ANNEX-VII

TERMS OF REFERENCE (TOR)

for

Subsurface Geological Study and Seismic Hazard Assessment for Mirsharai Upazila

under

"চট্টগ্রাম জেলার মীরসরাই উপজেলার উন্নয়ন পরিকল্পনা প্রণয়ন ঃ সার্বিক দুর্যোগ ব্যবস্থাপনাকে ভূমি ব্যবহারের মাধ্যমে সম্পৃক্তকরণ"

(Preparation of Development Plan for Mirsharai Upazila, Chittagong District: Risk Sensitive Landuse Plan)

URBAN DEVELOPMENT DIRECTORATE
Ministry of Housing and Public Works
Government of the People's Republic of Bangladesh
November, 2016

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APPENDIX 01
BCKGROUND INFORMATION OF THE PROJECT

1.1. Project Background

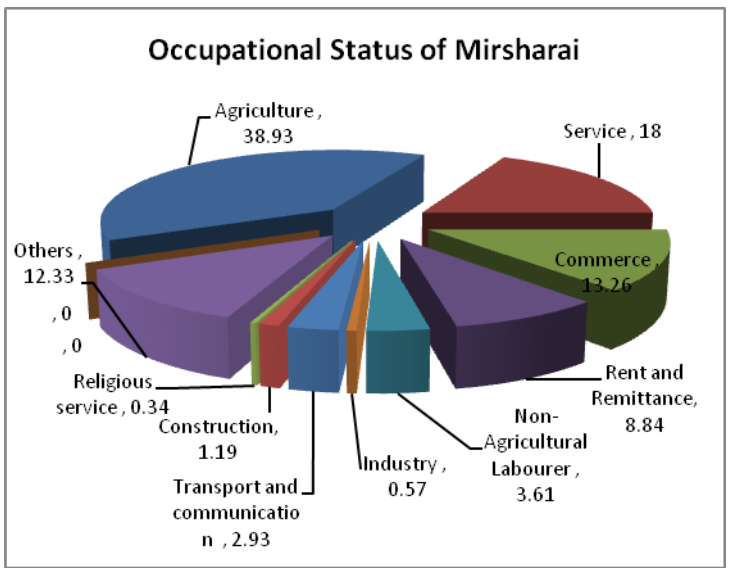
Mirsharai Upazila (CHITTAGONG DISTRICT) area 482.88 sqkm(BBS)/509.80sqkm(GIS Data), located in between 22°39' and 22°59' north latitudes and in between 91°27' and 91°39' east longitudes. It is bounded by TRIPURA state of India, CHHAGALNAIYA and FENI SADAR upazilas on the north, SITAKUNDA upazila and BAY OF BENGAL on the south, FATIKCHHARI upazila on the east, SONAGAZI and COMPANIGANJ (NOAKHALI) upazilas on the west. Mirsharai Thana was formed in 1901 and it was turned into an upazila in 1983. Mirsharai Upazila consists of 2 Municipality, 16 Union and 113 Mouza.

Mirsharai, the combination of lake and hilly area contains attractive scenic beauty on the southernmost part of Bangladesh. The most important attraction of the upazila is that one can travel Mohamaya Chara Lake by speed boat and explore hilly area and can enjoy Khoiyachora, Baghbiani, Napitachora, Sonaichora, Mithachora and Boyalia waterfalls. This area is located 192.2 km far from DHAKA and 4.5 hour bus journey. Anyone can travel by rail and it is 197 km of rail journey and it takes 4.5 hour from Dhaka to Mirsharai Upazila. 56 km from the CHITTAGONG Divisional headquarters and takes 1.5 hour travel by bus. The Bangladesh Road Transport Corporation introduced a direct bus service from Dhaka to *Mirsharai* via comilla.(Source: Banglapedia,2012)

At Mirsharai Upazila main river is Feni; Sandwip Channel is notable; canal 30, most noted of which are Feni Nadi, Isakhali, Mahamaya, Domkhali, Hinguli, Moliaish, Koila Govania and Mayani Khal. The hills range on the northern and eastern side of this upazila along the bank of the Feni River extended up to Chittagong and the Chittagong hill tracts

Historical Events: Sultan Fakhruddin Mobarak Shah conquered Chittagong in 1340 AD and established the Muslim rule in this region. During the reign of Gaur Sultans Hussain Shah and Nusrat Shah, Paragal Khan and Chhuti Khan were the rulers of this area. Subsequently Nizam Shah, brother of emperor Sher Shah, was the ruler of this area. Nizampur Pargana is named after Nizam Shah and the whole area of Mirsharai came under the control of Nizampur pargana. From the beginning of the 16th century this region was very rich in Bangla literature. Most of the time between 1580 and 1666 this region was under the control of the Arakanese. The place at which (of the present Mirsharai thana) Bujurg Umed Khan, son of Subadar Sayesta Khan, landed after crossing the Feni River was named as Bujurg Umedpur. With the conquest of Chittagong by Bujurg Umed Khan in 1666, this region came permanently under the Mughal rule. Towards the end of British rule in India, Durgapur and Karerhat areas of Mirsharai upazila were the centres of revolutionary activities of Chittagong. A fierce battle was fought between the freedom fighters (under Capt. Wali Ahmed) and the Pak army at a place adjacent to the Fenafuni Bridge on the south of Mirsharai sadar in which about 100 Pak soldiers were killed. Besides, direct encounters were held between the freedom fighters and the Pak army at many' places including Shuvapur Bridge, Hinguli Bridge, Aochi Mia Bridge and Mostan Nagar.

Main occupations: Agriculture 38.93%, non-agricultural labourer 3.61%, industry 0.57%, commerce 13.26%, transport and communication 2.93%, service 18%, construction 1.19%, religious service 0.34%, rent remittance 8.84% and others 12.33%. Total cultivable land 22,896.40 hectares, fallow land 147713 hectares; single crop land 38.91%, double crop 42.46% and treble crop land 18.63%. At present Cultivable land under irrigation is 6,917.85 hectare. Ownership of agricultural



land Landowner 51.30%, landless 48.70%; agricultural landowner: urban 38.82% and rural 52.09%.

Value of land : The market value of the first grade arable land is Tk 30000 per 0.01 hectare. Main crops Paddy, potato, aborigine, bean, tomato, pumpkin and radish. Extinct or nearly extinct crops Sugarcane, jute, arahar, mustard, sesame, linseed, ground nut. Main fruits Mango, blackberry, jackfruit, banana, papaya, litchi, pineapple, water-melon.

Communication facilities Roads: Pucca road 230 km, semi-pucca road 119 km, mud road 1435 km; railway 16 km; waterway 11 nautical miles, Rail junction 4. Extinct or nearly extinct traditional transport Palanquin, bullock cart. Noted manufactories Carpet industry, pipe mill, ice factory, rice mill, bakery, brick-field, steel furniture, fish- poultry' feed' factory, bidi factory. There are also Cottage industries, Goldsmith, blacksmith, potteries, weaving, tailoring, bamboo and wood work. Hats, bazars and fairs Hats and bazars are 52, fairs 5, most noted of which are Abu Torab Bazar, Kamar Ali Bazar, Bara Daroga Hat, Mahajan Hat, Karer Hat, Baraia Hat, Shantir Hat, Zorwarganj Baishakhi Mela, Baruni Snan Mela and Shadhinata Mela. Main exports product is Bamboo, fish, paddy, potato, banana, vegetables.

NGO Activities: Operationally important NGOs are BRAC, Proshika, ASA, Sheba, CARE, and Hunger Project. Upazila health complex 1, family planning centre 16, satellite clinic 11.

Opportunity: Bangladesh can earn money in local and also in foreign exchange by opening a tourist resort at *Mirsharai*. The spot, if properly developed will become an excellent holiday resort and tourist centre. Rowing facility can be arranged easily; fishing and hunting facilities are already there. The success of developing *Mirsharai* as a tourist centre and Special Economic Zone depends much on good communication facilities and availability of modern amenities. Moreover, the proposed *Special Economic Zone* would generate many industry related new activities including huge vehicular traffic such as air, rail, road and water. This phenomenon would have both positive and negative impact on the socio-economic condition and existing land use pattern of the region. The proposed planning package would guide such probable changes in the socio-economic condition and land use pattern of the region, and would also address the adverse impact of such changes.

The proposed project would be prepared on a regional development perspective considering the region as a part of whole of Mirsharai Upazila and its 16 unions. In this development planning package since its location is strategically important from the regional context because this upazila is situated on the way to Dhaka Chittagong highway as the highway runs through this upazila.

Description of the Project Area: A detailed description of the Project Area is given below:

Table-1: Area, Population and Density of the Project Area:

Municipality	Union	Mouza	Village	Population		Density (per sq km)	Literacy Rate (%)
				Urban and Other Urban	Rural		
2	16	103	208	31206	367510	826	55.1

Source: BBS, 2011

Mirsharai sea beach, hilly area, Mohamaya Chara Lake, Khaiya Chara region has the greater potential for tourism development as there are abundant resources to attract tourists. Mirsharai is developing in an unplanned and haphazard manner very rapidly due to the ample opportunity for tourism development, which is acting as pull factor for private sector developers. Hence, this project has been under taken to protect the region from depletion of its natural resources and character and tourism development as well.

Moreover, honorable MoHPW Minister expressed his heartiest interest to develop char of this Upazila as an exclusive economic zone; as well as to establish a tourist zone and economic zone covering Mirsharai upazila.

1.2 Objectives of the Project

The objective of the project is to optimize coastal resources and activities for sustenance of marginal people. The coastal activities and resources are very important to the economy and life of the people of Bangladesh whose living conditions are inextricably linked to the productivity and sustainability of coastal zone. There is no long term Holistic Development Plan for the coastal zone. Coastal zone needs to be integrated with the mainstream of development process of the country. So, an interdisciplinary development planning approach is urgent to optimize livelihood of coastal zone. The Physical development planning problems, needing attention, are as follows:

(i) To integrate coastal zone with the mainstream of development process of the country.
(ii) To frame policies for the best use of land and its control for the Mirsharai Upazila.
(iii) To optimize coastal environment for sustenance of marginal people.
(iv) Formulation of Policies and plans for mitigation of different types of hazards, minimizing the adverse impacts of climate change and recommend possible adaptation strategies for the region.
(v) Formulation of Policies and plans for gradual nucleation of settlements with policies and plans for development of growth centers of the area.
(vi) Formulation of a planning package for development of tourism in Mirsharai Upazila, and also to accommodate future changes in existing land use pattern, socio-economic condition of the area and quality of life of the people due to establishment of the third sea port in the region in an integrated and comprehensive manner.

APPENDIX 02

Scope of Work

Nowadays the world is giving more emphasize on disaster risk reduction through strengthening preparedness and mitigation measures over response and recovery activities. This is known as paradigm shift. There exists a saying if we spend 1$ for disaster risk reduction we can save 10 $ equivalent cost in during and post disaster situation. So Bangladesh is also giving more concentration to make the nation resilient through disaster risk reduction, climate change adaptation and sustainable development.

The ultimate target is to develop the risk-informed and environment friendly physical plan. These outcomes shall further guide to develop the design of the infrastructures addressing their risk reduction aspects. The main goals of the project work will be:

- Preparation of the background information to lay-out the development plan
- GIS based Geological and geomorphological map of the project area.
- Sub-surface lithological 3D model development and relevant interpretation.
- Soil classification map using geophysical and geotechnical investigations
- Engineering geological map development based on Average Shear Wave (AVS30).
- Seismic hazard assessment will provide micro zonation (PGA, PGV, and SA) map of the area of interest which helps to identify and construct structures in earthquake resilient zones.
- Predominant period map of the soil can be prepared from the study which can be used to determine how many storied buildings are suitable for the project area for earthquake hazard.
- Foundation layers delineation and developing engineering properties of the sub-soil.
- Landslide vulnerable zones will be identified from the study.
- Liquefaction susceptibility map will be constructed from study data.
- Based on vulnerability of building and seismic hazard data a risk map will be prepared

2.1 Detailed Activities for the Scope of Work

2.1.1. Review of Regional morphotectonic and neotectonic mapping and crustal movement modeling for the identification of potential earthquake sources

The survey firm shall review the (I) Morphotectonic and neotectonic studies of Bangladesh and its surrounding areas and (II) Geodynamic model of Bangladesh based on GPS/DGPS readings and other relevant information focusing crustal shortening/zone of strain accumulation based on available information, which have been prepared by CDMP.

Deliverables: Review of Morphotectonic and neotectonic studies of Bangladesh and its surrounding areas and its interpretation with respect to urban areas of Mirsharai Upazila *. A land use based interpretation of such reviews, which shall provide with detailed guidelines and strategies for preparing risk sensitive land use plan for the project area.*

2.1.2 Review of active faults mapping and modeling Updated by CDMP

The survey firm shall conduct an in-depth review of the following reports: (I) C14 dating and geophysical as well as borehole investigation report (II) Available information on revisit and analysis of historical earthquakes; and (III) Updated active fault model of Bangladesh integrating line investigations.

A land use based interpretation shall also be provided by the survey firm as guidelines for preparing risk sensitive land use plan of Mirsharai Upazila .

Deliverables:Review of active faults mapping and modeling; (II) Land use based interpretation of active faults mapping and modeling; and development of land use planning guidelines and strategies for preparing earthquake risk based land use for Mirsharai Upazila.

2.1.3. Engineering geological mapping

The objective of the preparation of engineering geological map is to develop the geo-technical and geophysical characteristics of the soft sub-surface sedimentary deposits which caused damages to the infrastructures. These information are often use for subsurface lithological 3D model, foundation engineering, landuse mapping and seismic hazard assessment. The purpose of engineering geological investigations is to generate AVS30 maps for the targeted areas. The investigated area shall be differentiated into number of potential grid sizes. AVS30 shall be calculated for each grid of the targeted areas. Following investigations given in Table 02 that should be conducted for the preparation of engineering geological maps for Mirsharai upazila.

Table 02: Geotechnical and Geophysical investigations to be carried-out in the Mirsharai Upazila.

Name of investigations			
Borelog with SPT *(30m Depth)*	Down-hole Seismic Test (Primary and Secondary Wave Logging) *(30m depth)*	Multi-channel Analysis of Surface Wave (MASW) *(30m depth)*	Microtremor Mesurment *(Vs>100m depth)*
85	15	20	30

Table 03:Geological Survey activity

Sub surface exploration (Standard Penetration Test)			
Sl. No.	**Description of Items**	**Unit/ No of Person**	**Total Number/mm**
1	Standard penetration Test (30m Drilling)		85
Laboratory Test			

2	Particle size analysis	Two specimens from each boring	170
3	Atterberg's limit	Two specimens from each boring	170
4	Direct Shear test	One specimens from each boring	60
5	Unconfined compressional strength test	One specimens from each boring	60
6	Triaxial test (Unconsolidated Undrained)	Thirty specimens from all boring	30
Geophysical Survey			
7	Multi-channel Analysis of Surface Wave (MASW) survey including Preparation, Packing and Transportation of survey Equipment from Store to Work Site and Back and Accommodation for Staff at Site;	Each	20
8	Down hole seismic test (PS logging) including installation of PVC pipe, Transportation of survey Equipment from Store to Work Site and Back and Accommodation for Staff at Site	Each (depth 30m)	15
9	Single Micro tremor measurement	Each	30

It is to be noted that secondary data of any type on investigations (at least 100 nos SPT Data) should be used for improving and comparing the findings. But data quality should be assessed before using them.

The survey firm shall have to provide land use based interpretation from the findings of geotechnical and geophysical investigations for preparing earthquake risk oriented land use plan.

Some indications for conducting the engineering geological investigations:

- Site selection for borehole drilling, PS logging, MASW and Microtremor should be made with the consultation of Project Director.

- Soil sampling: SPT should be conducted at each 1.5m interval depth. When SPT N values exceed 100 times in consecutive 2/3 measurements, SPT can be stopped. Disturbed samples have to be collected during SPT for physical soil test (grain size analysis, natural moisture contents, unit weight, specific gravity, atterberg test for clayey soil) in laboratory. Conducting unconfined compression test and direct Shear test for soil bearing capacity determination. Trixaial test for soil liquefaction analysis should be conducted in each study area.

- PS logging analysis: Waveform, travel curve data with Vp and Vs shall be analyzed with 1 meter or 1.5m depth interval.

- MASW analysis: Measurement should be conduct by 24 numbers of geophone and spacing between those geophones will be 2m or 3m. . The results should be representing by 1D surface wave velocity curve and 2D Vs model up to 30m depth.

- Microtremor measurement: Measurement should be conducted during night or quiet time for measuring more than 5 minutes continuous recording. The results should be assessed considering geomorphology and soil layers comparing with Vs data.

Deliverables: (I) Submission of all geotechnical and geophysical investigations in raw and processed format as well as analysis, (II) Land use based interpretation of engineering geological map and development of

guidelines and strategies for preparing earthquake risk oriented land use plan for urban areas of Mirsharai Upazila.

2.1.4. Seismic hazard assessment

The seismic hazard maps of the cities should be prepared following probabilistic and deterministic approaches. Seismic motion estimation is the prime parameter of seismic hazard assessment. Soil liquefaction and slope failures are also belong to seismic hazard. Since, all the cities for which seismic hazard assessment will be done are almost flat, slope failure need not to consider for hazard estimation in this study. Detailed requirement of seismic hazard mapping is given below:

Nature of seismic motions:
PGA, PGV, Sa(T) of 5% damping at 0.3 and 1.0 second periods values of 2% and 10% exceedance probability during next 50 years should be calculated at each grid.

Site amplification analysis:
Determine site specific amplification factor with respect to AVS30 which also consider non-linearity for both deterministic and probabilistic cases. Ground amplification should be calculated with Vs≈760m/s at engineering bed layer.

Liquefaction susceptibility and probability:
The liquefaction potential would be evaluated considering geologic/geomorphic condition, PGA/PGV magnitude (Mw) and groundwater depth. At first, liquefaction susceptibility shall be evaluated by geologic/geomorphic data and information of geological age. Later, liquefaction probability/potential shall be estimated using PGA/PGV, Mw and groundwater level with the above evaluated liquefaction susceptibility map. The liquefaction probability map developed integrating cyclic triaxial investigations.

Note: Awarded agency should consider the contributions of all potential seismic sources during the preparation of seismic hazard maps.

Deliverable: Seismic hazard assessment for peak ground acceleration/velocity and soil liquefaction; and its land use based interpretation including development of guidelines and strategies for preparing earthquake risk based land use plan for urban areas of Mirsharai Upazila.

2.2 Deliverables and Timeframe

The outlines of the deliverables and the timeframe for their submission are given in the Table-4 below. Any innovative methods, concepts and ideas beyond the outlines of the deliverables can be included with the activities and corresponding reports. The timeframe can be reshuffle as well.

Table 4: List of deliverables with their tentative outlines

Sl No.	Deliverables	Outline of Deliverables
1.	Mobilization Report	☐ Description of objectives and scope of sub-activities ☐ Team formation and structure of survey team ☐ Actual work schedule for the work ☐ Immediate action taken after signing agreement
2	Inception Report	☐ Introduction ☐ Description of sub-activities ☐ Method and materials for each activity ☐ Required resources allocation ☐ Revised work schedule for completion of the work
3.	Report on review of (i) Morphotectonic and neotectonic studies of Bangladesh and its surrounding areas, (ii) Updating fault model, (iii) Report on geophysical	☐ Outcome from review of such reports ☐ Land use based interpretation of such outcome ☐ Revised work schedule for accomplishing rest of the work

	and geotechnical investigations and engineering geological mapping	
4	Report on (i) Engineering geology (i) Seismic hazard assessment,	☐**For Engineering Geology** ☐ Geological and Geomorphologic condition of study area. ☐Engineering layer forstructural foundation. ☐Subsurface 3D model development. ☐Engineering geological mapping based on average shear wave velocity ☐Slope stability ☐**For Hazard Assessment** ☐ Method of seismic hazard mapping ☐ Setting attenuation formula ☐ Seismic motion at engineering bed rock and ground amplification ☐ Prepare peak ground acceleration, velocity and duration maps ☐ Recommended risk sensitive height for both high rise building and low rise building ☐ Prepare intensity maps ☐determined liquefaction, ground failure and landslide characteristic.

2.3Report submission schedule and Mode of Payment

Reports shall be presented and illustrated in a clear and concise professional manner, including maps, plans, diagrams and other graphics. Schedule of submission:

Table 5: List of Report with Language, No. of Copies, Period of Submission, Binding status and Mode of Payment

Report	**Language**	**No. of Copies**	**Period of Submission**	**Binding Status**	**Mode of Payment (% of Contract amount)**
Mobilization Report	English	50	Within 15 days of signing contract	Spiral Binding	Not more than 10%
Inception Report	English	50	End 1st month	Spiral Binding	Not more than 15%
Report on review of (i) Morphotectonic and neotectonic studies of Bangladesh and its surrounding areas, (ii) Updating fault model, (iii) Report on geophysical and geotechnical investigations and engineering geological mapping	English	50	End of 2nd month	Spiral Binding	Not more than 25%
Report on Data relating to Geo-technical and geophysical survey includes laboratory test results, Lithological cross section by boring data and Engineering Geological Mapping.	English	50	End of 4th month	Spiral Binding	Not more than 20%
Draft Report of all geological works and Seismic hazard assessment for peak ground acceleration/velocity and soil liquefaction; and its land use based interpretation including development of guidelines and strategies for preparing earthquake risk based land use.	English & Bangla	100	End of 5th month	Spiral Binding	Not more than 10%
Final Report	English & Bangla	100	End of 6th month	Spiral Binding	Not more than 20%

2.4. Some important notes:

- Noteworthy, survey firm can make any change in collecting data and selecting methodology (procedure, equation etc) to achieve the best results with the consultation of UDD without influencing financial agreement
- Any report should properly describe the definition, methodology, procedures/steps, reason for accepting/avoiding relevant equation, detail sources of any references, in-depth description of the result, proper way of writing bibliography etc. Report should be provided in doc. format, rather than pdf of other format. Before submitting the report English (spelling, sentence making etc.) should be varied and edited properly. All references (article, chapter of the book, report etc.) used in the report should be provided to UDD with the submission of each deliverable.
- All data (in excel, access, GIS etc.) used in the text or as reference should be provided with the each deliverable
- The awarded agency/consortium shall record progress of activities through video, still photographs and stories (as appropriate) and must submit the same to UDD as on when required.
- The awarded agency/consortium shall follow all the conditions and provisions stated in this document and in case of any confusion regarding any of those, explanation provided by UDD shall be deemed as final.

2.5. QUALIFICATION, EXPERIENCE AND RESPONSIBILITY OF GEOLOGICAL SURVEY FIRM

2.5.1 Qualifications, Experience and Responsibility of Key Personnel of Survey Firm:

A. Geologist 1 Person (1*6=6 mm.)

Qualification: M. Sc. in Geology.

Experience: 05 experience in engineering and hydro- geological survey and analysis

Responsibility: (i) To conduct and supervise boreholes for geological surveys for the study area; (ii) To check and monitor the accuracy of the borehole preparation process, collected sample and data for the geological survey; (iii) To conduct lab test of the collected samples and interpretation of the results of lab test; (iv) To prepare seismic hazard, vulnerability, damage and risk assessment map for the area, (v) To prepare micro zonation map for the area. (vi) To provide land use based interpretation of seismic hazard map for developing guidelines to prepare risk sensitive land use plan (vii) Any other related jobs assigned by PD.

B. Associate Geologist 1 Person (1*4=4 mm.)

Qualification: M. Sc. in Geology.

Experience: 03 experience in engineering and hydro- geological survey and analysis

Responsibility: (i) To assist the geologist in conducting and supervising boreholes for geological surveys for the study area; (ii) To assist the geologist in checking and monitoring the accuracy of the borehole preparation process, collected sample and data for the geological survey; (iii) To assist the geologist in conducting lab test of the collected samples and interpretation of the results of lab test; (iv) To assist the geologist in preparation of seismic hazard, vulnerability, damage and risk assessment map for the area, (v) To assist the geologist in preparation of micro zonation map for the area. (vi) To assist the geologist for land use based interpretation of seismic hazard map for developing guidelines to prepare risk sensitive land use plan (vii) Any other related jobs assigned by PD.

C. Geological Survey Technician 1 Person (1*2=2 mm.)

Qualification: Minimum B. Sc. in Geology or Diploma in Civil Engineering.

Experience: 03 experience in engineering and hydro- geological survey and analysis

Responsibility: (i) To prepare boreholes for geological surveys for the study area; (ii) To collect samples and data for the geological survey; (iii) To assist the geologist in conducting lab test of the collected samples; (iii) Any other related jobs assigned by PD.

APPENDIX-03
BIDDING FOR TENDER

3.1 Contents of the Technical Proposal

According to the provisions laid in the Public Procurement Regulations 2008.

3.2 Financial Proposal

Financial proposal should be prepared as per following format in the firm's own letter head.

Format of Financial Offer

Sl No	Description of Survey and Studies	Area/no.	Rate (TK.)	Total Amount(TK.)
01	Borelog with SPT *(borehole-30m,method-mechanical)*			
02	Down-hole seismic test (PS logging) *(30m depth)*			
03	Multi-channel Analysis of Surface Wave (MASW) (30m depth)			
04	Microtremor Mesurement *(Vs>100m depth)*			
05	Grain Size Analysis			
06	Atterberg Limits Determination			
07	Direct Shear Test			
08	Unconfined Compression strength Determination			
09	Triaxial test (Unconsolidated Undrained)			
10	Project Team of Consultant			
	TOTAL			

N.B. – Above Quoted rates should be inclusive of the cost Salaries, Management, Transportation, Contingency, Incidental, Income Tax & VAT and other related cost including printing and binding of maps and reports etc.

APPENDIX-04
FORMAT OF CURRICULUM VITAE AND PROJECT TEAM

4.1 Format of Curriculum Vitae of Professionals

According to the provisions laid in the Public Procurement Regulations 2008.

4.2 Format of the Proposed Project Team

Sl. No.	Position	Name	Age (in Years)	Length of Experience (Year)	Qualification	Man month
1.						
2.						

4.3 Format of the Major Experience in Similar Project Completed During Last 05 Years

Sl. No.	Name of the project	Name of the Client	Cost of the Project	Project Duration
1.				
2.				