 m north of the mouth of Muttukadu Backwater. Fig. 2 focuses the interested area. The shoreline assessment study and bathymetry survey have been conducted on 21-05-2015 & 22-05-2015 to assess the present nature of shoreline at the site. This would also be useful to access the erosion magnitude in the last two decades. The proposal of a groin field will lead to form accretion in between the groins thus the shoreline will progress towards the sea in future.

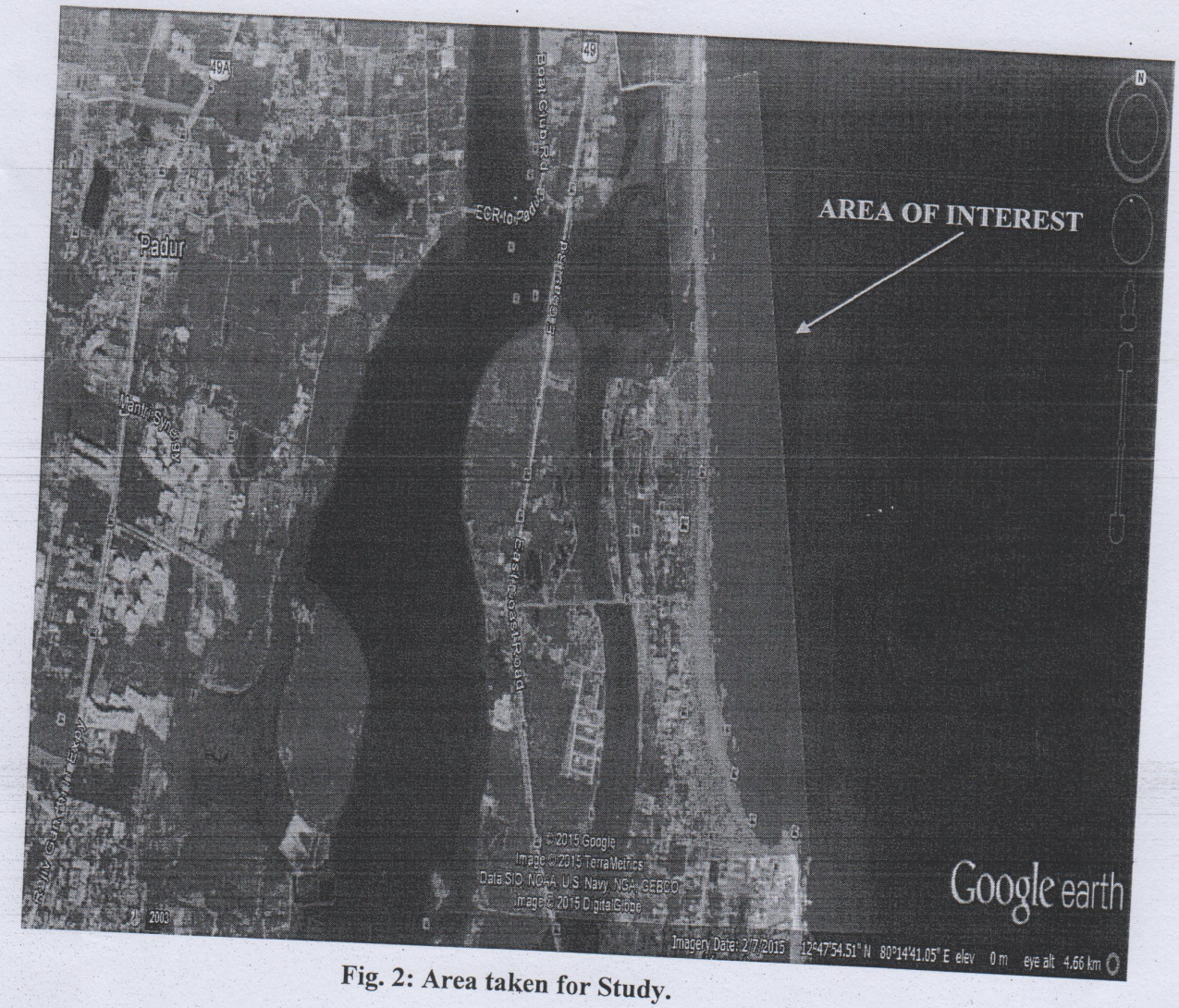

Fig. 2: Area taken for Study.

4.0 ISSUES AT KOVALAM

The Kovalam shore for a length of 2160m start from Narasimha temple on the south is being subjected to continuous erosion. Fig.3 shows the erosion packets along this coastal stretch. Hence, covering 1860m length along the shore, six groins (G1 to G6) and two training walls (G7 & G8) on the mouth of Muttukadu backwater are proposed. Erosion is found to be highly alarming from chainage 100m to 600m and hence, the first two groins on the south are proposed to be T-groins.

Bathymetry survey and shoreline survey have been carried out. Fig. 4 (plate 1) presents the measured nearshore bathymetry along this coastal stretch.

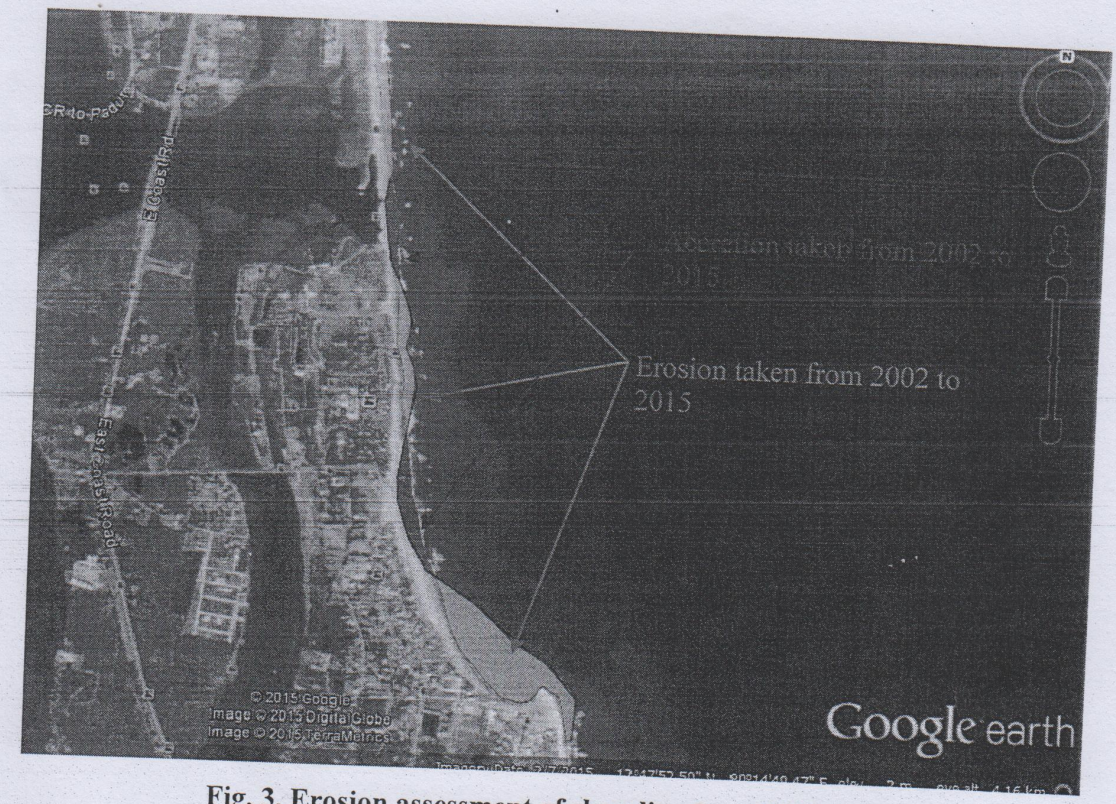

Fig. 3. Erosion assessment of shoreline from 2002 to 2015.

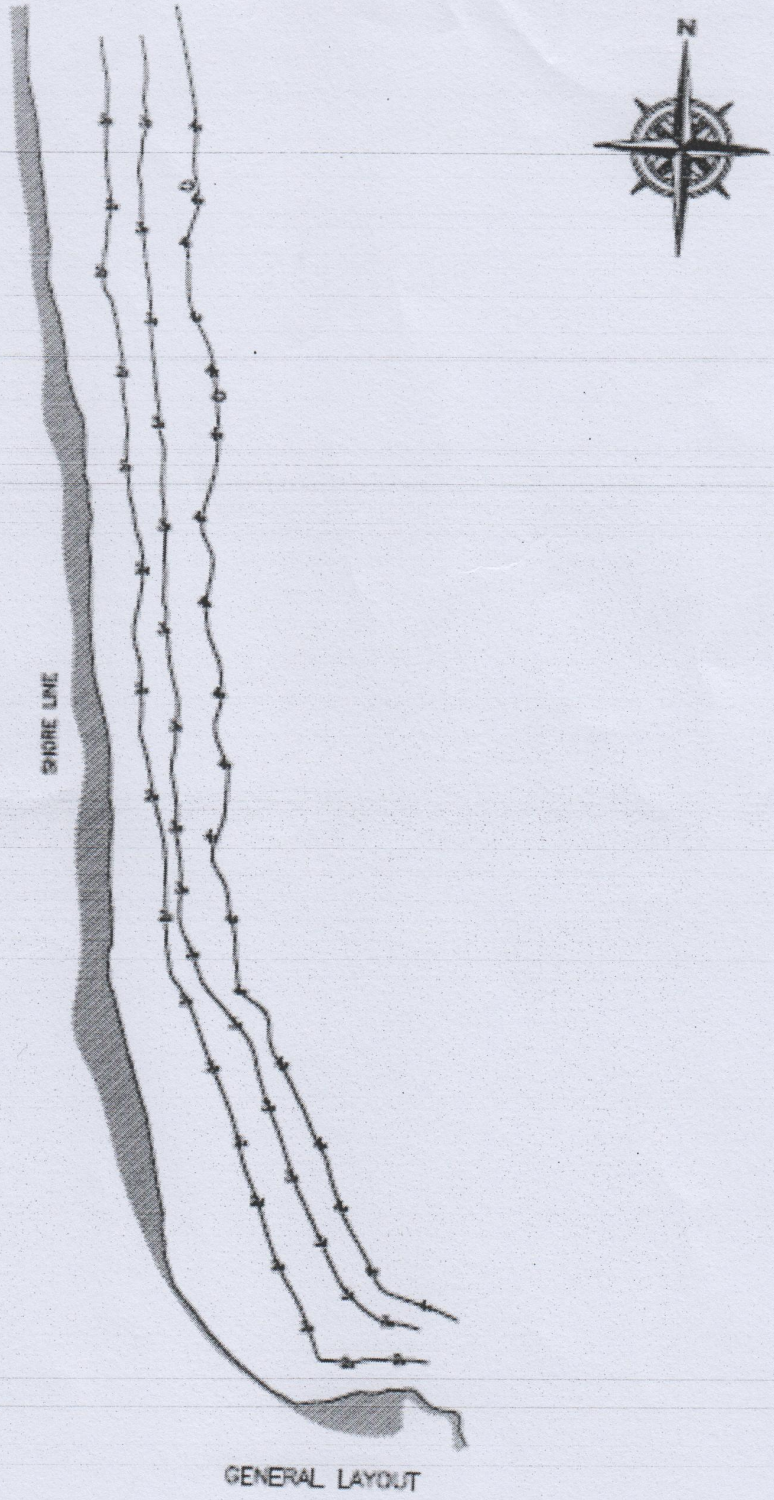

Fig. 4. Measured bathymetry

5.0 PROPOSED SHORE PROTECTION SCHEME

It is proposed to construct 6 groins of different lengths varying from 40m, 50m, 75m and 100m. Additional two training walls of 200m length are proposed at the mouth of the Muthukadu Back water. The following table shows length of each groin. Fig. 5 (Plate 2) presents the layout of groin field superimposed on the measured bathymetry.

Table 1. Proposed groin field

Groin Number	Length of groin	Location of groin from point nearer to Narasimha Temple (Chainage)
G1	50 m	200m
G2	75m	300m
G3	100m	500m
G4	75m	700m
G5	50m	900m
G6	40m	1000m
G7	200m	1580m
G8	200m	1860m

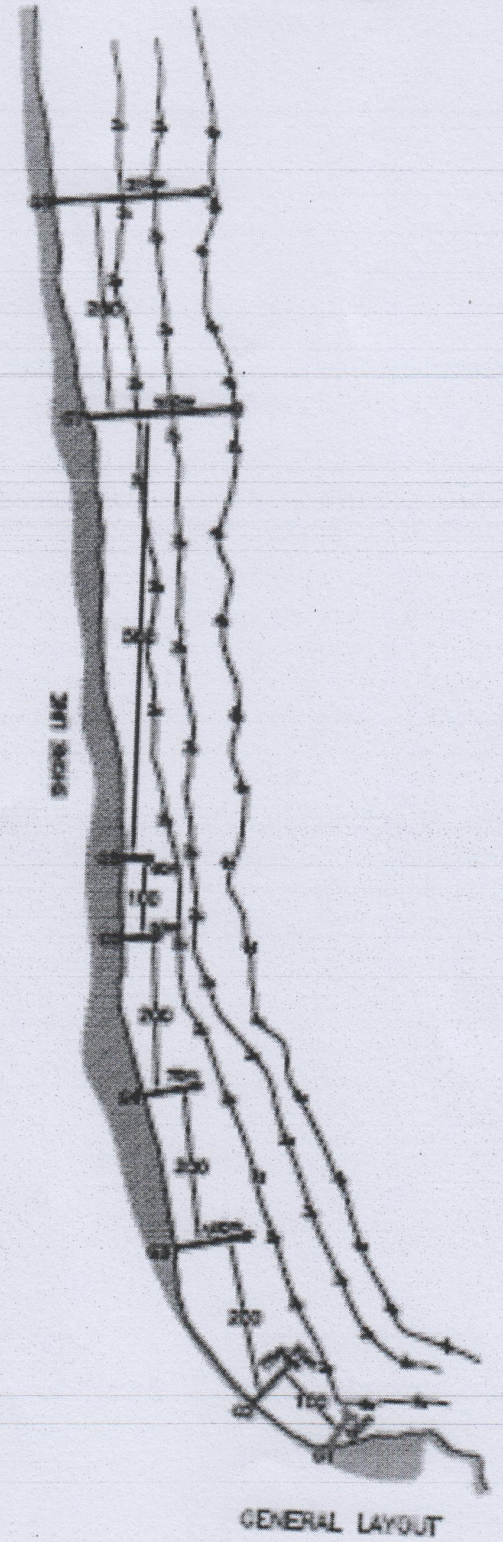

Fig. 5. Layout of the proposed groin field

6.0 NUMERICAL MODELLING FOR SHORELINE EVOLUTION

Structures in the near-shore environment are built for different purposes. These may be for the formation of artificial harbors, shore protection measures, seawater intake systems, disposal of effluent, etc. There are several configurations of such structures with respect to the shoreline, among which, structures normal to the shore is most common. The construction of a shore-connected structure often leads to changes in the shoreline. This warrants a study on the shoreline due to presence of the shore-connected structures. Such a study is very much essential in planning stage; so as to assess the impact of shore connected structures on the adjacent shoreline.

Numerical models offer the capability to study the effect of the wave characteristics, structure dimensions and other associated parameters in providing reasonable estimates of the shoreline response. As the ocean waves approaches the near-shore it undergoes transformations like shoaling, refraction, diffraction and breaking. The phenomena of wave breaking throw sediments to the surface due to the turbulence generated. The sediments in suspension are then driven by the wave-induced currents. Since the direction of waves in the near-shore is oblique, the currents induced by them have two components. One along the shore called long shore current mainly responsible for the long shore sediment transport, which plays an important role in the shoreline changes especially due to the shore connected structures. The other component is in the direction normal to the shore, in which case, the mode of sediment transport is called onshore-offshore sediment transport. When a structure normal to the shoreline is constructed, it will intercept the free passage of long shore sediment transport, which results an imbalance in the quantity of sediment in the near shore especially near the structure. This leads to accretion on the up-drift side and erosion on the down-drift side of the structure.

6.1 Methodology

KRAUS and HARIKAI (1983) proposed a numerical scheme to solve the one line model using Crank Nicholson implicit finite difference method. The non-dimensional equation of shoreline

$$y^*_{n,t^*+1} = B\{Q^*_{n,t^*+1} - Q^*_{n+1,t^*+1}\} + C_n \qquad (1)$$

$$where\ B = \frac{\delta t^*}{2 \times \delta x^*}\ and\ C_n = B\{Q^*_{n,t^*} - Q^*_{n+1,t^*} + 2\delta x^* q^*_{n,t^*}\} + y^*_{n,t^*} \qquad (2)$$

The non-dimensional shoreline is divided into 'n' grid points at equal non-dimensional interval, δx^*. Then shoreline changes over a non-dimensional time, δt^* is calculated using Crank-Nicholson finite difference scheme. The schematic diagram for finite difference scheme is shown in Fig. 6.

In this method, Q^* at the time interval (t^* +1) is expressed in terms of the shoreline co- ordinate of y*, first isolating the term involving α_{sp} (angle of shoreline normal to x-axis) using trigonometric identities. One of the term involving α_{sp} is then expressed as first order quantities in y* at time step (t*+1).

$$Q^* = K_D^2 \cos(\alpha_o) \sin(\alpha_b) \tag{3}$$

Where, $\alpha_o = \alpha - \alpha_{sp}$ and α is wave direction with respect to x-axis. The definition sketch showing the angles is shown in Fig. 7.

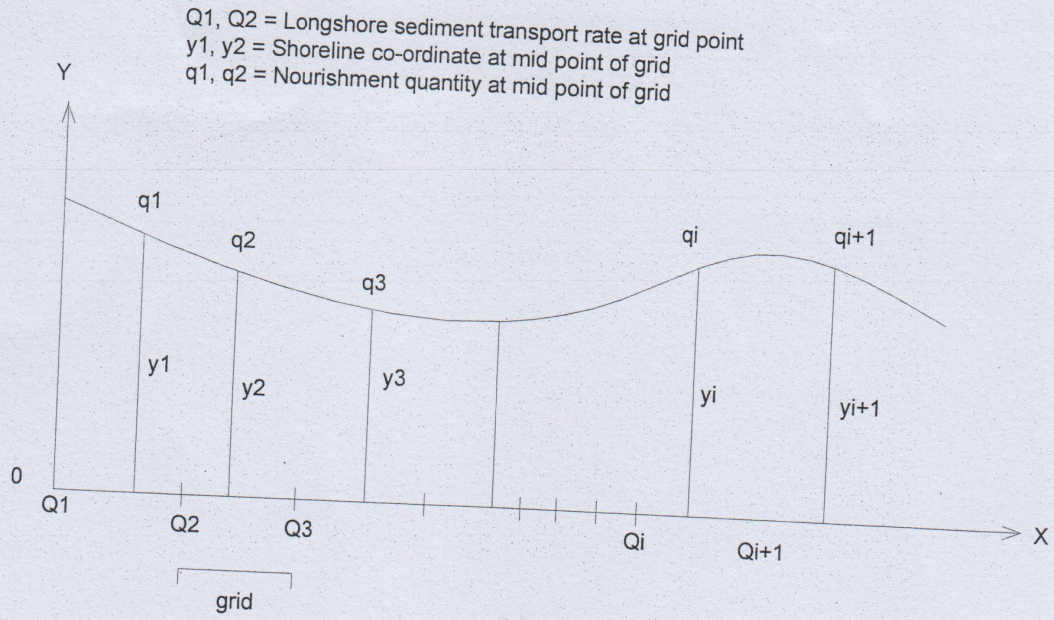

Fig.6. Schematic diagram for finite difference scheme

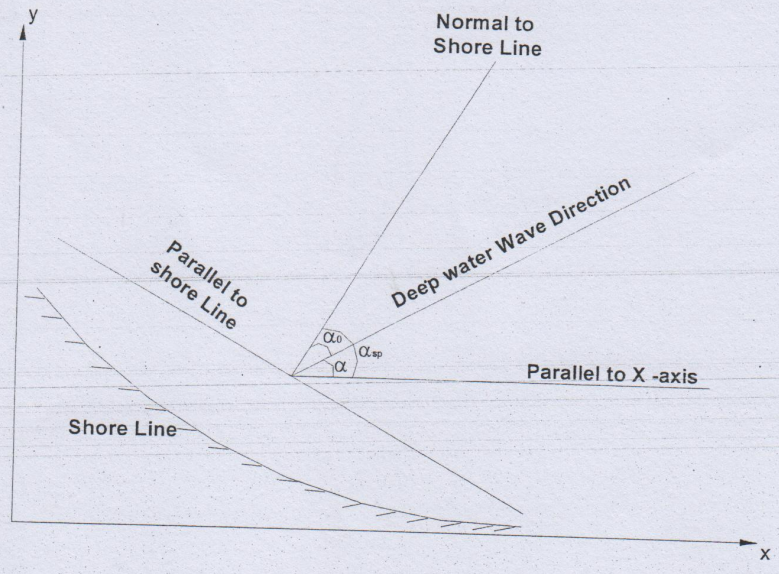

Fig.7. Definition sketch of angles considered

The elliptical form of mild slope equation, which deals with combined refraction-diffraction,

$$Q^* = K_D^2 \cos(\alpha - \alpha_{sp}) \sin(\alpha_b) \quad (4)$$

$$Q^* = K_D^2 \sin(\alpha_b) \left\{\cos(\alpha)\sin(\alpha_{sp}) \cot(\alpha_{sp}) + \sin(\alpha) \sin(\alpha_{sp})\right\} \quad (5)$$

$$Q^* = E_n \left\{y_{n-1,t^*+1} - y^*_{n,t^*+1}\right\} + F_n \quad (6)$$

Where $E_n = K_D^2 \{\cos(\alpha) \sin(\alpha_{sp,t^*}) \sin(\alpha_{b,t^*})\} / \delta x^*$ *and* $F_n = K_D^2 \{\sin(\alpha_{sp,t^*}) \sin(\alpha_{b,t^*})\}$

By substituting above equations, give the final equation as given below

$$BE_n Q^*_{n-1,t^*+1} - (1+2BE_n) Q^*_{n,t^*+1} + BE_n Q^*_{n+1,t^*+1} = E_n [C_n - C_{n-1}] - F_n \quad (7)$$

The above equations represent a set of (N-1) linear equation for (N-1) unknowns. The end values are specified as boundary conditions, that is, $Q^*_1 = 0$ and $Q^*_{N+1} = Q^*_N$. The above equation results into a tri-diagonal form which is solved for Q^*. This process is repeated for the entire duration and non-dimensional quantity is converted into real quantities using the corresponding scale factors. The program has been validated with published results.

6.2 Input and Output from the numerical model

The coastal line is discretized into number of grids with an equal spacing of 5m. The co-ordinates of the existing shoreline were provided. The length of the structure and grain size of the sediments (0.2mm) required for the calculation of active depth of the sediment transport and water depth at the tip of the structure are the inputs given to the model. In addition to these, the monthly wave characteristics and the number of years over which the shoreline change is desired to be mentioned.

The output shows the predicted shoreline changes after a period of 1, 5, 10, 15, 20& 25 years. The upstream of the structures shows advancement of the shoreline position, while, the downstream end shows the erosion. The output obtained is plotted in **Fig 8.**

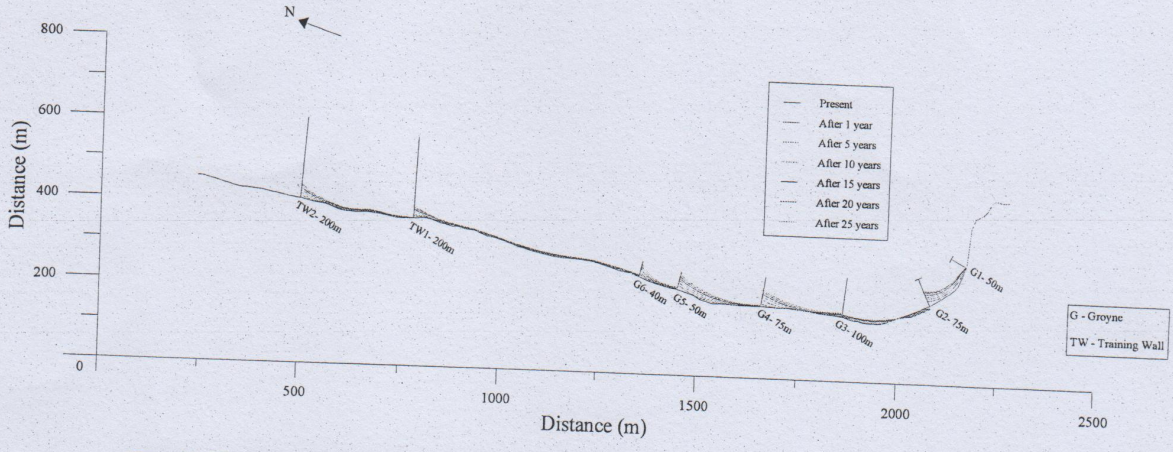

Fig. 8. Predicted shoreline changes due to the proposed groin field

7.0 DESIGN OF GROIN SECTIONS

7.1. General

The design of GROIN/ training wall section is mainly being carried out for the stability of armour units and the overall hydraulic stability of the section formed by rubble stones. It is to be noted that the geotechnical stability of the training wall sections has to be ensured such that seabed profiling is mainly coarse sand to fine silt and without any major clay content beneath the seabed. If the clay content is higher, the stability of the cross section will become questionable. Hence this warrants additional design requirements in the event

K_D =Stability coefficient, for rubble stones in breaking wave condition is 2 for random placement.

From Hudson's formula and further, provide a range between 75% to 125%, the weight of rubble stones is worked out to be 1 Ton to 2.5 Ton in two layers to withstand the design wave height of 1.8m. Accordingly, it is recommended two layers of rubble stones in the range of 1T to 2.5T.

Under layer

The size of stone in under layer is taken as W /10 to W /15 (as per CERC, 1984). Rough angular quarry stones are suggested for under layer for which W_r =2650 kg/m^3

Core layer

The size of stone in core layer is taken as W /100 to W /225 (as per CERC, 1984). Rough angular quarry stones are suggested for core layer for which W_r =2650 kg/m^3

Toe Mound

The size of stone in toe mound is taken as W /10 to W /15 (as per CERC, 1984). Rough angular quarry stones are suggested for toe layer for which W_r =2650 kg/m^3

Crest width

Crest width, r is arrived from the formula

$$r = nK_\delta \left[\frac{W}{W_r}\right]^{\frac{1}{3}}$$

Where,

n= number of stones on the crest = 3

K_δ =Layer coefficient

Thickness of armour layer

The thickness of the armour layer is calculated by following,

$$t = nK\delta\left[\frac{w}{w_r}\right]^{\frac{1}{3}}$$

Where,

n is the number of armour layers. Here, n = 2.

Crest elevation

The crest elevation of the training wall is given by,

Crest elevation = R + free board + Design Water Level

Where,

R = wave run up estimated as per CEM (2002).

Filter Layer

The filter layer is recommended for a thickness of 300mm with 10mm to 10kg rubble stones following the suggestions of SPM of the order of W/2000 to W/6000.

Accordingly, trunk sections have been designed at 4m water depth as well as head sections at 2m and 4m water depths. To secure the training walls without any permanent damages, it is highly recommended to construct shore anchoring for the training walls. Both the Northern and Southern Training walls and groins with suitable head section are shown in **Plates 3** and **4**.

Plates 5 & 6 depict the trunk sections at water depths of 1m, 2m, 3m and 4m. **Plates 7 to 10** depict the plan view of groins. There will be anchoring of training wall/ groin into the beach for a length of up to 10 to 20m with a slope of 1:5 beyond the HTL into the land. The details of materials at different layers of trunk section in the water depths of 2m and 4m have been presented in Table 2. Further, the details of the head sections are presented along with in Table 3.

Table 2. Design details of groin trunk sections at CD -2m & -4m

Trunk Section	At 2m water depth	2m to 4m water depth
Crest elevation	(+) 4.0m	(+) 4.0m
Crest width	4m	4m
Side Slope (both Side)	1: 2	1: 2
Armour Layer	1T to 2.50 T stones of 1.8m thickness	3.0 T to 4.50 T stones of 2.4 m thickness
Under layer	----	500kg to 1T stones of 1.40 m thickness
Toe Mound	500 kg to 1T stones of 2m thickness	500 kg to 1T stones of 2 m thickness
Core	10 kg to 300 kg of stones	10 kg to 300 kg of stones
Filter Layer	10 kg to 300 kg stones of 0.3m thickness	10 kg-300 kg stones of0.30 m thickness

Table 3. Design details of head sections at CD (-) 2 m & (-)4 m

Trunk Section	At 2m water depth	At 4m water depth
Crest elevation	(+) 4.0 m	(+) 4.0 m
Crest width	4 m	4 m
Side Slope (both Side)	1: 2	1: 2
Armour Layer	1T to 2.50 T stones of 1.8m thickness	3.0 T to 4.50 T stones of 2.4 m thickness
Under Layer	----	500kg to 1T stones of 1.40 m thickness
Toe Mound	500 kg to 1T stones of 2m thickness	500 kg to 1T stones of 2 m thickness
Core	10 kg to 300 kg of stones	10 kg to 300 kg of stones
Filter Layer	10 kg to 300 kg stones of 0.3m thickness	10 kg-300 kg stones of0.30 m thickness

8.0. BOQ AND COST ESTIMATE

The total cost of project works out to **Rs. 18.30 crore** (Eighteen Crores and Thirty Lakhs)

9.0 RECOMMENDATIONS

It is recommended to construct series of groins and a pair of training walls to be constructed. There are six groins (G1 to G6 as shown in Plate 2) with varied length and the length of training walls (G7 & G8) are 200m each. The sequence of construction is important which will depend on the period of the year during which the construction is executed although, the construction of all groins need to be carried out during the same season.

Even though, it is not expected to have severe erosion on the north of G6, a buffer quantity should be made for the construction of two short groins, the average length of each about 50m in between G6 and G7. The design length and the distance between the groins will be based on the behaviour of shoreline during the construction of groins G1 to G8. IIT Madras will assist this part during the construction.

The plan view of the groins is given in **Plates 7 to 10**. The cross sections of the groins in water depths of 1m, 2m, 3m and 4m are given in **Plates 5 and 6**. It is to be mentioned that the above designs are valid only for the site considered under the present study depending on the bottom topography, wave climate and other environmental conditions such as tide.

To make the training walls (groins, G7 and G8) effective, it is required to dredge a channel of width 30m to 50m in between the training walls by dredging the seabed up to -1.5m bed level. It is to be noted that all the levels are with reference to chart datum. The dredging has to be carried out after the construction of the training wall and the dredged spoil may be deposited on the southern side of G7.

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Fishing Harbour Project Sub Division
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Fishing Harbour Project
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Shore protection along the coastal stretch of Kovalam in Kancheepuram District

Detailed estimate

Sl No	Description	No	L	B	D	Content
1	Formation of Training wall with following layers using granite stones having specific gravity of not less than 2.65Mt of specified size against each layer for each Groyne all as per approved design and drawing including cost and charges for quarrying, loading transporting by tippers/lorries weighing in the electronic weigh bridge for measurement, dumping, placing in position to the required specified level, profile and finishing the side slopes with 1:2 on both sides as specified with necessary machineries equipment and devices required for carrying out work with me power as per the drawings and specification etc complete as directed by the Departmental Officers. The rate is also inclusive of placing, sectioning and finishing with necessary equipment and devices and hire and operational charges of tools and plants etc. (The payment shall be made on weight basis (ie) laden weight minus unladden weight). Weigh Bridge for which amount has been provided. Bedding Layer Groynes 1 - 8 10 kg to 300 kg Core Layer Groynes 1 – 8 10 kg to 300 kg						
a	Formation of bedding layer using stones of size 10 kg to 300 kg including cost of stones, conveyance charges, handling charges, placing, levelling and sectioning to required profile in under sea condition						
	Groyne 1	1	x 1	450		0.3	135.00
	Groyne 2	1	x 1	450		0.3	135.00
	Groyne 3	1	x 1	405		0.3	121.50
	Groyne 4	1	x 1	310		0.3	93.00
	Groyne 5	1	x 1	118		0.3	35.40
	Groyne 6	1	x 1	106		0.3	31.80
	Groyne 7	1	x 1	338		0.3	101.40
	Groyne 8	1	x 1	338		0.3	101.40
	Sub total						754.50
	Allowance for sinkage 1/3rd quantity						251.5
	Total quantity						1006.00
	D/d voilds @ 30%						-301.8
	Net quantity						**704.20**
	Weight (Unit weight 2.65 MT/Cu.m)			704.20		2.65	1866.13
	Sundries						33.87
	Total						**1900.00 MT**
b	Providing Core layer using stones of size 10 kg to 300 kg						
	Groyne 1	1	x 1	1660		1.25	2075.00
	Groyne 2	1	x 1	2190		1.25	2737.50
	Groyne 3	1	x 1	1970		2.5	4925.00
	Groyne 4	1	x 1	1630		2.25	3667.50
	Groyne 5	1	x 1	2190		3.75	8212.50
	Groyne 6	1	x 1	1981		3.25	6438.25
	Groyne 7	1	x 1	1604		4.55	7298.20
	Groyne 8	1	x 1	1604		4.55	7298.20
	Total quantity						42652.15
	D/d voilds @ 30%						-12795.65
	Net quantity						**29856.50**

Sl No	Description	No			L	B	D	Content
	Weight (Unit weight 2.65 MT/Cu.m)				29856.50			
	Sundries						2.65	79119.73
	Total							80.27
	Grand total a+b							**79200.00 MT**
								81100.00 MT
2	Formation of Training wall with following layers using granite stones having specific gravity of not less than 2.65Mt of specified size against each layer for each Groyne all as per approved design and drawing including cost and charges for quarrying, loading transporting by tippers/lorries weighing in the electronic weigh bridge for measurement, dumping, placing in position to the required specified level, profile and finishing the side slopes with 1:2 on both sides as specified with necessary machineries equipment and devices required for carrying out work with me power as per the drawings and specification etc complete as directed by the Departmental Officers. The rate is also inclusive of placing, sectioning and finishing with necessary equipment and devices and hire and operational charges of tools and plants etc. (The payment shall be made on weight basis (ie) laden weight minus unladden weight). Weigh Bridge for which amount has been provided. Toe Mound Groynes 1 - 8 500 kg to 1000 kg,Under Armour Groynes 7 – 8 500 kg to 1000 kg ,Armour Layer Groynes 1 - 6 1000 kg to 2500 kg,Armour Layer Groynes 7 – 8 3000 kg to 4500 kg.							
c	Providing Toe Mound layer using stones of size 500 kg to 1 T							
	Groyne 1	1	x	1	1800		2	3600.00
	Groyne 2	1	x	1	1950		2	3900.00
	Groyne 3	1	x	1	2400		2	4800.00
	Groyne 4	1	x	1	2100		2	4200.00
	Groyne 5	1	x	1	745		2	1490.00
	Groyne 6	1	x	1	665		2	1330.00
	Groyne 7	1	x	1	1974		2	3948.00
	Groyne 8	1	x	1	1974		2	3948.00
	Total quantity							27216.00
	D/d voilds @ 35%							-9525.6
	Net quantity							**17690.40**
	Weight (Unit weight 2.65 MT/Cu.m)				17690.40		2.65	46879.56
	Sundries							20.44
	Total							**46900.00 MT**
d	Providing Armour layer using stones of size 1 T to 2.5 T							
	Groyne 1	1	x	1	155		1.8	279.00
	Groyne 2	1	x	1	255		1.8	459.00
	Groyne 3	1	x	1	148		1.8	266.40
	Groyne 4	1	x	1	155		1.8	279.00
	Groyne 5	1	x	1	206		1.8	370.80
	Groyne 6	1	x	1	166		1.8	298.80
	Groyne 7	1	x	1	7858		2.4	18859.20
	Groyne 8	1	x	1	7858		2.4	18859.20
	Total quantity							39671.40
	D/d voilds @ 35%							-13884.99
	Net quantity							**25786.41**
	Weight (Unit weight 2.65 MT/Cu.m)				25786.41		2.65	68333.99
	Sundries							66.01
	Total							68400.00 MT

Sl No	Description	No			L	B	D	Content
	Grand total c+d							**115300.00 MT**
3	Earthwork open excavation for foundation in all soils and sub soils and to the full depth as may be diverted except hard rock requiring blasting inclusive of shoring, strutting and baling water wherever necessary refilling the sides of foundation with excavated earth SS20B.							
	For approach road	1	x	1	2000	4.5	0.15	1350.00
	For approach road - Round portion	1	x	4	3.142	25	0.15	47.13
	Sundries							2.87
	Total							**1400.00 Cu.m**
4	Providing and laying unblasted soling stone of size 15cm cubes including labour for fixing the same in position etc., complete							
	For approach road	1	x	1	2000	4.5	0.15	1350.00
	For approach road - Round portion	1	x	4	3.142	25	0.15	47.13
	Sundries							2.87
	Total							**1400.00 Cu.m**
5	Supplying and filling with red gravel in layers of not more than 15 cm thick as per specifications							
	For approach road	1	x	1	2000	4.5	0.15	1350.00
	For approach road - Round portion	1	x	4	3.142	25	0.15	47.13
	Sundries							2.87
	Total							**1400.00 Cu.m**
6	Providing and laying Water Bound Macadam 75mm compacted thickness with grade II metal using 1.00 cum of 63-45mm IRC size HBG metal with 0.24cum of gravel for bindage per 10 sqm including cost and conveyance of all materials, labour charges for spreading metal and gravel hand packing to camber, watering, with all leads for water and compaction by 8-10 t power roller including hire charges and fuel charges for power roller, water sprinkler and all other tools and plant employed, barricading etc., complete as per MORT and H specification No:404							
	For approach road - 2 layers	1	x	1	2000	4	0.15	1200.00
	For approach road - Round portion	1	x	4	3.142	25	0.15	47.13
	Sundries							2.87
	Total							**1250.00 Cu.m**
7	Deepening and dredging as indicated in the drawing in all types of soil as existing at site including loose or compacted sand, silt mixed with / without clay or soft clay or any other soft materials including boulders, spilled cargoes and any broken concrete pieces/debris and foreign materials like fishing nets, broken pieces or mechanised boats etc but including hard rock by suitable methods acceptable to the Departmental Officers using Grab Dredger or cuter suction Dredger or any other suitable Machinery and sufficient number of barges for dumping, transporting and disposal without disturbing / damaging the wharf / jetty structures, break water, groyne including removal and conveying the dredged materials and dumping in the complex area including spreading etc. complete as shown in the drawings and as directed by the Departmental Officers with all lead and lift, Mobilisation of Machineries, cost of surveying at the time of part payment and at completion stage including all tools, plants, equipment and labour, consumables fuel etc., complete as directed by the departmental officers.							
	For channel portion	1	x	1	300	40	2	24000 Cu.m
8	Provision for Unforeseen items							LS
9	Provision for Petty supervision charges & contingencies							LS

Sl No	Description	No	L	B	D	Content
10	Provision for price escalation charges					LS
11	Provision for labour welfare fund					LS
12	Provision for Advertisement charges					LS
13	Provision for Documentation charges					LS

Assistant Engineer
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Fishing Harbour Project SubDivision

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Fishing Harbour Project Division
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Shore protection along the coastal stretch of
Kovalam in Kancheepuram District

LEAD STATEMENT

Sl. No	Material	Source of Supply	Distance (Kms)	Unit	Cost	Lead Charges	Total
1	Gravel	Singaperumalkoil	54	m^3	87.00	373.30	460.30
2	IRC Metal 63mm Size	Venkatapuram	53	m^3	511.00	367.30	878.30
3	IRC Metal 53mm Size	Venkatapuram	53	m^3	621.00	367.30	988.30
4	IRC Metal 45mm Size	Venkatapuram	53	m^3	832.00	367.30	1199.30
5	IRC Metal 26mm Size	Venkatapuram	53	m^3	803.00	367.30	1170.30
6	IRC Metal 13.2mm Size	Venkatapuram	53	m^3	1081.00	367.30	1448.30
7	IRC Metal 11.20mm Size	Venkatapuram	53	m^3	734.00	367.30	1101.30
8	IRC Metal 6.70mm Size	Venkatapuram	53	m^3	545.00	367.30	912.30
9	Jeddy size stones 10 kg to 2.5 T	Venkatapuram	53	m^3	348.00	367.30	715.30
10	Rough stone for revetment works	Venkatapuram	53	m^3	316.00	367.30	683.30
11	Soling stone unblasted	Venkatapuram	53	m^3	93.10	367.30	460.40

Certificate that the lead particulars furnished above are correct to the best of my knowledge and belief and the rates adopted are based on the current Schedule of Rates for the year 2014-2015

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Shore protection along the coastal stretch of
Kovalam in Kancheepuram District

DATA

Sl. No.	Qty.	Unit	Description	Rate	Per	Amount
1	1.00	m^3	Earthwork open excavation for foundation in all soils and sub soils and to the full depth as may be diverted except hard rock requiring blasting inclusive of shoring, strutting and baling water wherever necessary refilling the sides of foundation with excavated earth SS20B.	33.80	m^3	33.80
2	Providing and laying unblasted soling stone of size 15cm cubes including labiur for fixing the same in position etc., complete					
	1.00	m^3	Soling stone unblasted	460.40	m^3	460.40
	0.50	No	Mason II class	368.00	No	184.00
	0.50	No	Mazdoor I class	257.00	No	128.50
	0.50	No	Mazdoor II class	232.00	cu.m.	116.00
			Sundries			0.10
			Rate for 1m^3			**889.00**
3	Providing and laying Water Bound Macadam 75mm compacted thickness with grade II metal using 1.00 cum of 63-45mm IRC size HBG metal with 0.24cum of gravel for bindage per 10 sqm including cost and conveyance of all materials, labour charges for spreading metal and gravel hand packing to camber, watering, with all leads for water and compaction by 8-10 t power roller including hire charges and fuel charges for power roller, water sprinkler and all other tools and plant employed, barricading etc., complete as per MORT and H specification No:404					
			Hire charges for machinery :			
			Power Rollller 80-100 KN			
			Hire charges excluding fuel charges per day			3680.00
			Fuel charges(Diesel)per day 50.00x2.5lit x8 Hour			1000.00
			Total Hire charges per day			
			Daily out turn: 450Sqm of 75mm thick			**4680.00**
			Hire charges for power Roller per 10 Sq.m : 4680 x 10/450			104.00
			Water Tanker			
			Hire charges excluding fuel charges per day			2175.00
			Fuel charges(Diesel)per day 60.00x3.5lit x8 Hour			1680.00
			Total Hire charges per day			
			Daily out turn: 450 RM. Of 75mm thick			3855.00
			Hire charges for power Roller per 10 Sq.m : 3855 x 10/450			85.67
			Total Hire charges per Machinery			
			For 10 Sq.m.: 189.67 x 100/75			189.67
						252.89

Sl. No.	Qty.	Unit	Description	Rate	Per	Amount
			Labour charges for spreading 10 sq.m of 75mm thick			
	1.08x3/16		Road Mazdoor I	291.00	Each	58.93
	1.08x1/4		Road Mazdoor II	260.00	Each	70.20
	1.08x1/3		Road Mazdoor III	260.00	Each	93.60
			Forming edge bunds		LS	1.70
			Watering and keeping the surface moist for 15 days		LS	1.70
			Rent for tools including baskets sharpening pickaxes		LS	1.70
			Sundries such as rope, water pots		LS	1.50
			Total labour charges for 10 sq.m of 75mm thick			229.33
			Hire charges and labour charges for 10 Sq.m : 252.89 + 229.33			482.22
			SUB DATA			
	0.41	m^3	63mm IRC metal	878.30	m^3	360.10
	0.39	m^3	53mm IRC metal	988.30	m^3	385.44
	0.20	m^3	45mm IRC metal	1199.30	m^3	239.86
			TOTAL			**985.40**
			MAIN DATA			
	1.00	m^3	63-45mm IRC metal	985.40	m^3	985.40
	0.24	m^3	Gravel	460.30	m^3	110.47
	10.00	m^2	Hire charges and labour charges	482.22	$10m^2$	482.22
			For 10 sq.m or 0.75 cu.m			1578.09
			For 1 cu.m			**2104.10**

Sl. No.	Qty.	Unit	Description	Rate	Per	Amount
4	1.00	m^3	Deepening and dredging as indicated in the drawing in all types of soil as existing at site including loose or compacted sand, silt mixed with / without clay or soft clay or any other soft materials including boulders, spilled cargoes and any broken concrete pieces/debris and foreign materials like fishing nets, broken pieces or mechanised boats etc but including hard rock by suitable methods acceptable to the Departmental Officers using Grab Dredger or cuter suction Dredger or any other suitable Machinery and sufficient number of barges for dumping, transporting and disposal without disturbing / damaging the wharf / jetty structures, break water, groyne including removal and conveying the dredged materials and dumping in the complex area including spreading etc. complete as shown in the drawings and as directed by the Departmental Officers with all lead and lift, Mobilisation of Machineries, cost of surveying at the time of part payment and at completion stage including all tools, plants, equipment and labour, consumables fuel	185	m^3	185.00
5	Formation of Training wall with following layers using granite stones having specific gravity of not less than 2.65Mt of specified size against each layer for each Groyne all as per approved design and drawing including cost and charges for quarrying, loading transporting by tippers/lorries weighing in the electronic weigh bridge for measurement, dumping, placing in position to the required specified level, profile and finishing the side slopes with 1:2 on both sides as specified with necessary machineries equipment and devices required for carrying out work with man power as per the drawings and specification etc complete as directed by the Departmental Officers. The rate is also inclusive of placing, sectioning and finishing with necessary equipment and devices and hire and operational charges of tools and plants etc. (The payment shall be made on weight basis (ie) laden weight minus unladden weight). using Weigh Bridge, for which amount has been provided. Bedding Layer Groynes 1 - 8 10 kg to 300 kg Core Layer Groynes 1 – 8 10 kg to 300 kg			

			SUB-DATA			
	a		**Cost of stone**			
			Weight of 1.00 Cu.m stone	2.65	MT	
			Deduct 30% for voids	0.80	MT	
			Net weight per Cu.m	1.85	MT	
			Cost per Cu.m	316.00		
			Cost per MT			
	b		**Conveyance charges**			**170.81**

Sl. No.	Qty.	Unit	Description	Rate	Per	Amount
			Conveyance charges per Cu.m			
			Deduct Loading and unloading charges			367.30
			Conveyance charges per Cu.m excluding loading and unloading			-52.60
			Conveyance charges per MT excluding loading and unloading	314.70	/ 1.85	314.70
			Loading charges at Quarry for heavy stones			170.11
			Assume 200 Hitachi to be engaged for loading stones at quarry			
			Hire charges per day	12300.00		
			Each crane can handle 120 MT per day			
			Cost of hire charges per MT	12300.00	/ 120	102.50
			Conveyance charges per MT			
	c		**Handling and placing charges**			**272.61**
			Handling charges, Placing, Levelling, sectioning to the required profile and work in under sea water condition			
			Assume TATA PH Crane 655 can be utilised. Assume 4 Sundays as non working day			
			Hire charges for crane per month	1210000		
			Assuming 26 days / month - cost per day	12,10,000 / Month of 26 days	Rs.	46538.46
			Assuming 8 Hrs of work per day - cost per hour	46538.46	/ 8	5817.31
			Assume 22 tonnes can be handled, placed, levelled and sectioned to the required profile in one hour - cost per MT	5817.31	/ 22	**264.42**
			Labour			
			Assume 2 No of Diver -II class can level the bedding layer & core layer metal of 22 tonnes per day			
	2.00	No	Divers class II	331		662.00
			Rate per Tonne	662.00	/22	**30.09**
			Total cost of placing - for machiery and labour per MT			**294.51**
			Main Data			
a	1.00	MT	Cost of stone	170.81	MT	170.81
b	1.00	MT	Conveyance charges	272.61	MT	272.61
c	1.00	MT	Handling and placing charges	264.42	MT	294.51
	1.00	MT	Weighing charges	10.00	MT	10.00
			Templates, frames for placing, levelling and sectioning, oxygen cylinder, buoy, life jacket, mask etc	LS		22.07
			Total cost per MT			770.00

Sl. No.	Qty.	Unit	Description	Rate	Per	Amount
5			Formation of Training wall with following layers using granite stones having specific gravity of not less than 2.65Mt of specified size against each layer for each Groyne all as per approved design and drawing including cost and charges for quarrying, loading transporting by tippers/lorries weighing in the electronic weigh bridge for measurement, dumping, placing in position to the required specified level, profile and finishing the side slopes with 1:2 on both sides as specified with necessary machineries equipment and devices required for carrying out work with man power as per the drawings and specification etc complete as directed by the Departmental Officers. The rate is also inclusive of placing, sectioning and finishing with necessary equipment and devices and hire and operational charges of tools and plants etc. (The payment shall be made on weight basis (ie) laden weight minus unladden weight). using Weigh Bridge, for which amount has been provided. Toe Mound Layer Groynes 1 - 8 500 kg to 1000 kg Armour Layer Groynes 1 – 8 1000 kg to 2500 kg			
0	0.00	0	**SUB-DATA**	0.00	0	0.00
0	a	0	**Cost of stone**	0.00	0	0.00
0	0.00	0	Weight of 1.00 Cu.m stone	2.65	MT	0.00
0	0.00	0	Deduct voids 35%	0.93	MT	0.00
0	0.00	0	Net weight per Cu.m	1.72	MT	0.00
0	0.00	0	Cost per Cu.m	348.00	cu.m.	0.00
0	b	0	**Conveyance charges**	0	0	**202.33**
0	0.00	0	Conveyance charges per Cu.m	**0.00**	0	0.00
0	0.00	0	Deduct Loading and unloading charges	0	0	367.30
0	0.00	0	Conveyance charges per Cu.m excluding loading and unloading	0	0	-52.60
0	0.00	0	Conveyance charges per MT excluding loading and unloading	314.70	/ 1.72	314.70
0	0.00	0	Loading charges at Quarry for heavy stones	0.00	0	182.97
0	0.00	0	Assume 200 Hitachi to be engaged for loading stones at quarry	0.00	0	0.00
0	0.00	0	Hire charges per day	0.00	0	0.00
0	0.00	0	Each crane can handle 120 MT per day	12300.00	0	0.00
0	0.00	0	Cost of hire charges per MT	0.00	0	0.00
0	0.00	0	Conveyance charges per MT	12300.00	/ 120	102.50
0	c	0	**Handling and placing charges**	0	0	**285.47**
0	0.00	0	Handling charges, Placing, Levelling, sectioning to the required profile and work in under sea water condition	**0.00**	0	0.00
0	0.00	0	Assume TATA PH Crane 655 can be utilised. Assume 4 Sundays as non working day	0	0	0.00
0	0.00	0	Hire charges for crane per month	0	0	0.00
0	0.00	0	Assuming 26 days / month - cost per day	1210000	0	0.00
				12,10,000 /. Month of 26 days	Rs.	46538.46

Sl. No.	Qty.	Unit	Description	Rate	Per	Amount
0	0.00	0	Assuming 8 Hrs of work per day - cost per hour	46538.46	/ 8	5817.31
0	0.00	0	Assume 22 tonnes can be handled, placed, levelled and sectioned to the required profile in one hour - cost per MT	5817.31	/ 22	**264.42**
0	0.00	0	**Labour**	0	0	0.00
0	0.00	0	Assume 2 No of Diver -II class can level the bedding layer & core layer metal of 22 tonnes per day	0	0	0.00
0	2.00	No	Divers class II	331	0	662.00
0	0.00	0	Rate per Tonne	662.00	/22	**30.09**
0	0.00	0	Total cost of placing - for machiery and labour per MT	0	0	**294.51**
0	0.00	0	**Main Data**	0	0	**0.00**
a	1.00	MT	Cost of stone	202.33	MT	202.33
b	1.00	MT	Conveyance charges	285.47	MT	285.47
c	1.00	MT	Handling and placing charges	264.42	MT	294.51
0	1.00	MT	Weighing charges	10.00	MT	10.00
0	0.00	0	Templates, frames for placing, levelling and sectioning, oxygen cylinder, buoy, life jacket, mask etc	LS	0	22.09
0	0.00	0	**Total cost per MT**	0.00	0	**814.40**

16/6/15

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16/6/15

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Shore protection along the coastal stretch of Kovalam in Kancheepuram District

Abstract Estimate

Sl No	Quantity	Description	Rate	Per	Amount
1	81100 MT	Formation of Training wall with following layers using granite stones having specific gravity of not less than 2.65Mt of specified size against each layer for each Groyne all as per approved design and drawing including cost and charges for quarrying, loading transporting by tippers/lorries weighing in the electronic weigh bridge for measurement, dumping, placing in position to the required specified level, profile and finishing the side slopes with 1:2 on both sides as specified with necessary machineries equipment and devices required for carrying out work with me power as per the drawings and specification etc complete as directed by the Departmental Officers. The rate is also inclusive of placing, sectioning and finishing with necessary equipment and devices and hire and operational charges of tools and plants etc. (The payment shall be made on weight basis (ie) laden weight minus unladden weight). Weigh Bridge for which amount has been provided. Bedding Layer Groynes 1 - 8 10 kg to 300 kg Core Layer Groynes 1 – 8 10 kg to 300 kg	770 MT	MT	6,24,47,000
2	115300 MT	Formation of Training wall with following layers using granite stones having specific gravity of not less than 2.65Mt of specified size against each layer for each Groyne all as per approved design and drawing including cost and charges for quarrying, loading transporting by tippers/lorries weighing in the electronic weigh bridge for measurement, dumping, placing in position to the required specified level, profile and finishing the side slopes with 1:2 on	814 MT	MT	9,38,99,757

Sl No	Quantity	Description	Rate	Per	Amount
3	1400 MT	Earthwork open excavation for foundation in all soils and sub soils and to the full depth as may be diverted except hard rock requiring blasting inclusive of shoring, strutting and baling water wherever necessary refilling the sides of foundation with excavated earth SS20B.	33.80	Cu.m	47,320
4	1400 MT	Providing and laying unblasted soling stone of size 15cm cubes including labour for fixing the same in position etc., complete	460.40	Cu.m	6,44,560
5	1400 MT	Supplying and filling with red gravel in layers of not more than 15 cm thick as per specifications	460.30	Cu.m	6,44,420
6	1250 MT	Providing and laying Water Bound Macadam 75mm compacted thickness with grade II metal using 1.00 cum of 63-45mm IRC size HBG metal with 0.24cum of gravel for bindage per 10 sqm including cost and conveyance of all materials, labour charges for spreading metal and gravel hand packing to camber, watering, with all leads for water and compaction by 8-10 t power roller including hire charges and fuel charges for power roller, water sprinkler and all other tools and plant employed, barricading etc., complete as per MORT and H specification No:404	2104.10	Cu.m	26,30,125

Sl No	Quantity	Description	Rate	Per	Amount
7	24000 Cu.m	Deepening and dredging as indicated in the drawing in all types of soil as existing at site including loose or compacted sand, silt mixed with / without clay or soft clay or any other soft materials including boulders, spilled cargoes and any broken concrete pieces/debris and foreign materials like fishing nets, broken pieces or mechanised boats etc but including hard rock by suitable methods acceptable to the Departmental Officers using Grab Dredger or cuter suction Dredger or any other suitable Machinery and sufficient number of barges for dumping, transporting and disposal without disturbing / damaging the wharf / jetty structures, break water, groyne including removal and conveying the dredged materials and dumping in the complex area including spreading etc. complete as shown in the drawings and as directed by the Departmental Officers with all lead and lift, Mobilisation of Machineries, cost of surveying at the time of part payment and at completion stage including all tools, plants, equipment and labour, consumables fuel etc., complete as directed by the departmental officers.	185.00	Cu.m	44,40,000
8	LS	Provision for Unforeseen items		LS	36,42,818
9	LS	Provision for Petty supervision charges & contingencies		LS	41,18,800
10	LS	Provision for price escalation charges		LS	82,37,700
11	LS	Provision for labour welfare fund		LS	16,47,500
12	LS	Provision for Advertisement charges		LS	5,00,000
13	LS	Provision for Documentation charges		LS	1,00,000
		Total			**18,30,00,000**

(Rupees Eighteen Crores and Thirty Lakhs only)

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Fishing Harbour Project Division
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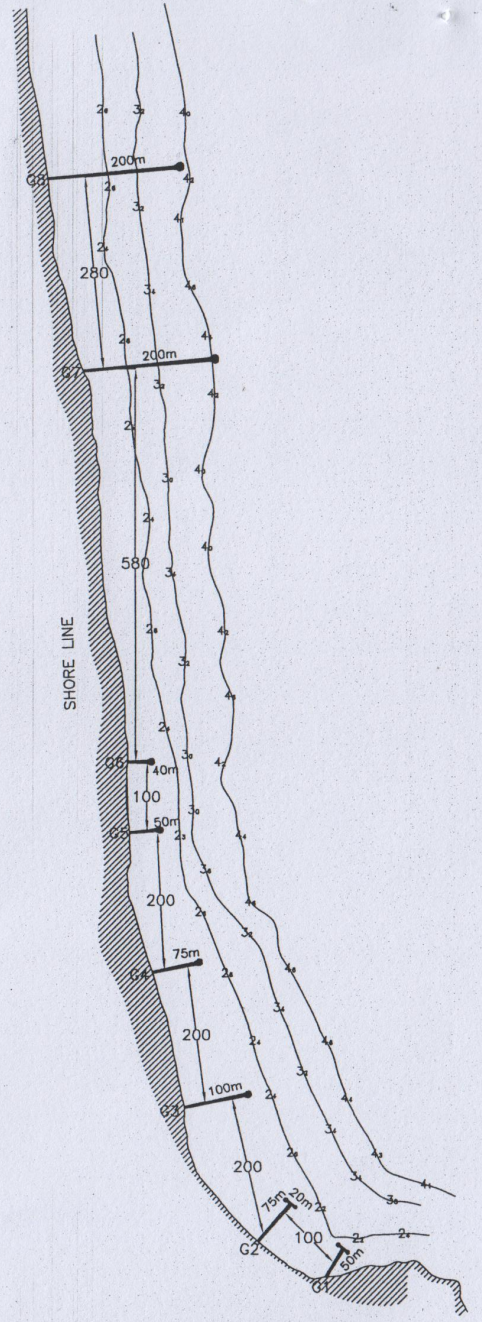


GENERAL LAYOUT

CONSULTANT:
DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS, CHENNAI – 36

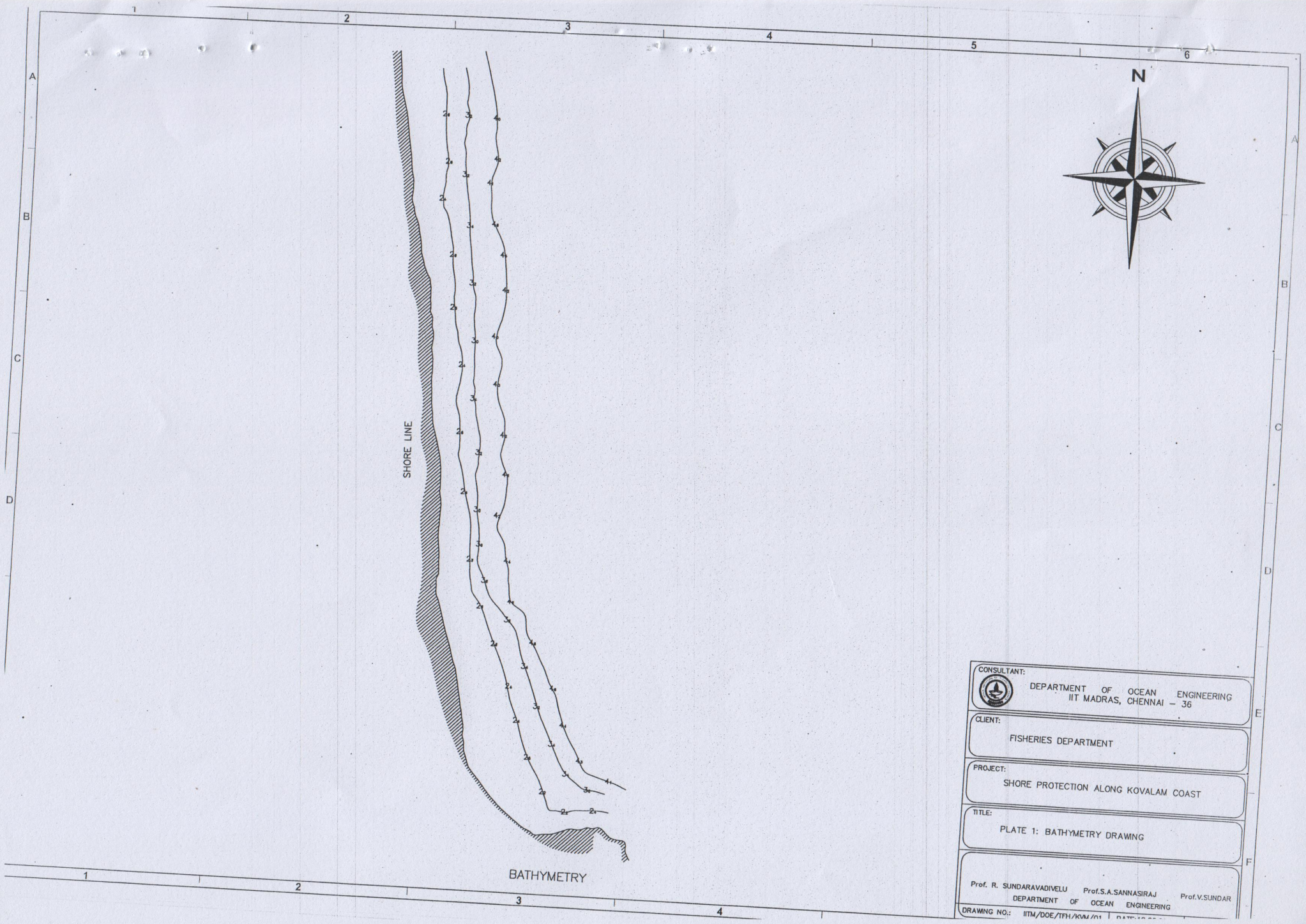
CLIENT:
FISHERIES DEPARTMENT

PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST

TITLE:
PLATE 2: GENERAL LAYOUT

Prof. R. SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

DRAWING NO.: IITM/DOE/TFH/KVM/02 | DATE:12.06.2015 | REV:00



CONSULTANT:
DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS, CHENNAI – 36

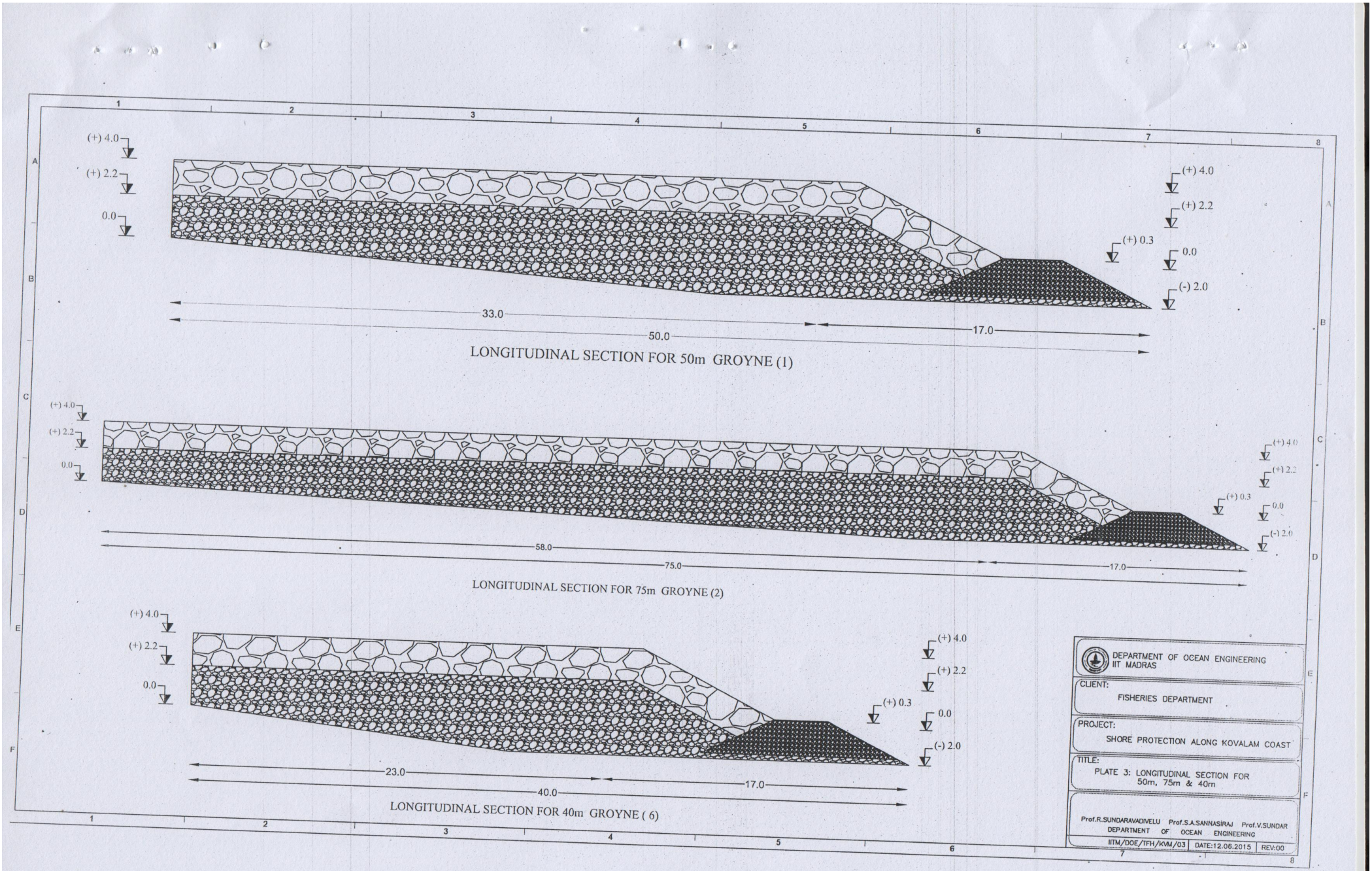
CLIENT:
FISHERIES DEPARTMENT

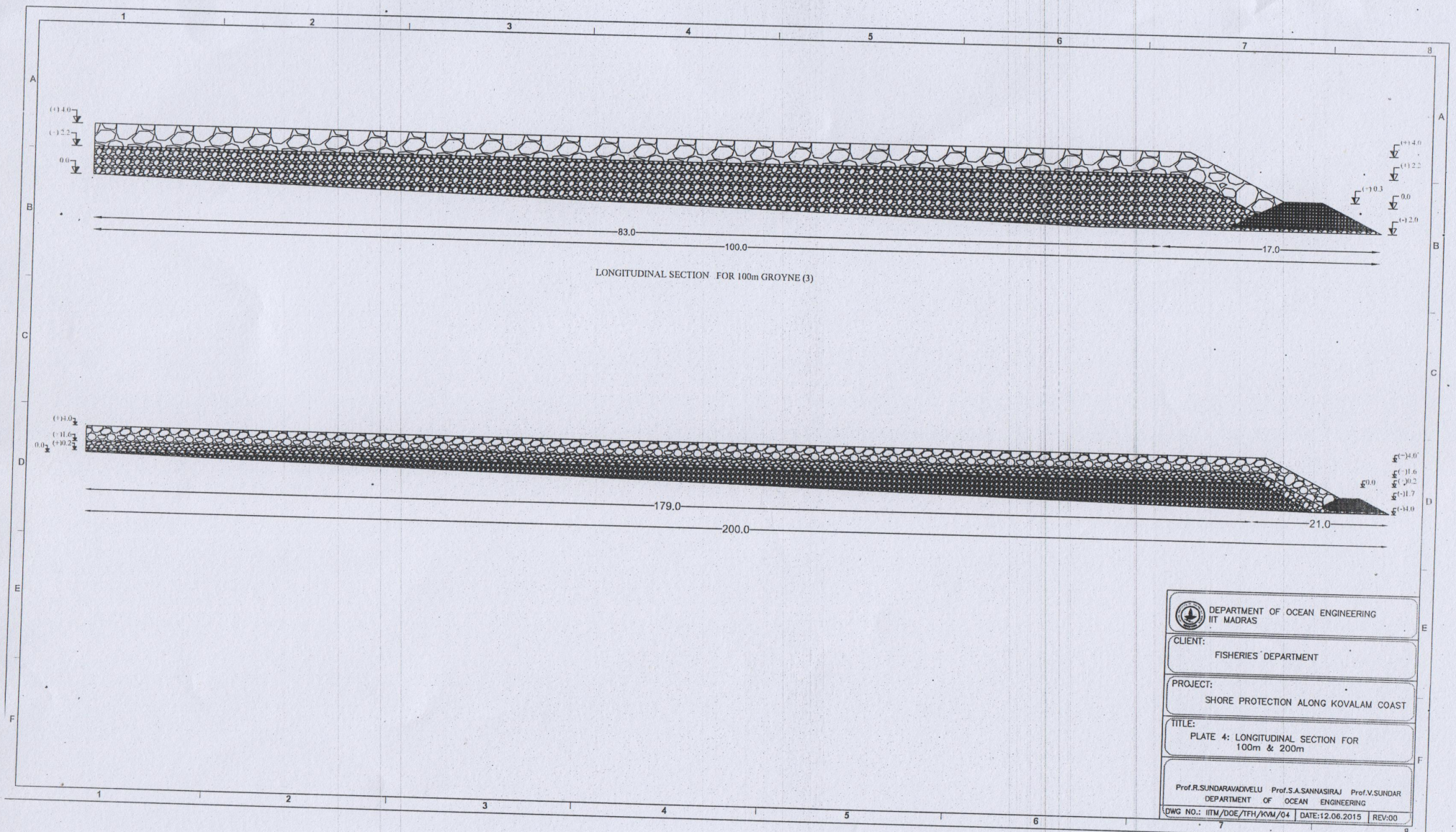
PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST

TITLE:
PLATE 1: BATHYMETRY DRAWING

Prof. R. SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

DRAWING NO.: IITM/DOE/TFH/KVM/01 | DATE:


(+) 4.0
(+) 2.2
0.0
(+) 0.3
(-) 2.0
33.0
17.0
50.0
LONGITUDINAL SECTION FOR 50m GROYNE (1)
58.0
75.0
LONGITUDINAL SECTION FOR 75m GROYNE (2)
23.0
40.0
LONGITUDINAL SECTION FOR 40m GROYNE (6)
DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS
CLIENT:
FISHERIES DEPARTMENT
PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST
TITLE:
PLATE 3: LONGITUDINAL SECTION FOR 50m, 75m & 40m
Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING
IITM/DOE/TFH/KVM/03
DATE:12.06.2015
REV:00



DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS

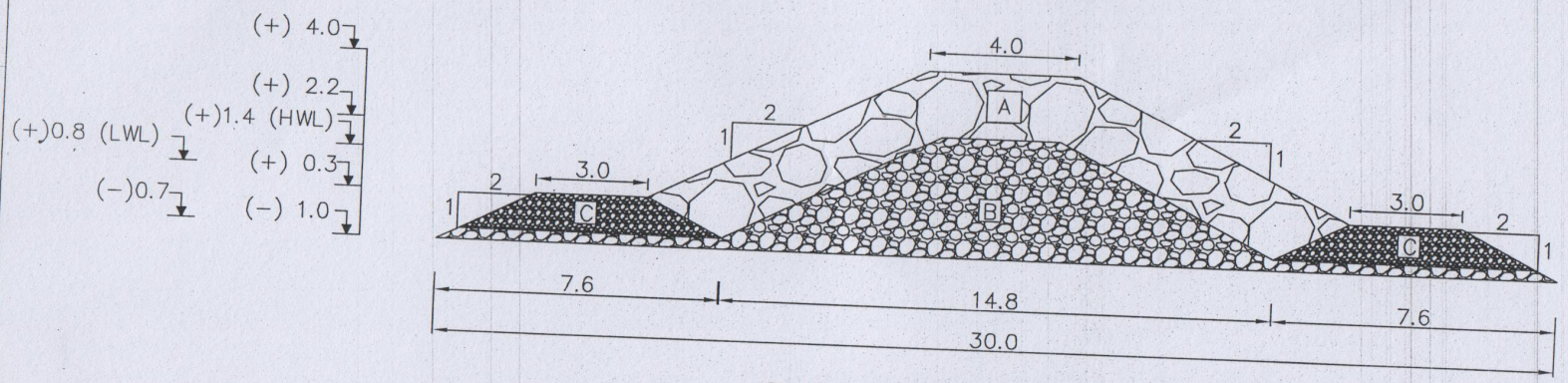
CLIENT:
FISHERIES DEPARTMENT

PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST

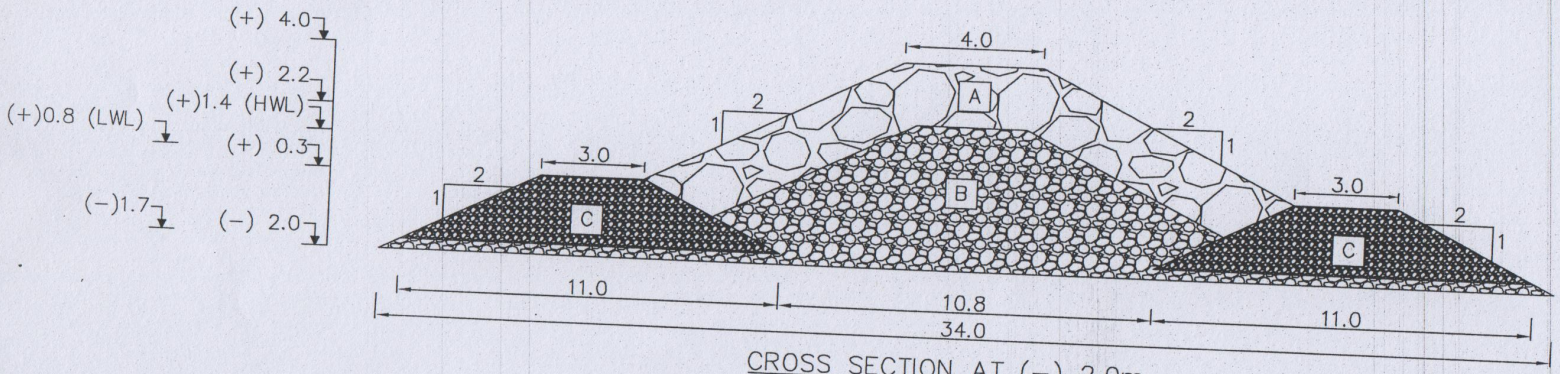
TITLE:
PLATE 4: LONGITUDINAL SECTION FOR 100m & 200m

Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

DWG NO.: IITM/DOE/TFH/KVM/04 | DATE:12.06.2015 | REV:00



CROSS SECTION AT (−) 1.0m



CROSS SECTION AT (−) 2.0m

LEGEND:

(A) ARMOUR LAYER 1 TO 2.5 TONNE AT 1.8m THK

(B) CORE LAYER 10kg TO 300kg

(C) TOE 500kg TO 1 TONNE

NOTES:

1. ALL DIMENSION AND LEVELS ARE IN METERS.

DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS

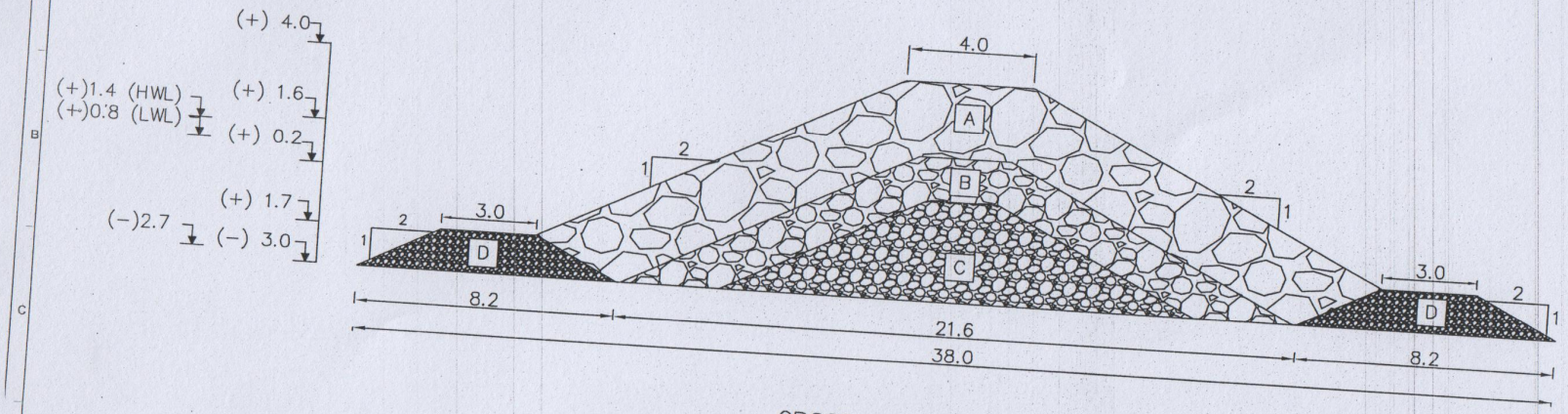
CLIENT: FISHERIES DEPARTMENT

PROJECT: SHORE PROTECTION ALONG KOVALAM COAST

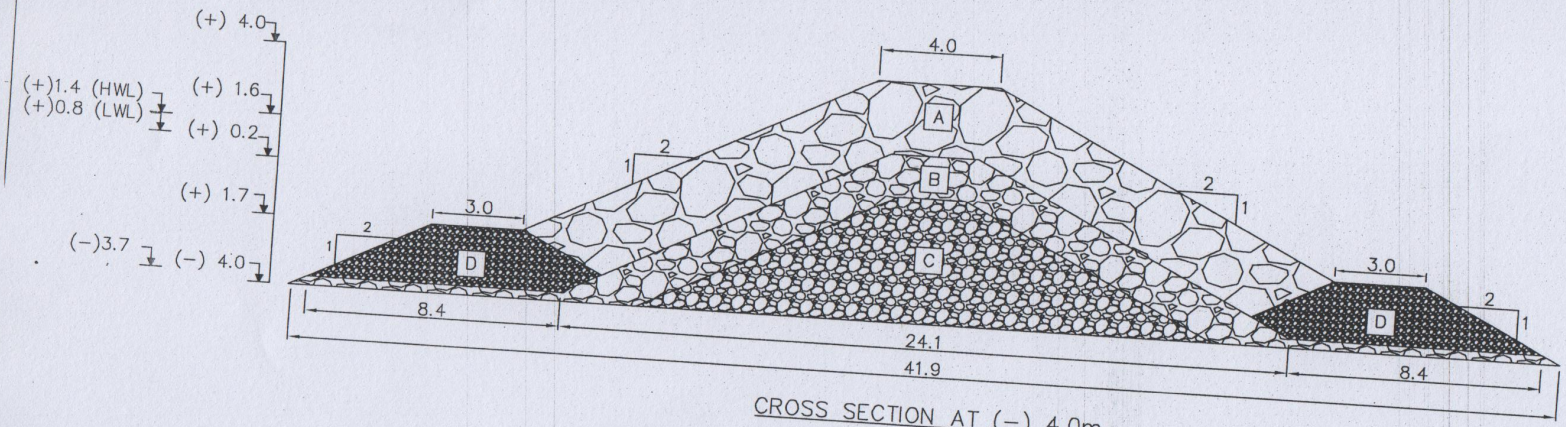
TITLE: PLATE 5: CROSS SECTION AT LEVEL (−)1.0m TO (−)2.0m

Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

IITM/DOE/TFH/KVN/05 | DATE:12.06.2015 | REV:00



CROSS SECTION AT (−) 3.0m



CROSS SECTION AT (−) 4.0m

LEGEND:

- (A) ARMOUR LAYER 3 TO 4.5 TONNE AT 2.4m THK
- (B) UNDER ARMOUR LAYER 500kg TO 1TONNE AT 1.4m THK
- (C) CORE LAYER 10kg TO 300kg
- (D) TOE 500kg TO 1 TONNE

NOTES:

1. ALL DIMENSION AND LEVELS ARE IN METERS.

DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS

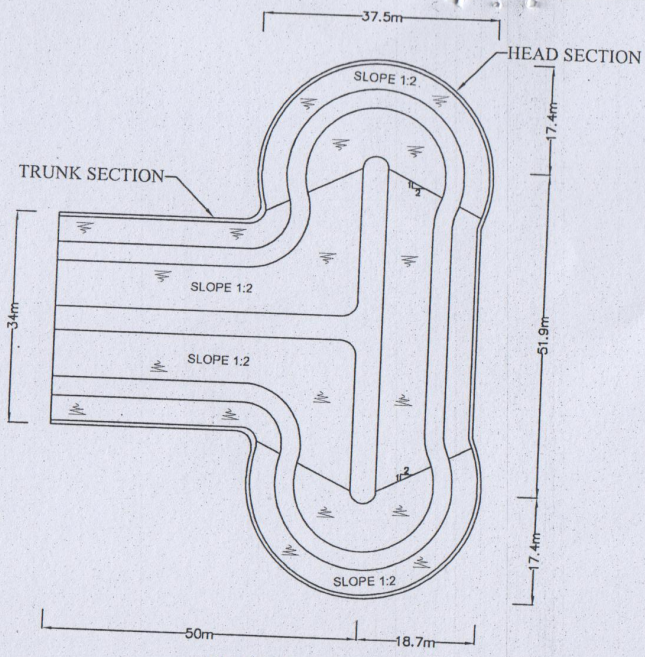
CLIENT: FISHERIES DEPARTMENT

PROJECT: SHORE PROTECTION ALONG KOVALAM COAST

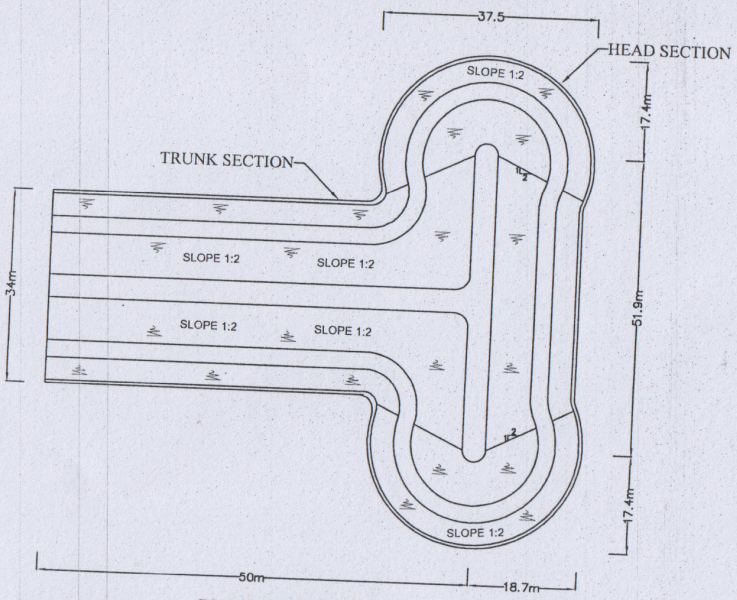
TITLE: PLATE 6: CROSS SECTION AT LEVEL (−)3.0m TO (−)4.0m

Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

IITM/DOE/TFH/KVM/06 | DATE:12.06.2015 | REV:00



PLAN FOR G1 (50m)



PLAN FOR G2 (75m)

NOTES:

1. ALL DIMENSION AND LEVELS ARE IN METERS.

CONSULTANT:
DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS, CHENNAI – 36

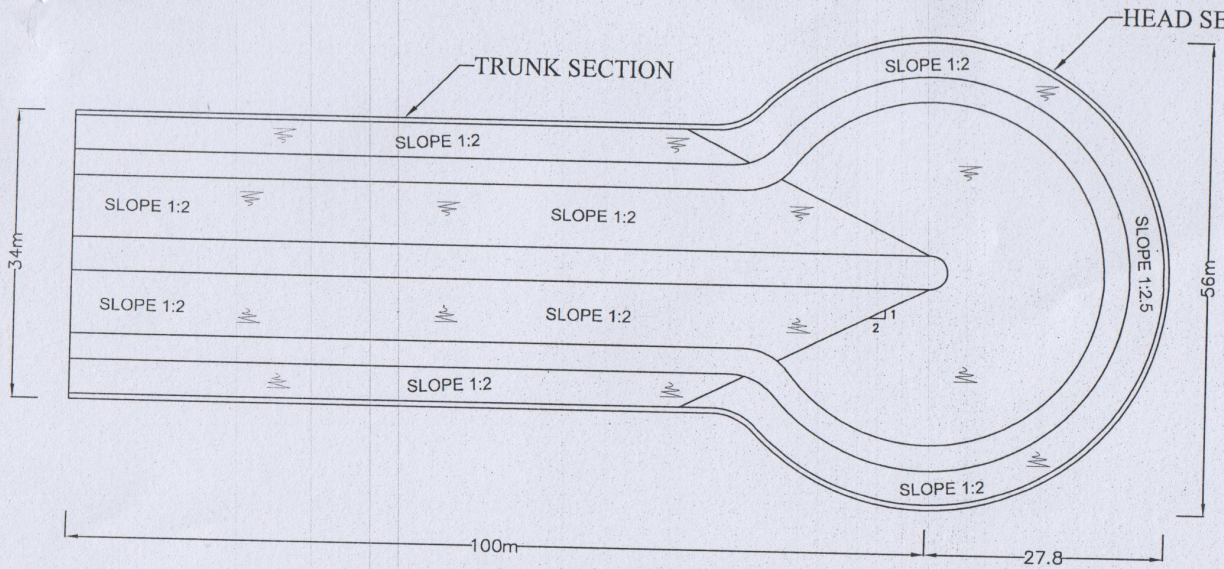
CLIENT:
FISHERIES DEPARTMENT

PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST

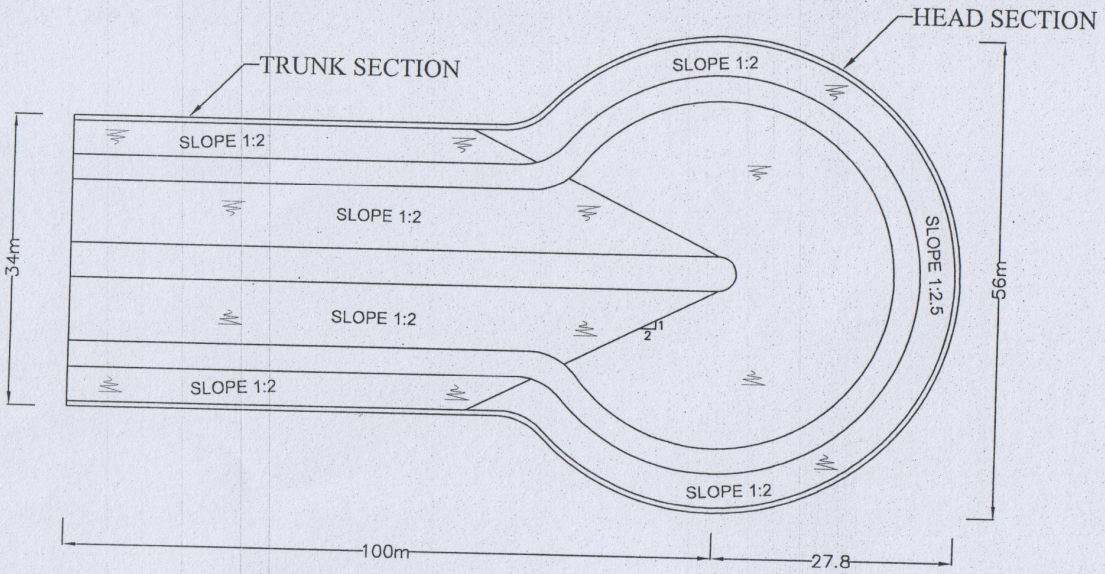
TITLE:
PLATE 7: PLAN FOR G1 & G2

Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

DRAWING NO.: IITM/DOE/TFH/KVM/07 | DATE: 12.06.2015 | REV: 00



PLAN FOR G3 (100m)



PLAN FOR G4 (75m)

NOTES:

1. ALL DIMENSION AND LEVELS ARE IN METERS.

CONSULTANT:
DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS, CHENNAI – 36

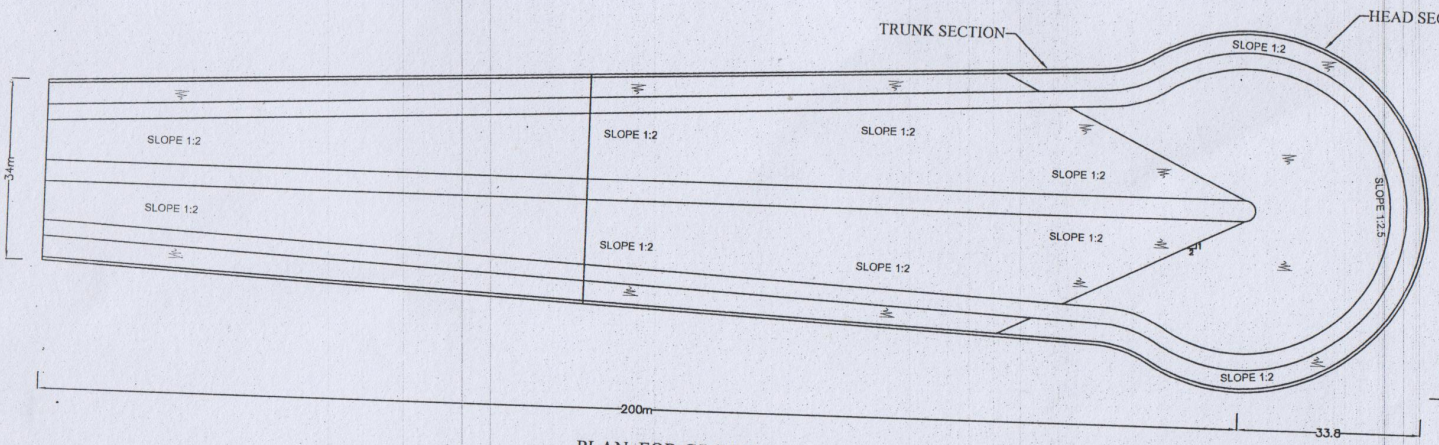
CLIENT:
FISHERIES DEPARTMENT

PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST

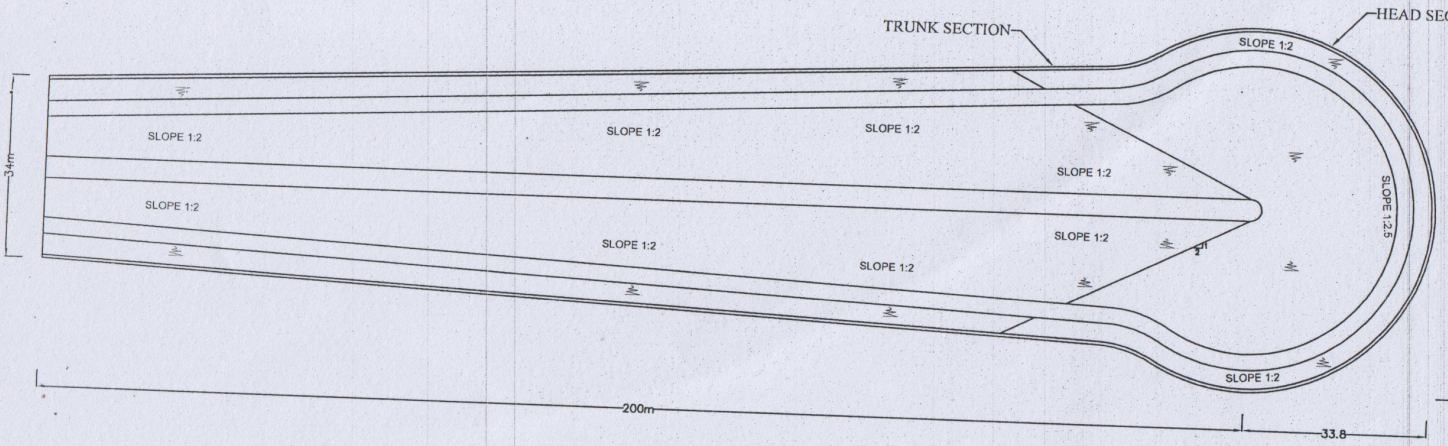
TITLE:
PLATE 8: PLAN FOR G3 & G4

Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

DRAWING NO.: IITM/DOE/TFH/KVM/08 | DATE:12.06.2015 | REV:00



PLAN FOR G7 (200m)



PLAN FOR G8 (200m)

NOTES:

1. ALL DIMENSION AND LEVELS ARE IN METERS.

CONSULTANT:
DEPARTMENT OF OCEAN ENGINEERING
IIT MADRAS, CHENNAI – 36

CLIENT:
FISHERIES DEPARTMENT

PROJECT:
SHORE PROTECTION ALONG KOVALAM COAST

TITLE:
PLATE 10: PLAN FOR G7 & G8

Prof.R.SUNDARAVADIVELU Prof.S.A.SANNASIRAJ Prof.V.SUNDAR
DEPARTMENT OF OCEAN ENGINEERING

DRAWING NO.: IITM/DOE/TFH/KVM/10 | DATE: 10.06.2015 | REV: 00

Fisheries Department

From,

Thiru.L.A.G. Julius Edwar
Assistant Director of Fisheries
Kancheepuram District at Neelangarai
Neelangarai

To,

The District Environmental Engineer,
Tamil Nadu Pollution Control Board,
Maraimalai Adigalar Street,
Next to Municipal Office
Maraimalai Nagar, Chennai - 603209
Kancheepuram District.

Lr.No.FI/AD/K/2016 Dated: 01.04.2016

Sub: Submission of application form for seeking clearance for project attractive CRZ Notification - Reg

Dear Sir,

In Connection to the above subject & reference we here with submit 10 Copies of EIA Report for obtaining CRZ Clearance for the proposed Shore Protection along the coastal stretch of Kovalam . Kindly process our application and grant us CRZ clearance at the earliest.

Assistant Director Of Fisheries
Kancheepuram District at Neelangarai

Annexure-IV

Form-1 for seeking clearance for project attracting CRZ Notification

Basic information:

Name of the Project:- Shore Protection along the coastal stretch of Kovalam in Kancheepuram District of Tamil Nadu

Location or site alternatives under consideration:- Geo Location Groyne 1 E 418961 N 1414037
Geo Location Groyne 8 E 418474 N 1415720

Size of the project (in terms of total area) :- **3.00 Hectare (Inside the Sea)**

CRZ classification of the area:- **CRZ – I & IV**

Expected cost of the project:- **1830 Lakhs**

Contact Information:-

(II) Activity

1. Construction, operation or decommissioning of the project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, and the like)

S.No	Information / Check list confirmation	Yes /no	Details there of (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	No	
1.2	Details of CRZ classification as per the approved Coastal Zone Management Plan	Yes	CRZ – I & IV
1.3	Whether located in CRZ -1 area?	Yes	
1.4	The distance from the CRZ-1 areas		In CRZ – I & IV
1.5	Whether located within the hazard zone as mapped by Ministry of Environment and Forests/National Disaster Management Authority?	Yes	
1.6	Whether the area is prone to cyclone, tsunami, Tidal surge, sub duct ion, earthquake etc.?	Yes	Cyclone & Tsunami
1.7	Whether the area is prone for salt water ingress?	No	Located in the shore and sea
1.8	Clearance of existing land, vegetation and buildings?	No	
1.9	Creation of new land uses?	Yes	
1.10	Pre-construction investigations e.g. bore hole, soil testing?	Yes	
1.11	Construction works?	Yes	Training wall and short Groyne.
1.12	Demolition works?	Yes	
1.13	Temporary sites used for construction works or housing of construction workers?	Yes	Temporary site will be located in the village
1.14	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	Yes	
1.15	Underground works including mining or tunnelling?	No	----
1.16	Reclamation works?	No	
1.17	Dredging/reclamation/land filling/disposal of dredged material etc.?	Yes	In the Shore area
1.18	Offshore structures?	Yes	
1.19	Production and manufacturing processes?	No	----

1.20	Facilities for storage of goods or materials?	No	----
1.21	Facilities for treatment or disposal of solid waste or liquid effluents?	No	
1.22	Facilities for long term housing of operational workers?	No	
1.23	New road, rail or sea traffic during construction or operation?	Yes	
1.24	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No	----
1.25	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	----
1.26	New or diverted transmission lines or pipelines?	No	----
1.27	Impoundment, damming, culver ting, realignment or other changes to the hydrology of watercourses or aquifers?	No	----
1.28	Stream and river crossings?	No	----
1.29	Abstraction or transfers of water form ground or surface waters?	No	----
1.30	Changes in water bodies or the land surface affecting drainage or run-off?	No	----
1.31	Transport of personnel or materials for construction, operation or decommissioning?	No	----
1.32	Long- term dismantling or decommissioning or restoration works?	No	----
1.33	Ongoing activity during decommissioning which could have an impact on the environment?	No	----
1.34	Influx of people to an area in either temporarily or permanently?	No	----
1.35	Introduction of alien species?	No	------
1.36	Loss of native species or genetic diversity?	No	----
1.37	Any other actions?	No	----

2. Use of Natural resources for construction or operation of the project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	No	----
2.2	Water (expected source & competing users) unit: KLD	Yes	
2.3	Minerals (MT)	No	----
2.4	Construction material – stone, aggregates, sand/soil (expected source – MT)	Yes	Stones – 1,81,000 MT
2.5	Forests and timber (source-MT)	No	----
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT),energy (MW)	No	---
2.7	Any other natural resources (use appropriate standard units)	No	----

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora ,fauna, and water supplies)	No	----
3.2	Changes in occurrence of disease or affect disease vectors (eg. Insect or water borne diseases)	No	----
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	Improvement standard of living positive impact
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	No	----
3.5	Any other causes, that would affect local communities, fisher folk, their livelihood, dwelling units of traditional local communities etc	No	Positive impact due to Fish landing development.

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	----
4.2	Municipal waste (domestic and or commercial wastes)	No	----
4.3	Hazardous wastes (as per Hazardous waste Management Rules)	No	----
4.4	Other industrial process wastes	No	----
4.5	Surplus product	No	----
4.6	Sewage sludge or other sludge from effluent treatment	No	----
4.7	Construction or demolition wastes	No	----
4.8	Redundant machinery or equipment	No	----
4.9	Contaminated soils or other materials	No	----
4.10	Agricultural wastes	No	----
4.11	Other solid wastes	No	----

5. Release of pollutants or any hazardous, toxic or noxious substances to air (kg/hr)

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	No	----
5.2	Emissions from production processes	No	----
5.3	Emissions from materials handling including storage or transport	No	----
5.4	Emissions from construction activities including plant and equipment	No	----
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	Yes	
5.6	Emissions from incineration of waste	No	----
5.7	Emissions from burning of waste in open air (e.g. slush materials, construction debris)	No	----
5.8	Emissions from any other sources	No	----

6. Generation of Noise and Vibration, and Emissions of Light and Heat

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	No	----
6.2	From industrial or similar processes	No	----
6.3	From construction or demolition	No	----
6.4	From blasting or piling	Yes	
6.5	From construction or operational traffic	Yes	
6.6	From lighting or cooling systems	No	----
6.7	From any other sources	No	----

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	No	----
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	
7.3	By deposition of pollutants emitted to air into the land or into water	No	----
7.4	From any other sources	No	----
7.5	Is there a risk of long term build up of pollutants in the environment from these sources	No	----

8. Risk of accidents during construction or operation of the project, which could affect human health or the environment

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	No	----
8.2	From any other causes	No	----
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	----

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S.No	Information / Check list confirmation	Yes /no	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
9.1	Lead to development of supporting. Lities, ancillary development or development stimulated by the project which could have impact on the environment e.g.: Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) Housing development Extractive industries Supply industries other	No	----
9.2	Lead to after-use of the site, which could have an impact on the environment	No	----
9.3	Set a precedent for later developments	No	----
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	----

111. Environmental Sensitivity

S.No	Areas	Yes /no	Aerial distance (within 15 km) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	No	None with in 10 Km
2	Areas which are important or sensitive for ecological reasons – Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No	----
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	No	----

4	Inland, coastal, marine or underground waters	Yes	Bay of Bengal
5	State, National boundaries	No	----
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	No	----
7	Defence installations	No	----
8	Densely populated or built-up area	No	----
9	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	No	----
10	Areas containing important, high quality or scarce resource (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	No	----
11	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	No	----
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No	----

Declaration

I hereby given undertaking that the data and the information given in the application and enclosures are true to the best of my Knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance given, if any to the project will be revoked at our risk and cost.

14/16

Assistant Director Of Fisheries
Kancheepuram District at Neelangarai

SHORE PROTECTION ALONG THE COASTAL STRETCH OF KOVALAM

FINAL REPORT

Client

Project Division, Chennai

Tamilnadu Fisheries Department

Consultant

Prof. R. SUNDARAVADIVELU

Prof. V. SUNDAR

Prof. S.A.SANNASIRAJ

JUNE 2015

INDEX

1.0 INTRODUCTION

Kovalam is a fishing village about 40 km south of Chennai, on the East Coast Road en route to Mahabalipuram. The Kovalam shore is subjected to seasonal erosion since 1986 and, during the last decade, there was heavy erosion has been observed resulted in loss of over 150 coconut and palm trees. About 13 houses were destroyed in due course of time. The livelihood of the fishermen in the villages is severely affected. The shoreline has advanced towards the village rapidly about 130m since 2002 to till date. Department of fisheries has approached Department of Ocean Engineering, I.I.T Madras for a consultancy proposal to protect the shore of Kovalam village. I.I.T Madras in turn accepted the consultancy proposal and conducted bathymetry survey and shore line analysis during 21-05-2015 and 22-05-2015, to study the shoreline behavior and its effect over the years. The local villagers welcomed the decision of shore protection using groins and extended full support and cooperation for the team during survey. On the study of various factors influencing the erosion, it has been finalized to construct six short groins and two training walls along the shore starting from the Narasimha temple on the south to North covering 1860m length of shore. The layout of groins are designed so as to form accretion in between these groins and hence, to win over the eroded areas.

2.0 LOCATION

Kovalam or Covelong Beach is situated at (12° 47' 34.29''N -80°15'0.70''E) on the way to Mahabalipuram, from Chennai. It is located on the Coromandel Coast of Bay of Bengal, is known for its fishing activities and water sport events and, it is a good tourist destination nearby Chennai and every year a large number of people visit Kovalam. Fig. 1 shows the location of Kovalam on the Google map.

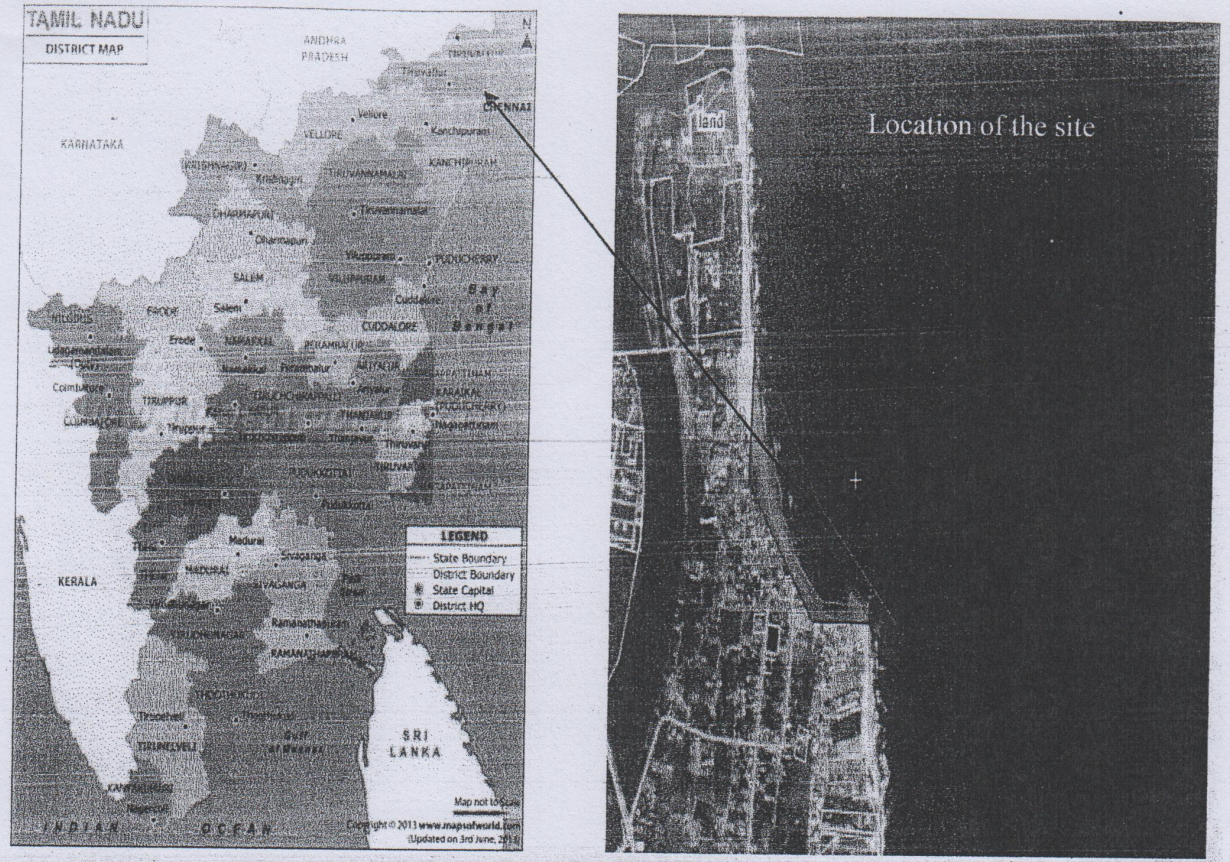


Fig.1. Location of Kovalam

3.0 AREA OF INTEREST

The area of interest is likely to start from the Narasimha temple near the existing beach up to 300 m north of the mouth of Muttukadu Backwater. Fig. 2 focuses the interested area. The shoreline assessment study and bathymetry survey have been conducted on 21-05-2015 & 22-05-2015 to assess the present nature of shoreline at the site. This would also be useful to access the erosion magnitude in the last two decades. The proposal of a groin field will lead to form accretion in between the groins thus the shoreline will progress towards the sea in future.

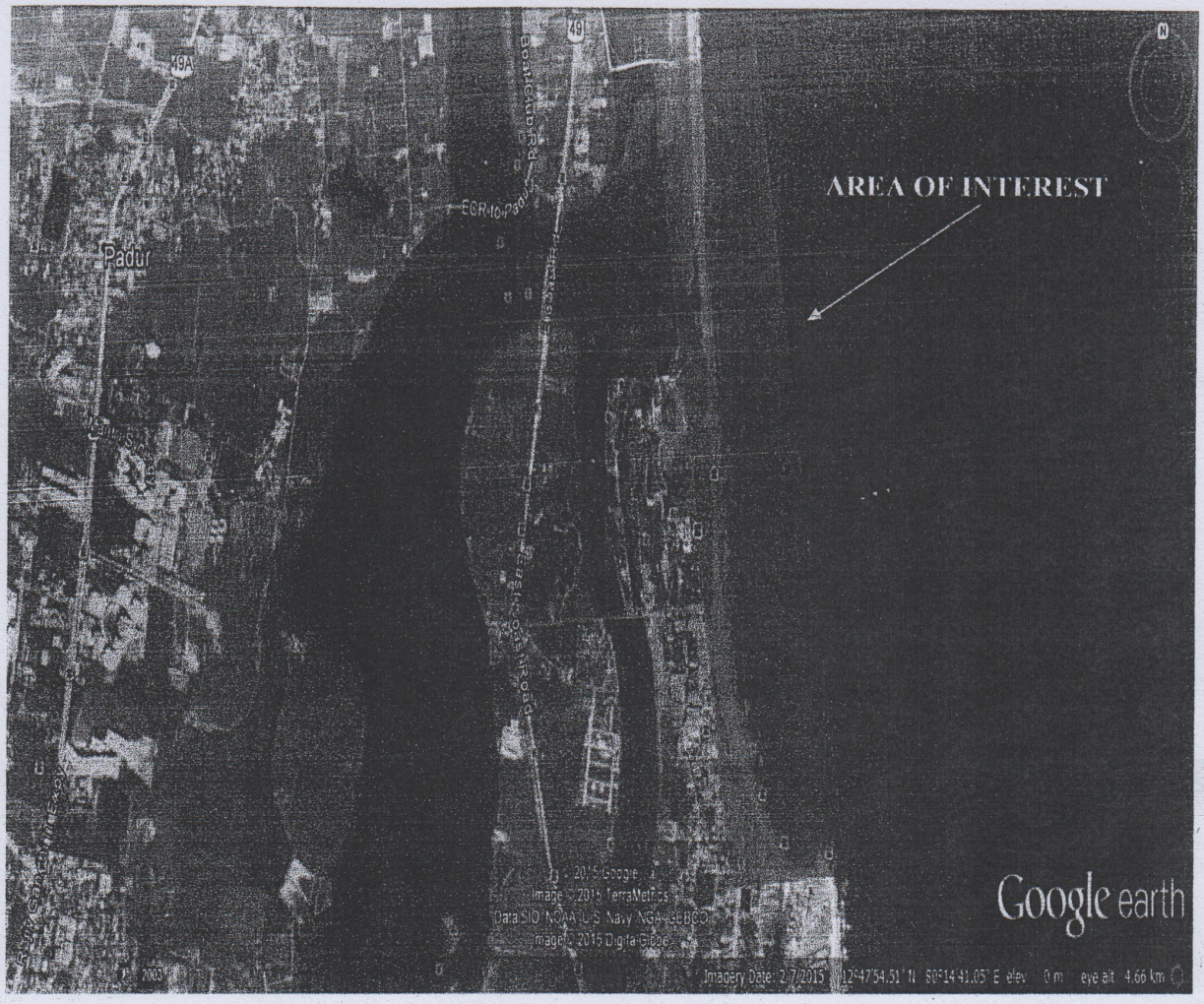


Fig. 2: Area taken for Study.

4.0 ISSUES AT KOVALAM

The Kovalam shore for a length of 2160m start from Narasimha temple on the south is being subjected to continuous erosion. Fig.3 shows the erosion packets along this coastal stretch. Hence, covering 1860m length along the shore, six groins (G1 to G6) and two training walls (G7 & G8) on the mouth of Muttukadu backwater are proposed. Erosion is found to be highly alarming from chainage 100m to 600m and hence, the first two groins on the south are proposed to be T-groins.

Bathymetry survey and shoreline survey have been carried out. Fig. 4 (plate 1) presents the measured nearshore bathymetry along this coastal stretch.

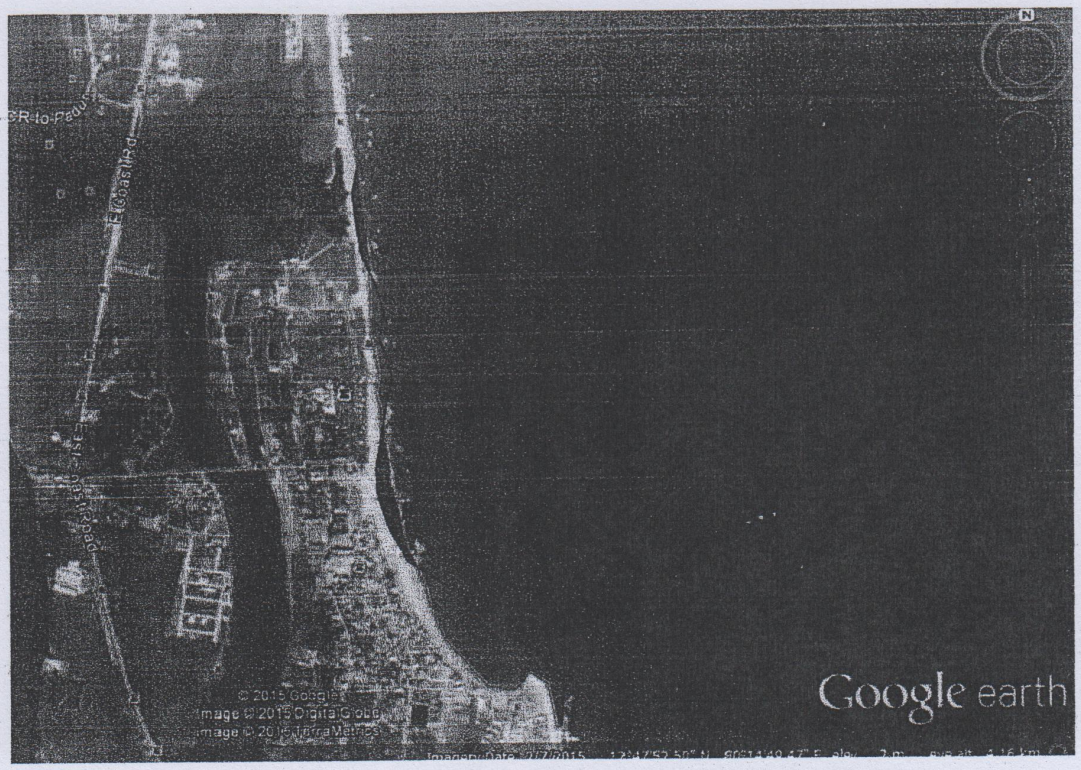


Fig. 3. Erosion assessment of shoreline from 2002 to 2015.

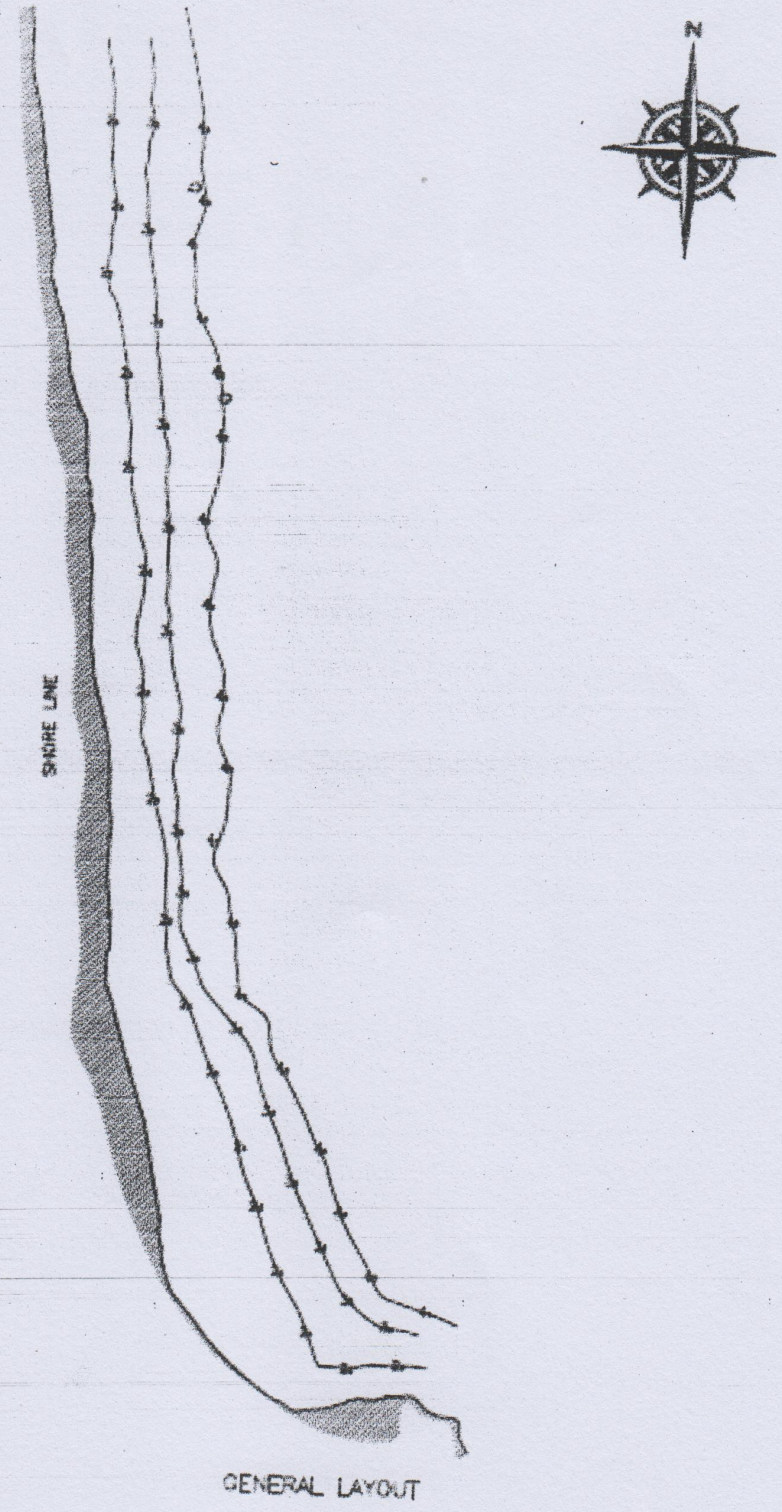


Fig. 4. Measured bathymetry

5.0 PROPOSED SHORE PROTECTION SCHEME

It is proposed to construct 6 groins of different lengths varying from 40m, 50m, 75m and 100m. Additional two training walls of 200m length are proposed at the mouth of the Muthukadu Back water. The following table shows length of each groin. Fig. 5 (Plate 2) presents the layout of groin field superimposed on the measured bathymetry.

Table 1. Proposed groin field

Groin Number	Length of groin	Location of groin from point nearer to Narasimha Temple (Chainage)
G1	50 m	200m
G2	75m	300m
G3	100m	500m
G4	75m	700m
G5	50m	900m
G6	40m	1000m
G7	200m	1580m
G8	200m	1860m

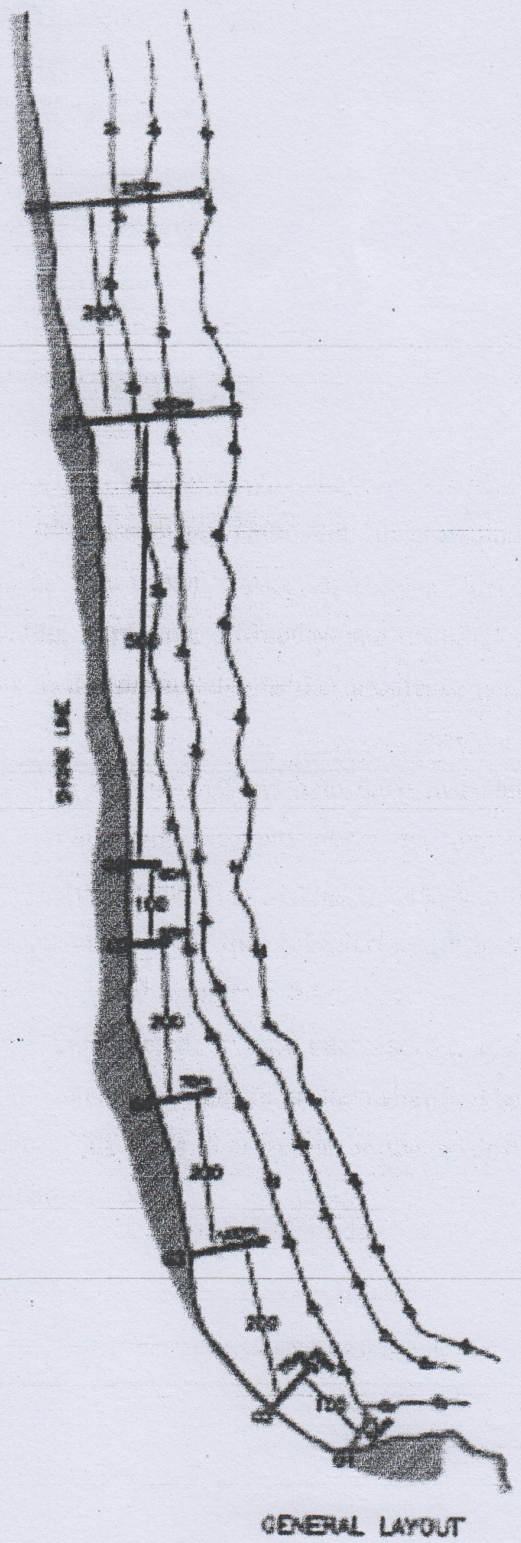


Fig. 5. Layout of the proposed groin field

6.0 NUMERICAL MODELLING FOR SHORELINE EVOLUTION

Structures in the near-shore environment are built for different purposes. These may be for the formation of artificial harbors, shore protection measures, seawater intake systems, disposal of effluent, etc. There are several configurations of such structures with respect to the shoreline, among which, structures normal to the shore is most common. The construction of a shore-connected structure often leads to changes in the shoreline. This warrants a study on the shoreline due to presence of the shore-connected structures. Such a study is very much essential in planning stage; so as to assess the impact of shore connected structures on the adjacent shoreline.

Numerical models offer the capability to study the effect of the wave characteristics, structure dimensions and other associated parameters in providing reasonable estimates of the shoreline response. As the ocean waves approaches the near-shore it undergoes transformations like shoaling, refraction, diffraction and breaking. The phenomena of wave breaking throw sediments to the surface due to the turbulence generated. The sediments in suspension are then driven by the wave-induced currents. Since the direction of waves in the near-shore is oblique, the currents induced by them have two components. One along the shore called long shore current mainly responsible for the long shore sediment transport, which plays an important role in the shoreline changes especially due to the shore connected structures. The other component is in the direction normal to the shore, in which case, the mode of sediment transport is called onshore-offshore sediment transport. When a structure normal to the shoreline is constructed, it will intercept the free passage of long shore sediment transport, which results an imbalance in the quantity of sediment in the near shore especially near the structure. This leads to accretion on the up-drift side and erosion on the down-drift side of the structure.

6.1 Methodology

KRAUS and HARIKAI (1983) proposed a numerical scheme to solve the one line model using Crank Nicholson implicit finite difference method. The non-dimensional equation of shoreline

$$y^*_{n,t^*+1} = B\{Q^*_{n,t^*+1} - Q^*_{n+1,t^*+1}\} + C_n \qquad (1)$$

$$where\ B = \frac{\delta t^*}{2\times\delta x^*}\ and\ C_n = B\{Q^*_{n,t^*} - Q^*_{n+1,t^*} + 2\delta x^* q^*_{n,t^*}\} + y^*_{n,t^*} \qquad (2)$$

The non-dimensional shoreline is divided into 'n' grid points at equal non-dimensional interval, δx^*. Then shoreline changes over a non-dimensional time, δt^* is calculated using Crank-Nicholson finite difference scheme. The schematic diagram for finite difference scheme is shown in Fig. 6.

In this method, Q^* at the time interval (t^* +1) is expressed in terms of the shoreline co- ordinate of y*, first isolating the term involving α_{sp} (angle of shoreline normal to x-axis) using trigonometric identities. One of the term involving α_{sp} is then expressed as first order quantities in y* at time step (t*+1).

$$Q^* = K_D^2 \cos(\alpha_o) \sin(\alpha_b) \tag{3}$$

Where, $\alpha_o = \alpha - \alpha_{sp}$ and α is wave direction with respect to x-axis. The definition sketch showing the angles is shown in Fig. 7.

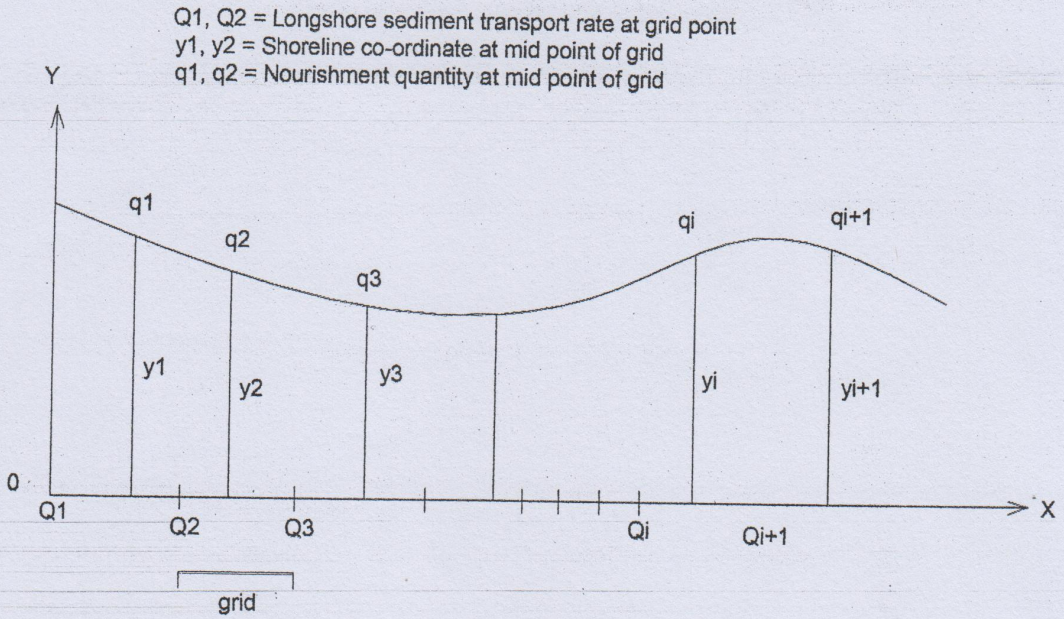


Fig.6. Schematic diagram for finite difference scheme

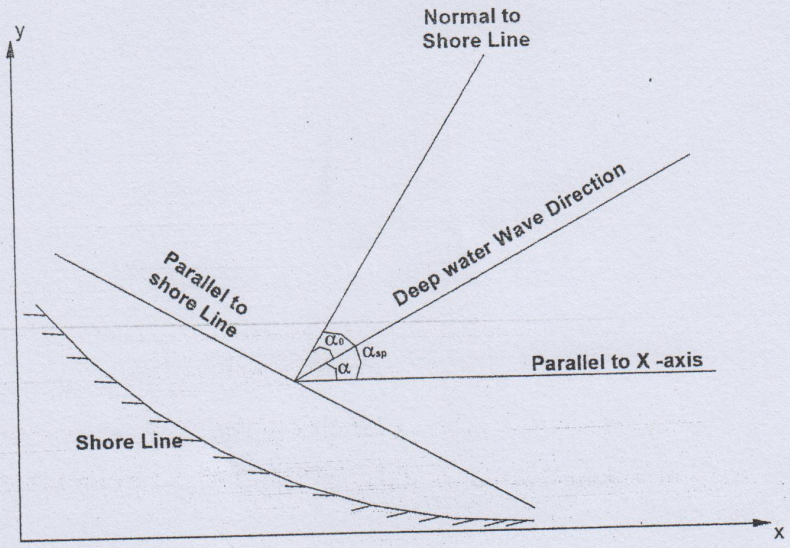


Fig.7. Definition sketch of angles considered

The elliptical form of mild slope equation, which deals with combined refraction-diffraction,

$$Q^* = K_D^2 \cos(\alpha - \alpha_{sp}) \sin(\alpha_b) \tag{4}$$

$$Q^* = K_D^2 \sin(\alpha_b) \left\{\cos(\alpha)\sin(\alpha_{sp}) \cot(\alpha_{sp}) + \sin(\alpha) \sin(\alpha_{sp})\right\} \tag{5}$$

$$Q^* = E_n \left\{y_{n-1,t^*+1} - y^*_{n,t^*+1}\right\} + F_n \tag{6}$$

Where $E_n = K_D^2 \{\cos(\alpha) \sin(\alpha_{sp,t^*}) \sin(\alpha_{b,t^*})\} / \delta x^*$ *and* $F_n = K_D^2 \{\sin(\alpha_{sp,t^*}) \sin(\alpha_{b,t^*})\}$

By substituting above equations, give the final equation as given below

$$BE_n Q^*_{n-1,t^*+1} - (1+2BE_n) Q^*_{n,t^*+1} + BE_n Q^*_{n+1,t^*+1} = E_n [C_n - C_{n-1}] - F_n \tag{7}$$

The above equations represent a set of (N-1) linear equation for (N-1) unknowns. The end values are specified as boundary conditions, that is, $Q^*_1 = 0$ and $Q^*_{N+1} = Q^*_N$. The above equation results into a tri-diagonal form which is solved for Q^*. This process is repeated for the entire duration and non-dimensional quantity is converted into real quantities using the corresponding scale factors. The program has been validated with published results.

6.2 Input and Output from the numerical model

The coastal line is discretized into number of grids with an equal spacing of 5m. The co-ordinates of the existing shoreline were provided. The length of the structure and grain size of the sediments (0.2mm) required for the calculation of active depth of the sediment transport and water depth at the tip of the structure are the inputs given to the model. In addition to these, the monthly wave characteristics and the number of years over which the shoreline change is desired to be mentioned.

The output shows the predicted shoreline changes after a period of 1, 5, 10, 15, 20& 25 years. The upstream of the structures shows advancement of the shoreline position, while, the downstream end shows the erosion. The output obtained is plotted in **Fig 8.**

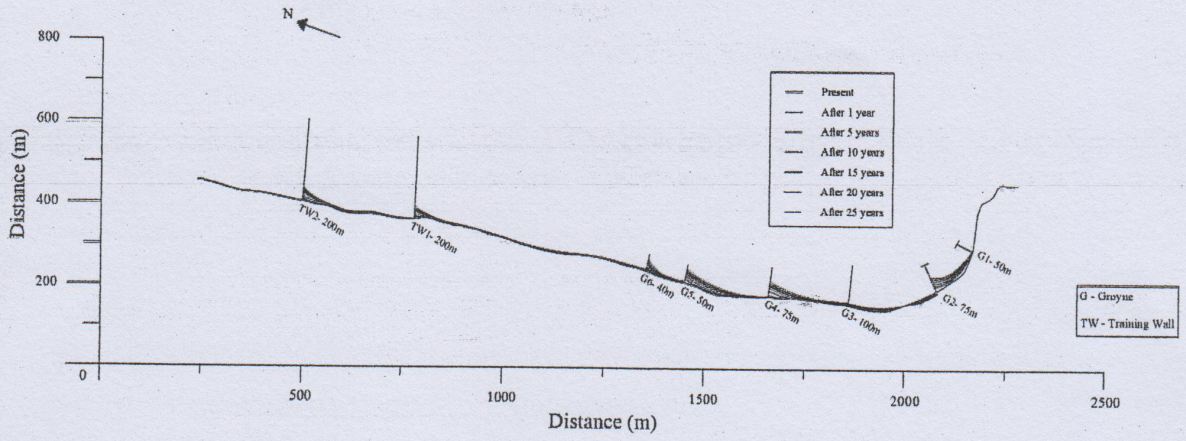


Fig. 8. Predicted shoreline changes due to the proposed groin field

7.0 DESIGN OF GROIN SECTIONS

7.1. General

The design of GROIN/ training wall section is mainly being carried out for the stability of armour units and the overall hydraulic stability of the section formed by rubble stones. It is to be noted that the geotechnical stability of the training wall sections has to be ensured such that seabed profiling is mainly coarse sand to fine silt and without any major clay content beneath the seabed. If the clay content is higher, the stability of the cross section will become questionable. Hence this warrants additional design requirements in the event

the soil beneath the sea bed is of clay which is not considered in the present report. The section is designed to be safe up to a water depth of -2m CD (Chart Datum) for the groin sections and up to -4m CD for the training wall sections. The following section presents the design of a typical rubble mound groin section at -2m CD.

7.2 Design water level

Following design data has been adopted for the design of rubble mound groin section. The mean high water spring (MHWS) is +1.6m above CD. For the design of the section, MHWS is adopted as maximum water level.

Maximum high water spring, $d_{wmax} = 1.6m$

The design water level for the breakwaters can thus be set as the sum of MHWS and the water depth with reference to CD, i.e.,

$$d = 1.6 + 2.0 = 3.6m$$

7.3 Design of groin section

A typical design of groin cross section is given here.

Armour Layer

The size of the armour stones for the training wall section is calculated by using the Hudson formula, which is recommended by CERC (1984).

$$W = \frac{W_r H_D^{\,3}}{K_D (S_r - 1)^3 \cot\theta}$$

Where,

W=weight of an individual armour unit in the primary cover layer.

W_r=Unit weight of rubble stones, 2.65T/m^3.

H_D=Design wave height at the structure site in meters,

S_r=Specific weight of armour unit relating to water at the structure

$S_r = (W_r / W_w)$

W_w=Unit weight of seawater = 1025 kg/m^3

θ =Angle of structure slope measured with the horizontal in degrees

=1:2 (chosen)

K_D =Stability coefficient, for rubble stones in breaking wave condition is 2 for random placement.

From Hudson's formula and further, provide a range between 75% to 125%, the weight of rubble stones is worked out to be 1 Ton to 2.5 Ton in two layers to withstand the design wave height of 1.8m. Accordingly, it is recommended two layers of rubble stones in the range of 1T to 2.5T.

Under layer

The size of stone in under layer is taken as W /10 to W /15 (as per CERC, 1984). Rough angular quarry stones are suggested for under layer for which W_r=2650 kg/m^3

Core layer

The size of stone in core layer is taken as W /100 to W /225 (as per CERC, 1984). Rough angular quarry stones are suggested for core layer for which W_r=2650 kg/m^3

Toe Mound

The size of stone in toe mound is taken as W /10 to W /15 (as per CERC, 1984). Rough angular quarry stones are suggested for toe layer for which W_r=2650 kg/m^3

Crest width

Crest width, r is arrived from the formula

$$r = nK_\delta \left[\frac{W}{W_r}\right]^{\frac{1}{3}}$$

Where,

n= number of stones on the crest = 3

K_δ =Layer coefficient

Thickness of armour layer

The thickness of the armour layer is calculated by following,

$$t = nK\delta\left[\frac{w}{w_r}\right]^{\frac{1}{3}}$$

Where,

n is the number of armour layers. Here, n = 2.

Crest elevation

The crest elevation of the training wall is given by,

Crest elevation = R + free board + Design Water Level

Where,

R = wave run up estimated as per CEM (2002).

Filter Layer

The filter layer is recommended for a thickness of 300mm with 10mm to 10kg rubble stones following the suggestions of SPM of the order of W/2000 to W/6000.

Accordingly, trunk sections have been designed at 4m water depth as well as head sections at 2m and 4m water depths. To secure the training walls without any permanent damages, it is highly recommended to construct shore anchoring for the training walls. Both the Northern and Southern Training walls and groins with suitable head section are shown in **Plates 3** and **4**.

Plates 5 & 6 depict the trunk sections at water depths of 1m, 2m, 3m and 4m. **Plates 7 to 10** depict the plan view of groins. There will be anchoring of training wall/ groin into the beach for a length of up to 10 to 20m with a slope of 1:5 beyond the HTL into the land. The details of materials at different layers of trunk section in the water depths of 2m and 4m have been presented in Table 2. Further, the details of the head sections are presented along with in Table 3.

Table 2. Design details of groin trunk sections at CD -2m & -4m

Trunk Section	At 2m water depth	2m to 4m water depth
Crest elevation	(+) 4.0m	(+) 4.0m
Crest width	4m	4m
Side Slope (both Side)	1: 2	1: 2
Armour Layer	1T to 2.50 T stones of 1.8m thickness	3.0 T to 4.50 T stones of 2.4 m thickness
Under layer	----	500kg to 1T stones of 1.40 m thickness
Toe Mound	500 kg to 1T stones of 2m thickness	500 kg to 1T stones of 2 m thickness
Core	10 kg to 300 kg of stones	10 kg to 300 kg of stones
Filter Layer	10 kg to 300 kg stones of 0.3m thickness	10 kg-300 kg stones of0.30 m thickness

Table 3. Design details of head sections at CD (-) 2 m & (-)4 m

Trunk Section	At 2m water depth	At 4m water depth
Crest elevation	(+) 4.0 m	(+) 4.0 m
Crest width	4 m	4 m
Side Slope (both Side)	1: 2	1: 2
Armour Layer	1T to 2.50 T stones of 1.8m thickness	3.0 T to 4.50 T stones of 2.4 m thickness
Under Layer	----	500kg to 1T stones of 1.40 m thickness
Toe Mound	500 kg to 1T stones of 2m thickness	500 kg to 1T stones of 2 m thickness
Core	10 kg to 300 kg of stones	10 kg to 300 kg of stones
Filter Layer	10 kg to 300 kg stones of 0.3m thickness	10 kg-300 kg stones of0.30 m thickness

8.0. BOQ AND COST ESTIMATE

The total cost of project works out to **Rs. 11.80 crore (One eleven crore and eighty lakh)**

9.0 RECOMMENDATIONS

It is recommended to construct series of groins and a pair of training walls to be constructed. There are six groins (G1 to G6 as shown in Plate 2) with varied length and the length of training walls (G7 & G8) are 200m each. The sequence of construction is important which will depend on the period of the year during which the construction is executed although, the construction of all groins need to be carried out during the same season.

Even though, it is not expected to have severe erosion on the north of G6, a buffer quantity should be made for the construction of two short groins, the average length of each about 50m in between G6 and G7. The design length and the distance between the groins will be based on the behaviour of shoreline during the construction of groins G1 to G8. IIT Madras will assist this part during the construction.

The plan view of the groins is given in **Plates 7 to 10**. The cross sections of the groins in water depths of 1m, 2m, 3m and 4m are given in **Plates 5 and 6**. It is to be mentioned that the above designs are valid only for the site considered under the present study depending on the bottom topography, wave climate and other environmental conditions such as tide.

To make the training walls (groins, G7 and G8) effective, it is required to dredge a channel of width 30m to 50m in between the training walls by dredging the seabed up to -1.5m bed level. It is to be noted that all the levels are with reference to chart datum. The dredging has to be carried out after the construction of the training wall and the dredged spoil may be deposited on the southern side of G7.

Prof. S.A. Sannasiraj **Prof. V. Sundar** **Prof. R. Sundaravadivelu**

PLAN PROGRAMME	B. E. 2016 - 2017		
DEMAND NO. 7			
		In Rupees	
Head of Account:	4405- 00 -Capital Outlay on Fisheries 104 - Fishing harbour and landing facilities - Schemes in the Twelveth Five Year Plan II State Plan - JB -Scheme to open up river mouths in fishing areas / harbours 00 104 JB 0002) (D.P. Code No: 4405		
Detailed / Sub - Detailed Heads	D.P. Code No.	B.E. 2016 - 2017	Name of the Office "C" Sec. in H.O./
16 Major Works	4405.00.104.JB.1609	183000000	183000000
TOTAL		183000000	183000000

Commissioner of Fisheries
15/4/16
for Commissioner of Fisheries

Fisheries Department

From,

Thiru.L.A.G. Julius Edwar
Assistant Director of Fisheries
Kancheepuram District at Neelanagarai
Neelangarai

To,

The District Environmental Engineer,
Tamil Nadu Pollution Control Board,
Maraimalai Adigalar Street,
Next to Municipal Office
Maraimalai Nagar, Chennai - 603209
Kancheepuram District.

Lr.No.F1/ADF/2016 Dated: 01.04.2016

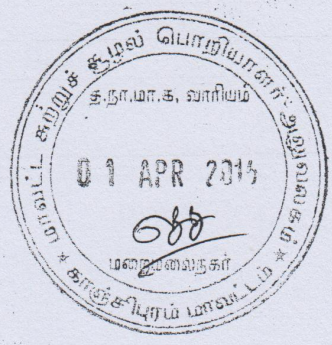
Sub: Submission of application form for seeking clearance for project attractive CRZ Notification - Reg

Dear Sir,

In Connection to the above subject & reference we here with submit 10 Copies of EIA Report for obtaining CRZ Clearance for the proposed Shore Protection along the coastal stretch of Kovalam . Kindly process our application and grant us CRZ clearance at the earliest.

1/4/16

Assistant Director Of Fisheries
Kancheepuram District at Neelangarai



ABSTRACT

Fisheries – Announcement made by Hon'ble Chief Minister under rule 110 of the Legislative Assembly - Construction of Fish Landing centres and improvement of Fish Seed Farms at various locations in Tamil Nadu and shore protection work at Kovalam in Kancheepuram District with the financial assistance from National Bank for Agriculture and Rural Development under RIDF-XXI – Administrative Approval – Orders- Issued.

Animal Husbandry, Dairying and Fisheries (FS-1) Department

G.O(Ms)No.233 **Dated.23.12.2015**

Thiruvalluvar Aandu-2046
Maargazhi-7

Read:-

1. G.O.(Ms)No.272, Animal Husbandry, Dairying and Fisheries (FS-1) Department, dated 24.12.2014.
2. Commissioner of Fisheries, letter Rc.No.8364/ F1/2014, dated 13.5.2015.
3. Government letter No.106/JS(AP)/2015-1, Finance (Res-II) Department, dated 9.6.2015.
4. Commissioner of Fisheries, letter Rc.No.17189/ T4/2015, dated 1.7.2015.
5. Government letter No.38012/Res.II/2015-1, Finance (Res-II) Department, dated 9.7.2015.
6. Deputy General Manager, National Bank for Agriculture and Rural Development, Ref.NB.TN.SPD/RIDF-6/RIDF-XXI/ 2015-2016, dated 2.9.2015.
7. From the Commissioner of Fisheries, letter Rc.No.13269/ F1/2015, dated 22.9.2015.
8. G.O(Ms)No193, Agriculture(AP1)Department, dated 21.9.2015.

ORDER:

Under rule 110 of the Legislative Assembly the Hon'ble Chief Minister had announced on the floor of the Assembly on 23.9.2015 that Five new fish Landing Centres would be constructed at a cost of Rs.25.00 crore, infrastructure works would be carried out in Fish Seed Farms in ten places at a cost of Rs.25.00 crore to increase fish seed production in the State and three Fish Seed Farms under the control of the Tamil Nadu Fisheries Development Corporation Limited would be upgraded at a cost of Rs.5.35 crore. The total cost for the improvement and upgradation of Fish Seed Farms is Rs.30.35 crore (Announcement No.13&14).

(P.T.O)

2. Accordingly, in Government order eighth read above, a sum of Rs.5.35 crore has been sanctioned for upgradation works of the Three Fish Seed Farms at Aliyar, Amaravathi and Thirumoorthy which come under the control of the Tamil Nadu Fisheries Development Corporation Limited, under National Agriculture Development Programme.

3. In respect of five new Fish Landing Centres and infrastructure works to Fish Seed Farms at 10 places, the Commissioner of Fisheries had furnished detailed proposal along with cost estimates to the tune of Rs.50.00 crore as detailed below:-

(i) Infrastructure works for the Improvement of 10 Fish Seed Farms:

S.No	Name of the location	District	Estimate Amount (Rs in Crore)
1	Poondi	Thiruvallur	3.00
2	Kulithalai	Karur	0.75
3	Thirukkambuliyur		2.90
4	Chinnar	Dharmapuri	2.70
5	Pambar	Krishnagiri	1.60
6	Thattankulam	Thanjavur	1.75
7	Manimutharu	Tirunelveli	1.40
8	Anaipatti	Dindigul	8.25
9	Piravalur	Sivagangai	2.15
10	Managiri		0.50
Sub Total (A)			25.00

(ii) Construction of Fish Landing Centres:-

S.No	Name of the Village	District	Estimate Amount (Rs in crore)
1	Pettodai	Cuddalore	6.5
2	Singithurai	Thoothukudi	4.5
3	Pazhalya Kayal		4.00
4	Samanthan pettai	Nagapattinam	0.75
5	Thirumullai Vasal		9.25
Sub Total (B)			25.00
Grand Total (A)+(B)			50.00

4. The Commissioner of Fisheries has also stated that based on the announcement made by the Hon'ble Chief Minister under rule 110 of the Legislative Assembly on 4.8.2014, in the Government order first read above, a sum of Rs.5.00 crore was sanctioned interalia for construction of a Fish Landing Centre at Kovalam in Kancheepuram District with financial assistance from National Bank for Agriculture and Rural Development under RIDF-XX. However, due to continuous erosion of the shore line at Kovalam village, the sea has rapidly advanced into the village for about 130 meters. So as to mitigate the problem of sea erosion, Commissioner of Fisheries has requested the Government to provide additional sanction for a sum of Rs.18.30 crore for construction of 6 short Groynes and 2 training walls along the Coastal stretch of Kovalam village.

5. In the letters third and fifth read above, the proposal for the construction of Five new Fish Landing Centres and for carrying out Infrastructure works for the improvement of Fish Seed Farms at a total cost of Rs.50 crore and the proposal for shore protection along the coastal stretch at Kovalam in Kancheepuram District at a cost of Rs.18.30 crore have been recommended to the National Bank for Agriculture and Rural Development for consideration and loan assistance under RIDF-XXI.

6. In the letter sixth read above, the Deputy General Manager, National Bank for Agriculture and Rural Development has informed that the National Bank for Agriculture and Rural Development in its 2nd meeting of the RIDF Internal Sanctioning Committee held on 20.8.2015 had sanctioned a sum of Rs.4750 lakh as loan assistance under RIDF-XXI for the construction of Five new Fish Landing Centres and Improvement of Fish Seed Farms; and Rs.1738.50 lakh for construction of Flood Protection / Anti sea erosion project at Kovalam in Kancheepuram District. (Total Rs.6488.50 lakh)

7. In the letter seventh read above, the Commissioner of Fisheries has requested the Government to accord Administrative Approval and Financial Sanction for Rs.6830.00 lakh (NABARD-RIDF XXI-Loan 95% Rs.6488.50 lakh + Government contribution 5% Rs.341.50 lakh) to implement the scheme through Fishing Harbour Division as detailed below:-

(Rs.in lakh)

Sl.No	Name of the scheme	NABARD – RIDF XXI – Loan (95%)	State Govt. contribution (5%)	Estimated Amount
1	Improvement of 10 Fish Seed Farms	2375	125	2500
2	Construction of 5 Fish Landing Centres	2375	125	2500
3	Construction of Flood Protection / Anti sea erosion project	1738.50	91.50	1830
	Total	6488.50	341.50	6830

8. The Government have examined the proposal of the Commissioner of Fisheries and decided to accept it. Accordingly, administrative sanction is accorded for Rs.6830 lakh (Rupees Sixty eight crore and thirty lakh only) towards the construction of five new Fish Landing Centres, carrying out Infrastructure works for the improvement of Fish Seed Farms at ten locations mentioned in para-2 above and for the project of shore protection along the coastal stretch of Kovalam in Kancheepuram District with loan

assistance from National Bank for Agriculture and Rural Development under RIDF-XXI for the year 2015-16 as abbreviated below:-

(Rs.in lakh)

Sl. No	Name of the Project	Estimate amount	Loan assistance from NABARD (95%)	State Government contribution (5%)
1	Construction of 5 new Fish Landing Centre	2500	4750	250
2	Improvement of 10 Fish Seed farms	2500		
3	Shore Protection along the coastal stretch of Kovalam in Kancheepuram District	1830	1738.50	91.50
Total		6830	6488.50	341.50

Further, the sanction accorded for the project of shore protection along the Coastal Stretch of Kovalam in Kancheepuram District is subject to the condition that Fish Landing Centre and groynes work at Kovalam should not overlap but compatible and integrated together. The above works will be implemented through the Fishing Harbour Division of the respective project area.

9. The amount sanctioned in para-8 above shall be debited to the following head of Account:-

(i) Construction of 5 Fish Landing Centres and the project work of Shore Protection at Kovalam (Rs.25 crore +Rs.18.30 crore = 43.30 crore):-

"4405-00-Capital Outlay on Fisheries-104 Fishing Harbour and Landing Facilities - Schemes in the Twelfth Five Year Plan - II. State Plan-JE Improvement of Fish Landing Facilities with Loan Assistance from NABARD-16. Major Works".
(DPC:4405 00 104 JE 1603)

(ii) Infrastructure works for the improvement of 10 Fish Seed Farms (Rs.25 crore):

"4405-00-Capital Outlay on Fisheries-101 -Inland Fisheries - Schemes in the Twelfth Five year Plan - II - State Plan - JN Improvement to Fish Seed Farms with loan assistance from NABARD -16 Major works".
(DPC:4405 00 101 JN 1601)

10. The expenditure sanctioned in para-8 above shall constitute an item of "New Instrument of Service" and the approval of the Legislative will be obtained in due course. Pending approval of the Legislature the expenditure shall initially be met from the Contingency Fund. Orders regarding this will be issued by the Finance (BG-II) Department separately. The Commissioner of Fisheries shall apply for the sanction of Contingency Fund advance to

Finance (BG-I) Department in the prescribed format along with the copy of this order at the appropriate time. The Commissioner of Fisheries is also directed to sent necessary explanatory notes for inclusion of the expenditure in the Supplementary Estimates 2015-16 without fail.

10. This order issues with concurrence of the Finance Department vide its U.O.No.69225(AH&F)/2015, dated.23.12.2015 and with Additional Sanction Ledger No.1706 (One thousand seven hundred and six)

(BY ORDER OF THE GOVERNOR)

S.VIJAYAKUMAR
Secretary to Government

To

The Commissioner of Fisheries, Chennai-6.
The Chief Engineer, Fishing Harbour Project Circle, Chennai-6
The Deputy General Manager, National Bank for Agriculture and Rural Development, Chennai-34
The Pay and Accounts Officer(South), Chennai-35.
The Principal Accountant General(E&RSA), Chennai-18
The Resident Audit Office, O/o. Principal Accountant General(G&SSA), Chennai-9.

Copy to:

Office of the Hon'ble Chief Minister, Chennai-9
The Senior Personal Assistant to Hon'ble Minister (Finance and Public Works), Chennai-9
The Senior Personal Assistant to Hon'ble Minister (Fisheries), Chennai-9
The Finance(AH&F/Res-II/BG-I/BG-II)Department, Chennai-9.
The Private Secretary to Secretary to Government, Animal Husbandry, Dairying and Fisheries Department, Chennai-9.
The Animal Husbandry, Dairying and Fisheries (FS-4/FS-5) Department, Chennai-9 (For follow up with reference to Fish Seed Farms)
Stock File / Spare Copies.

//Forwarded By Order//

23/12/2015
Section Officer

23/12/15

கோவளம்
மீனவர் பஞ்சாயத்து சபை

பஜனை கோயில் தெரு, கோவளம் குப்பம்,
கோவளம் அஞ்சல் - 603 112. காஞ்சிபுரம் மாவட்டம்.

பார்வை ஸ்ரீ தேதி 22/12/2014

பெறுநர்:

உயர்திரு மீன்துறை உதவி இயக்குனர்
நீலாங்கரை (இருப்பு)
காஞ்சிபுரம் மாவட்டம்
சென்னை 600115

ஐயா!

உயர்திரு மீன்துறை உதவி இயக்குனர் அவர்களுக்கு கோவளம் மீனவர் பஞ்சாயத்து சபை நிர்வாகிகள் வணக்கத்துடன் தெரிவித்துக் கொள்வது.

ஐயா! கோவளம் மீனவர் பகுதியில் உள்ள கடற்கரைக்கு அருகில் உள்ள அருள்மிகு ஸ்ரீ பிரதியங்கரா அம்மன் கோவிலுக்கு மேற்கு பக்கம் உள்ள காலி இடத்தில் (அதாவது எங்கள் ஊரின் வளர்ச்சிக்காக புதியதாக கட்டப்பட்டுவரும் சாலையின் பின்புறத்தில் உள்ள காலி இடத்தில் மீன் காயவைக்கும் தளமாகவும், மீன்பிடி வலைகள் பாதுகாப்பாக இருப்பதற்காக கட்டிடமும் கட்டுவதற்கு எதற்கும் மேலும் சூரிய ஒளியுடன் கடலோரம் அமையம் உள்ள காலி இடத்தில் கழிவறை மற்றும் குளியல் அறை கட்டி

கோவளம்
மீனவர் பஞ்சாயத்து சபை

பஜனை கோயில் தெரு, கோவளம் குப்பம்,
கோவளம் அஞ்சல் - 603 112. காஞ்சிபுரம் மாவட்டம்.

பார்வை

2

தேதி.........................

- அதற்கும் நாங்கள் மனப்பூர்வமாக சம்மதித்து தங்களுக்கு தெரிவித்துக் கொள்கிறோம்

இப்படிக்கு

R. சேகர்

[illegible]

A. மாரிமுத்து

P. ராமதாஸ்

R. சிவக்குமார்

M. Ramakrishnan

M. நாகேஸ்வரன்

[illegible]

கோவளம்
மீனவர் பஞ்சாயத்து சபை

பஜனை கோயில் தெரு, கோவளம் குப்பம்,
கோவளம் அஞ்சல் - 603 112. காஞ்சிபுரம் மாவட்டம்.

பார்வை

தேதி 15/08/2015

உயர்திரு தலைவர் அவர்கள்
கோவளம் ஊராட்சி மன்றம்
திருப்போரூர் வட்டம்
காஞ்சிபுரம் மாவட்டம்

ஐயா,

உயர்திரு ஊ. ம. தலைவர் அவர்களுக்கு வணக்கம். கோவளம் மீனவர் பஞ்சாயத்து சபை மற்றும் மீனவ மக்களின் சார்பாக தங்களுக்கு தெரிவித்துக்கொள்வது. கோவளம் கடற்கரை நாளுக்கு நாள் கடல் அரிப்பு ஏற்பட்டு வருவது தாங்கள் அறிந்ததே. அதுபோன்று தற்போது கோவளம் கடற்கரை கடல் அரிப்பு ஏற்பட்டு மிகவும் மோசமான நிலையால் குடியமைப்பு வீடுகள் பாதிக்கப்படுகின்றன, மற்றும் FRP படகுகளின் கடற்கரை நிறுத்துவதற்கு இடமில்லை முடியவில்லை. தற்போது தாங்கள் கோவளம் மீனவர்கள் பகுதியாகும் முஸ்லீம் மீனவர் பகுதியாகும் தாங்கள் மீனவமக்களின் மீது இறக்கப்பட்ட 300 லோடு கற்களை பாறை கொண்டு அவசரமாக போர்க்கால அடி

Off:044 – 27472833

கோவளம் ஊராட்சி மன்றம்

திருப்போரூர் ஊராட்சி ஒன்றியம்

காஞ்சிபுரம் மாவட்டம் – 603 112.

S. ஜானகிராமன் B.A.,
ஊராட்சி மன்ற தலைவர்,
நெ.104A, தர்கா தெரு,
கோவளம்.

E mail: venkattrust @ yahoo.com
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தேதி : 17-08-15

பெறுநர்

உயர்திரு மாவட்ட ஆட்சித்தலைவர் அவர்கள்,
காஞ்சிபுரம் மாவட்டம்,
காஞ்சிபுரம்.

ஐயா,

கோவளம். நெ. 16, 23 - ல் அடங்கிய கோவளம் குப்பம் பகுதி மற்றும் புது மசூதி பகுதியில் சுமார் 700 மீனவ குடும்பங்கள் உள்ளது. இங்கு எந்த வருடமும் இல்லாத அளவிற்கு கடல் அரிப்பு ஏற்பட்டு சுமார் 5 வீடுகள் இடிந்து விட்டது. மேலும் 50 வீடுகள் இடிந்து விழும் நிலையில் உள்ளது. ஆகையால் கடல் அரிப்பை தடுக்க வேண்டி கருங்கல் பாறை கொண்டு JCB இயந்திரம் மூலமாக தடுத்து நிறுத்துவற்கு கோவளம் ஊராட்சிக்கு 10 லட்சம் ரூபாய் ஒதுக்கித் தருமாறு தாழ்மையுடன் வேண்டுகிறேன்.

இப்படிக்கு,
தலைவர்
கோவளம் ஊராட்சி

நாட்டுயாவு

~~கூட்டுறவே~~

FMC 41 கோவளம் (முஸ்லீம்)
மீனவர் கூட்டுறவு சங்கம்

துணை தலைவர்
H.காலேஷா
செல் : 9962217911

தலைவர்
M.கப்பார்
செல் : 9884856781

நிர்வாக குழு உறுப்பினர்கள்:
M.அன்சர்தீன்
9941814125
K.தாஹாமுகமது
9962439247
J.தாகா
9677044990
H.இக்பால்
9500057895
J.முகமது யாகூப்
9940276720

தேதி: 15/08/15

பெறுநர்:
உயர்திரு தலைவர் அவர்கள்
கோவளம் ஊராட்சி மன்றம்.
திருப்போரூர் வட்டம்
காஞ்சிபுரம் மாவட்டம்

ஐயா,

உயர்திரு ஊ.ம. தலைவர் அவர்களுக்கு வணக்கம். கோவளம் முஸ்லீம் மீனவர், மற்றும் கோவளம் ஜோனை இப்பம் மஹல்லா ஜமாத்தார்கள் சார்பாக தங்களுக்கு தெரிவித்துக் கொள்வது, கோவளம் கடற்கரை நாளுக்கு நாள் கடல் அரிப்பு ஏற்பட்டு வருவது தாங்கள் அறிந்ததே. அதேபோன்று தற்போது ஏற்பட்டு கோவளம் கடற்கரை கடல் அரிப்பு ஏற்பட்டு மிகவும் மோசமான நிலையில் குடியிருப்பு, வீடுகள் பாதிக்கப்பட்டுள்ளன. மற்றும் FRPC படகு, இன்ஜின், கடற்கரையில் நிறுத்துவதற்கு கூட முடியவில்லை. இதுபோது தாங்கள் கோவளம் முஸ்லீம் மீனவர் பகுதியிலும் பகுதியும், கோவளம் மீனவர் பகுதியிலும் தாங்கள் மீனவ மக்களின் மீது இரக்கப்பட்டு 300 லோடு கருங்கற்கள் கொண்டு அவசரமாக தோணக்காவை அமைப்பதால் மேற்படி கடல் அரிப்

குடியுரிமை நடவடிக்கை எடுக்கும்படி மக்கள் தாழ்மையு

முஸ்லிம் ஜமாத் மக்களின் சார்பாகவும், கோனைப்பட்டி

மனுதாரா மக்கள் சார்பாகவும் கேட்டுக் கொள்கிறோம்.

இப்படிக்கு.

கோவனம் முஸ்லிம் ஜமாத்கள் மற்றும்

கோனைப்பட்டி மனுதாரா ஜமாத்தார்கள்

தலைவர்
கோவனம் முஸ்லிம்
[illegible] ஜமாத் சங்

கருப்பசாமி

H. [illegible]

J. ஜெயசூர்யா

K. சக்திராஜா

M. [illegible]

A. அலாவுதீன்

M. இஸ்மாயில்

S. அன்சாரி - காஜா மொய்தீன்

S. யாசின் ஷ

S. ஜனைதி.

A. சாபுன்

A. காவேசா

B. Rajeys

அமீர்

சுப்பையா

M. நிஜாமுதீன்

M. [illegible]

M - மஸ்தான்பி

M. khadhal

J. merin

N. [illegible]

J. [illegible]

[illegible]

J. உறவினி

M. ஜேக்கப்ராஜ்

A. காதர்பாஷா

S. இக்பால்

S. [illegible]

நாட்டுயர்வு

FMC 41 கோவளம் (முஸ்லீம்)
மீனவர் கூட்டுறவு சங்கம்

தலைவர்
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செல் : 9884856781

துணை தலைவர்
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நிர்வாக குழு
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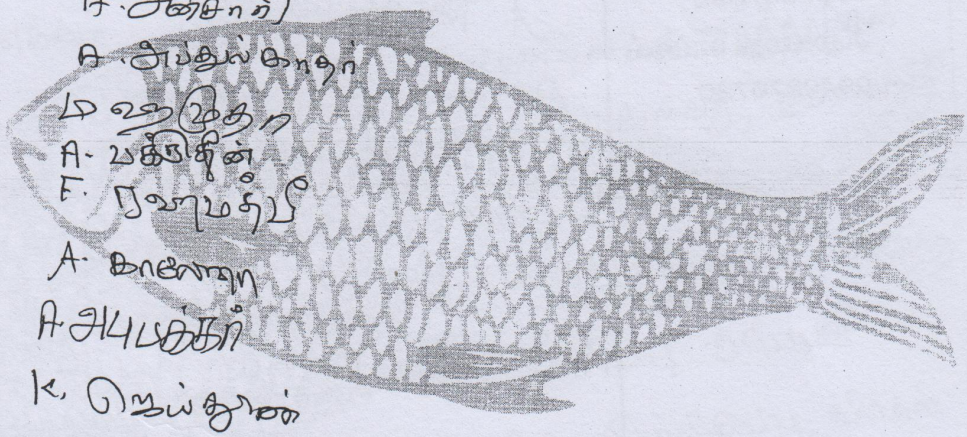
9677044990
H.இக்பால்
9500057895
J.முகமது யாகூப்
9940276720

தேதி: 15-8-201

A. Yasmine
A-Rajana Banu
A. Fatima
[illegible]
[illegible]
A. [illegible]
[illegible]
[illegible]
[illegible]
A. [illegible]
F. [illegible]
A. [illegible]
A. [illegible]
K. [illegible]
A. [illegible]
A- [illegible]
[illegible]
[illegible]
K. [illegible]
M. [illegible]
M. [illegible]
[illegible]



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கூட்டுறவே

நாட்டுயர்வு

FMC 41 கோவளம் (முஸ்லீம்)
மீனவர் கூட்டுறவு சங்கம்

தலைவர்
M.கப்பார்
செல் : 9884856781

துணை தலைவர்
H.காலேஷா
செல் : 9962217911

நிர்வாக குழு
உறுப்பினர்கள்:
M.அன்சர்தீன்
9941814125
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9962439247
J.தாகா
9677044990
H.இக்பால்
9500057895
J.முகமது யாகூப்
9940276720

தேதி: 15-8-2019

A.m Faizal
[illegible]
A. [illegible]
M. Iqbal.
A. Nousha
A. K[illegible]
R. Shiraj
S. Sheejal[illegible]
Al mubarak
A. Parveen Banu
A. செய்யதலி பாத்திமா
A. சிவ்தான் பி.
B. அயுப்கான்
B. ஜலாலுதீன்
H. Barakathulla
N. Rahamathulla
S. Sharafjan
K. Ijathu
A. pakrudeen

மீன்வளத்துறை

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2259

தி இந்து தமிழ்
நாள்..17.10.2015.....

கோவளத்தில் கடல் அரிப்பால் வீடுகள் சேதம்

மீனவளத்துறை அலட்சியப்படுத்துவதாக புகார்

காஞ்சிபுரம் கோவளம் பகுதி தென்பகுதியில் பல்வேறு கிராமங்களைச் சேர்ந்த மீனவர்கள் கடற்கரை அருகே பட்டா நிலங்களில் குடியிருந்து வருகின்றனர். கடந்த சில மாதங்களாக கோவளம் பகுதியில் கடல் அரிப்பு ஏற்பட்டு கட்டிடங்கள் சரிந்து வருகின்றன. இதில் சில குடியிருப்புகள் முற்றிலும் கடல் நீரால் அடித்து செல்லப்பட்டுள்ளன.

இதை தடுக்க தூண்டில் வளைவு அல்லது பாறைகளினால் தடுப்புகள் அமைக்க வேண்டும் என மீனவர்கள் தொடர்ந்து வலியுறுத்தி வருகின்றனர். ஆனால் இந்த விவகாரத்தில் மீன்வளத் துறை அலட்சியம் காட்டுவதாக மீனவர்கள் புகார் தெரிவித்துள்ளனர்.

இதுகுறித்து அப்பகுதி மீனவர்கள் கூறும்போது, கடந்த சில நாட்களில் மட்டும் 200 மீட்டர் கடல்நீர் முன் வந்துள்ளது. கடல் அரிப்பால் இரவு நேரங்களில் வீடுகளில் தங்க அச்சமாக உள்ளது. முதல்வரின் தனிப்பிரிவில் மனு அளிக்க முடிவு செய்துள்ளோம். கோவளத்தில் கடலரிப்பை தடுக்க தூண்டில் வளைவு அமைக்க வேண்டும் என மீன்வளத்துறையிடம் வலியுறுத்தி வருகிறோம். மீன்வளத்துறை இணை இயக்குநரை நேரில் தொடர்பு கொள்ள முடிவதில்லை. மாவட்ட ஆட்சியரிடம் நேரில் புகார் தெரிவித்தும் நடவடிக்கை இல்லை என தெரிவித்தனர்.

▲ கோவளம் கடற்கரையில் கடல் அலையால் சேதமடைந்துள்ள கட்டுக்கரையோர வீடுகள். படம்: கோ.கார்த்திக்

கோவளம் ஊராட்சி தலைவர் ஜானகிராமன் கூறும்போது, கடற்கரை பகுதி என்பதால் ஊராட்சி நிர்வாகம் நடவடிக்கை எடுக்க அதிகாரம் இல்லை. இதனால், மீனவர்கள் மற்றும் பொது மக்கள் கடுமையான பாதிப்புக் குள்ளாகியுள்ளனர் என தெரிவித்தார். காஞ்சிபுரம் மாவட்ட மீன்வளத்துறை இணை இயக்குநர் கிரிஜா கருத்து தெரிவிக்கையில், 'கோவளம் பாதிப்பு தொடர்பாக அரசிடம் தெரிவிக்கப்பட்டுள்ளது. இதுதொடர்பாக, மீனவர்கள் யாரும் என்னை தொடர்பு கொள்ளவில்லை. தூண்டில் வளைவு அமைப்பது தொடர்பாக தனக்கு எந்தவித தகவலும் இல்லை' என்றார்.

இப்பிரச்சினை பற்றி காஞ்சிபுரம் மாவட்ட ஆட்சியர் கஜலட்சுமியிடம் கேட்டபோது, 'கோவளத்தில் கடல் அரிப்பை தடுப்பதற்காக மீன்வளத் துறையினர் என்னென்ன நடவடிக்கைகள் மேற்கொண்டுள்ளனர், மற்றும் பாதிப்புகள் குறித்து, மீன்வளத்துறையிடம் விசாரித்து உரிய நடவடிக்கை எடுக்கப்படும்' என்றார்.

AD fisheries
Report

17/10/15

பெறுநர்
திருமதி ரா. பத்மாவதி , MFSc

Ph : 044-27472833
Cell : 8056039366

கோவளம் ஊராட்சி மன்றம்

திருப்போரூர் ஊராட்சி ஒன்றியம்,

நெ.21, பஜனை கோயில் தெரு, கோவளம், காஞ்சிபுரம் மாவட்டம் - 603 112.

S.ஜானகிராமன் B.A.,
தலைவர்

காஞ்சிபுரம் மாவட்டம்
14 AUG 2015
மாவட்ட ஆட்சித் தலைவரின் முகாம் அலுவலகம்.

தேதி : 14-8-15

பெறுநர்

உயர்திரு மாவட்ட ஆட்சித் தலைவர் அவர்கள்
காஞ்சிபுரம் மாவட்டம்
காஞ்சிபுரம்

ஐயா,

வணக்கம், காஞ்சிபுரம் மாவட்டத்தில், திருப்போரூர் ஊராட்சி ஒன்றியத்தில் அமைந்துள்ள கோவளம் ஊராட்சியில் கடல் அரிப்பு ஏற்பட்டு சுமார் 5 வீடுகள் இடிந்து விழுந்து விட்டன. இது சம்மந்தமாக 13.08.2015 அன்று கோவளம் ஊராட்சி மன்ற தீர்மானத்தின்படி வட்டார வளர்ச்சி அலுவலருக்கு தெரிவிக்கப்பட்டு உள்ளது. மேலும் ஒரு வாரக்காலத்திற்குள் சுமார் 95 வீடுகள் கடல் அரிப்பில் அடித்து செல்லும் நிலையில் உள்ளது. தற்காலிகமாக பராங்கற்களை கொட்டி கடல் அரிப்பு தடுத்து நிறுத்துமாறு தாழ்மையுடன் கேட்டுக் கொள்கிறோம்.

AD fisheries.

உரிய அறிக்கையினை கேட்டு மேல்நடவடிக்கை இரு தினங்களில் அனுப்பவும்.

14/8/15
10.20

இப்படிக்கு

S. Janakiraman.

தலைவர்
கோவளம் ஊராட்சி

மீன்வளம் துறை

அனுப்புநர்
திருமதி ரா. பத்மாவதி , MFSc.,
மீன்துறை உதவி இயக்குநர்
காஞ்சிபுரம்மாவட்டம் (இருப்பு)
நீலாங்கரை, சென்னை–115

பெறுநர்
மீன்துறை இணை இயக்குநர்
(மண்டலம்)
சென்னை 28

ந.க.எண் 1055 /அ3 / 2015 நாள் 17 . 08 .2015

அய்யா,

பொருள் காஞ்சிபுரம் மாவட்டம்– திருப்போரூர் ஊராட்சி ஒன்றியம் – கோவளம் மீனவ கிராமத்தில் கடலரிப்பு ஏற்பட்டது – தடுத்து நிறுத்திட ஆவன செய்திடுதல் – குறித்து

பார்வை காஞ்சிபுரம் மாவட்ட ஆட்சியர் அவர்களிடம் இருந்து பெறப்பட்ட மனு நாள் 14.08.2015

காஞ்சிபுரம் மாவட்டம் திருப்போரூர் தாலுக்காவில் அமைந்துள்ள கோவளம் மீனவ கிராமத்தில் 13.08.2015 அன்று கடலரிப்பு ஏற்பட்டு இதனால் சுமார் 5 வீடுகள் இடிந்து விழுந்துவிட்டன எனவும் இந்நிலை தொடர்ந்ததால் அப்பகுதியில் உள்ள 95 வீடுகள் கடல் அரிப்பினால் அடித்து செல்லப்படும் நிலையில் உள்ளதாகவும், அதனைத் தடுத்து நிறுத்திட ஆவன செய்திடுமாறு கோவளம் ஊராட்சி மன்றத்திடம் இருந்து மாவட்ட ஆட்சியர் அவர்கட்கு சமர்ப்பிக்கப்பட்ட மனு மீது விரிவான கருத்துரு அனுப்பிடக் கோரி காஞ்சிபுரம் மாவட்ட ஆட்சியர் அவர்களிடம் இருந்து அறிவுரை பெறப்பட்டுள்ளது.

NABARD RIDF- XX- 2014–15ம் ஆண்டில் காஞ்சிபுரம் மாவட்ட. கோவளம் பகுதியில் மீன் இறங்குதளம் அமைப்பதற்கு என ரூ.5.00 கோடி நிதி ஒதுக்கப்பட்டுள்ள நிலையில் கோவளம் மீனவ கிராமத்தில் கடல் அரிப்பினைத் தடுப்பதற்காக ஆவன செய்திடுமாறு மீன்துறை இணை இயக்குநர் அவர்களைப் பணிவுடன் கேட்டுக் கொள்கிறேன்.

இணைப்பு – மனுவின் நகல்

17/8/15

மீன்துறை உதவி இயக்குநர்
காஞ்சிபுரம் மாவட்டம் (இருப்பு) சென்னை– 115

நகல் பணிந்தனுப்பப்படுகிறது
மாவட்ட ஆட்சியர் அவர்கள்
காஞ்சிபுரம் மாவட்டம்

1415/15/13

அனுப்புநர்
முனைவர் வே. க. சண்முகம், இ.ஆ.ப.,
மாவட்ட ஆட்சித்தலைவர்,
காஞ்சிபுரம்.

பெறுநர்
உதவி இயக்குநர்,
மீன்வளத்துறை,
நீலாங்கரை,
சென்னை - 115.

ந.க.15385/2015/பேமே நாள் : 01.07.2015

பொருள் இயற்கை இடர்பாடுகள் - காஞ்சிபுரம் மாவட்டம் - திருப்போரூர் வட்டம் - கோவளம் கிராமம் - சாலை, மின்கம்பம், மீன்உலர்த்தும் இடம் ஆகியவை கடல் அரிப்பால் பாதிப்படைந்துள்ளது - தொடர்பாக.

பார்வை திருப்போரூர், வட்டாட்சியரின் கடித ந.க.4248/2015/அ1 நாள் : 19.05.2015.

"""""".

பார்வையில் காணும் திருப்போரூர் வட்டாட்சியரின் கடிதத்தில், திருப்போரூர் வட்டம், 16.கோவளம் கிராமத்தில் அடிக்கடி கடல் சீற்றத்தினால் அரிப்பு ஏற்படுதாகவும், மேற்படி கிராமம் மற்றும் குப்பம் பகுதியில் உள்ள சிமெண்ட் சாலை, மின்கம்பங்கள், மீன் உலர்த்தும் இடம், ஆகியவை பாதிக்கப்படுவதாகவும், கடல் சீற்றம் ஏற்பட்டு கட்ல் அரிப்பு அதிகளவில் ஏற்பட்டால் குடியிருப்பு பகுதிகள் பாதிப்பு அடையும் வாய்ப்புகள் உள்ளதாவும், அதனால் மீனவ மக்களின் வாழ்வாதாரம் கேள்விக்குறியாகும் நிலை ஏற்படும் எனவும் தெரிவிக்கப்பட்டுள்ளது.

மேலும் மேற்படி கிராமத்தை சார்ந்த சுமார் 500 நபர்கள் ஒன்றுகூடி கோவளம் கிராம நிர்வாக அலுவலர் அலுவலகத்தில் போராட்டம் செய்ய முற்பட்டதாகவும், அவர்களிடம் பேச்சுவார்த்தை நடத்தி கோரிக்கை மனு பெறப்பட்டதாகவும், அக்கோரிக்கை மனுவில் முதற்கட்டமாக கடல் அரிப்பை தடுக்கும் விதத்தில் பெரிய பாறைகருங்கற்களை கடல் அரிப்பு ஏற்படும் இடங்களில் அமைக்கவும், அடுத்த கட்டமாக மேற்படி பகுதியில் தூண்டில் வளை அமைக்கவும் கோரிக்கை வைத்துள்ளதாக திருப்போரூர், வட்டாட்சியர் தெரிவித்துள்ளார்.

எனவே இது தொடர்பாக மேற்படி இடத்தினை நேரடியாக பார்வையிட்டு விரிவான அறிக்கையினை அனுப்பி வைக்குமாறு கேட்டுக் கொள்கிறேன். இத்துடன் வட்டாட்சியர் அறிக்கை இணைத்தனுப்பப்படுகிறது.

தங்கள் நம்பிக்கையுள்ள,
ஒம்/- என். விஸ்வநாதன்
மாவட்ட ஆட்சித்தலைவருக்காக,
காஞ்சிபுரம்.

//உத்தரவின்படி//

வட்டாட்சியர் (பே.மே) 27/7/15