

**Environment and Infrastructure
Management Solution Ltd.**

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126/3, Monipuripara, Airport Road, Tejgaon, Dhaka-1215.

Tel: +8802 9113078, +8801713034019

Email: office@eimslbd.com;

Web: www.eimslbd.com

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MISSION

1. Innovation of new technologies for creating safe & sustainable infrastructure.
2. Adoption of evolving technologies to act as a leading technical think tank.
3. Ensuring quality of service by complying with internationally recognized codes and standards of practices.



VISION

EIMS envisions safe & sustainable infrastructure across the world as a technical think tank.

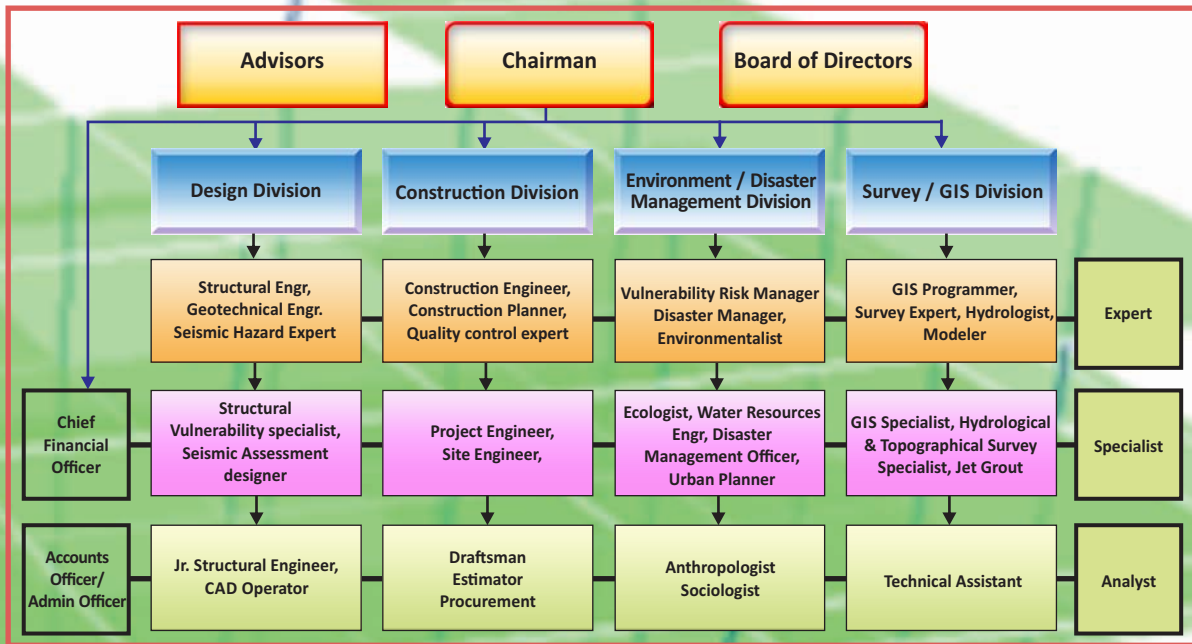
Introduction

Environment & Infrastructure Management Solution (EIMS) is a fast growing multidisciplinary engineering organization engaged in the areas of civil and structural engineering, urban planning and design, construction and project management services. EIMS has started its journey since 2005 and finally registered as a limited company on 17th October 2011 with the vision "we are for your safety".

In recent years, an increased urgency has been felt to strengthen the deficient buildings, as part of disaster mitigation, and to work out the modifications that may be made to an existing structure to improve the structural performance during an earthquake. Likely, the dedicated team of EIMS provides specialized services such structural design, retrofitting works, visual inspection and Detailed Engineering Assessment (DEA) with a close eye upon the vulnerability of any building or structures to earthquake

and other natural hazards. Most building retrofits, DEA and inspection have been intended to protect life safety or to at least reduce the risk of casualties in the design earthquake. As an evidence to this, EIMS is enlisted as Qualified Assessment Firm (QAF) of Alliance for Bangladesh Workers' Safety and also enlisted as consulting firm to the Department of Inspection for Factories and Establishments, Government of the People's Republic of Bangladesh to conduct Detailed Engineering Assessment (DEA) of garments factories. Within a very short time it has conducted about 50 structural integrity assessment of garments factories through visual inspection, conducted detailed Engineering Assessment (DEA) of 40 garments factory buildings, 20 retrofitting designs and awarded to undertaken retrofitting construction works of 12 garments factory. EIMS uses the highest quality construction materials and finishing products to ensure durability and customer satisfaction.

EIMS Organogram



Services

Structural Design, supervision and retrofitting:

- Pioneer in Seismic Retrofitting of Existing Structures in Bangladesh;
- Earthquake Engineering with SMRF design;
- Structural Safety Assessment/Evaluation as per US Standard;
- Destructive and Non-Destructive Test of Concrete and Steel Structures;
- Linear/Non-Linear Analysis and design of Structures;
- Dynamic Analysis of "Tall" Structures;
- Full Structural Design of RCC and Steel Structures;
- Design of factory buildings, office buildings, apartments, hotel and guest houses, shopping complex;
- Vulnerability assessment of Buildings;
- Retrofitting design with up-to-date technology and knowledge;
- Retrofitting construction works.

Project management (Technical):

EIMS includes providing services to the valuable clients by our professional architects and engineers in the following areas:

- Prepare the cost estimates, phasing out and priorities activities;
- Cost control by preparing time bound work plan, checking rates and labor input planning;
- Implementation of project plan and assist in ensuring the quality of materials and services involved in the construction works;
- Implementation, supervision, monitoring and evaluation of overall construction works;
- Prepare work progress report in terms of quantity and quality of works completed;
- Valuation of work-in-progress;
- Dealings with suppliers and contractors.

Building Inspection and Checking:

EIMS offers building inspection and checking of existing structures with expert engineers and assesses the vulnerability analysis with modern tools and techniques. In a short span of time, EIMS has inspected a number of buildings which includes several garments buildings and conducted detailed structural vulnerability assessment of numerous Garments factories. Besides this, EIMS has been selected as "Qualified Structural Assessment firm for the Alliance for Bangladesh Workers' Safety" where it has been awarded 61 buildings for performing visual inspection and more are expected to come both for visual and detailed assessment. With the profound inspection and quality assessment of work provided by EIMS, it has gained good customers' satisfaction in all of its projects.

Environmental and Social Management:

Besides structural design works, EIMS also provides services and solutions to environmental problems and issues and various consultancy services to social issues. It has qualified and experienced environmentalist, hydrologist, water modeler and sociologist to perform cost effective and sustainable environmental and social management works such as:

- Environmental Impact Assessment (EIA);
- Initial Environmental Assessment (IEA);
- Environmental Management Framework (EMF);
- Social Management Framework (SMF);
- Social Vulnerability Assessment (SVA);
- Rural Livelihood Improvement;
- Climate Change Impacts.

Urban Planning and Design:

EIMS is also expanding its working area in urban planning and design.

Some of the offered consultancy services are as follows:

- Layout Planning for Housing Projects;

- GIS and Remote Sensing Services;
- Architectural;
- Design and Interior Design.



Examples

1. Initial Structural Integrity Assessment

- I. EIMS has successfully completed Initial Structural Integrity Assessment of Thirty Seven (37) factory buildings under ALLIANCE for Bangladesh Worker Safety.
- II. Structural integrity assessment by Visual inspection (Type-C) on three garments building (FS-SFB#3, FS-SFB#5, FS-SFB#6) of Hop Lun (BD) Ltd. at DEPZ, Ganakbari, Savar, Dhaka. (Detail Structural Analysis is recommended for the garments buildings).
- III. Initial Structural Engineering Assessment for structural adequacy for vertical & horizontal extension of proposed multistoried building for United Surgical Ltd. at Islampur, Kadda, Gazipur, Bangladesh.

2. Detail Engineering Assessment

1. Detail Engineering Assessment (DEA) of Factories Preliminary Assessed by Levi's:
 - Two buildings of MBM Garments Ltd at M-19 & M-14, Section-14, Mirpur, Bangladesh;
 - Unique Washing & Dyeing Ltd at Kalemeshar, KB Bazar, Gazipur;
 - Three buildings of Medlar Apparels Ltd at East Narsinghapur, Ashulia, Savar Dhaka, Bangladesh;
 - Eight buildings of Opex Fashions Ltd at Kanchpur, Sonargaon, Narayanganj;
 - Five buildings of Youngone Bangladesh Ltd, Three buildings of Kenpark-1 BD Apparel Ltd and Three buildings of Kenpark-3 BD Apparel Ltd at CEPZ, Chittagong.
2. Detail Engineering Assessment (DEA) of Factories Preliminary Assessed by ACCORD:
 - 4A Yarn Dyeing Ltd at Savar, Dhaka and Brother Fashions Ltd at Kawranbazar.
3. Detail Engineering Assessment (DEA) of Padma Pictures Limited. Approximate Floor areas 80,000 square feet. The scope of consultancy services given to EIMS is following:
 - Sub-soil Investigation;
 - Core Test;
 - Ferro-Scanning in Column, Beam and Slab;
 - UPV (Ultrasonic Pulse Velocity) Test;
 - Checking of structural stability and geometry;
 - Checking adequacy of foundation i.e. pile & pile cap or footing/raft;
 - Checking of lateral load resistance capacity of the Building;
 - Design check for soft story & Dynamic load;
4. Structural Design Checking of Factory Building of South End Sweater Co. Ltd. at Dhour, Uttara, Dhaka.
5. Detail Engineering Assessment for structural adequacy for vertical extension of proposed multistoried building for Bangladesh Medical & Dental Council, State Medical Faculty of Bangladesh and Bangladesh Nursing Council. 86, Bijoy Nagar, Dhaka, Bangladesh.

3. Retrofitting Design and Construction Works

- Retrofitting Design of two buildings of Medlar Apparels Ltd at Ashulia;
- 4A Yarn Dyeing Ltd at Savar, Dhaka;
- Retrofitting of Academic Building of American International School, Dhaka;
- Retrofitting of Brothers Fashions Ltd, Karwan Bazar, Dhaka;
- Three buildings of Kenpark-1, BD Apparel Ltd at CEPZ, Chittagong;
- Eight factory buildings of Opex and Sinha Textiles Ltd, Dhaka;
- Three buildings of Kenpark-3, BD Apparel Ltd at CEPZ, Chittagong.

4. Structural Design of Residential & Factory Buildings

- I. Structural design checking and supervision for "GRAND BEACH CASTLE" sixteen storied holiday resort building at Cox's Bazar which supposed to build on 86 katha (61,920 sft of total land area).
- II. Consultancy Services of structural design Century-Gold Coast Hotel Building (15+1 storied), Kuakata.
- III. Detail architectural and structural design for Commercial-cum-residential building at Jurain (14-storied which is about 14,500sft each floor)
- IV. Consultancy Services for Structural Design of Garments Manufacturing Unit at Dhamrai, Dhaka (8-storied with 48,000sft floor area)
- V. Structural Design Checking of Ten storied Residential Building at Dhanmondi, Zingatola.
- VI. Consultancy services for architectural and structural design for 8 storied residential building at Rayer Bazar, Dhaka.



5. Design and consultancy services for WFP and UNICEF.

EIMS has been selected as consulting firm to provide long term services under WFP and UNICEF in the Asia region for 20 countries. Under long term agreement, EIMS will provide the following services:

- Topographical Surveys;
- Geotechnical Surveys;
- Hydrology Surveys;
- Architectural Services;
- Building Design Services;
- Large Civil Engineering Projects;
- Blast Design and Seismic Analysis;
- Environmental Assessment and Permitting;
- Project Management;
- Site Supervision.



6. Urban Planning, Environment and GIS section.

Open Cities Dhaka Project:

EIMS has been contracted by The World Bank to conduct Open Cities Dhaka Project for assessing the vulnerability of the buildings in the Old part of the Dhaka. Through this project EIMS has surveyed over 8500 buildings in old Dhaka comprising of three Wards (Ward 67, 68 and 69) and collected in depth critical infrastructural information such as number of stories, construction type, soft story, vertical irregularity which can be used to inform scientific risk modelling and vulnerability assessment of the building. From the surveyed buildings it is found that 8.34% buildings are soft storied and 26.58% buildings have vertical irregularity which are very important factors in seismic modeling and make the structure more vulnerable to earthquake. Beside this, the extensive survey had identified the cultural heritage buildings, possible evacuation centers in case of emergency and also looked on the existing water and sanitation network of the old Dhaka. The following table shows the building condition in these three Wards which have been identified through Rapid Visual Screening (RVS) method.

Table: Percentage of building condition in Ward 67, 68 and 69 according to RVS method

Open Cities Dhaka Project				
Visible Physical Condition	Total No. of Buildings (no.)	Poor (%)	Average(%)	Good (%)
Ward67	2027	21	56	20
Ward68	3018	21	58	19
Ward69	3496	28	51	18



Social Management Framework

This project is also under Bangladesh Urban Resilience Project (URP) of the World Bank. The Social Management Framework (SMF) intends to implement the URP in two cities, Dhaka (DNCC<DSCC) and Sylhet (SCC). The SMF will be submitted to the World Bank for review and clearance by the designated regional safeguard unit of the bank and formally agreed with the Government of Bangladesh. Following activities has been carried out for the preparation of this framework.

- Stakeholder Analysis.
- Analysis of legal and regulatory framework relevant to the URP
- Identification of Social Issues
- Identification of different social groups
- Making of resettlement policy framework

IEE of Coal based Power Plant

Prefeasibility Study and Initial Environmental Examination (IEE) of 600-800 MW Coal Based Power Plant at Munshiganj. The scope of consultancy services given to EIMS is following:

- Hydraulic and Hydrodynamic modeling.
- Structural Design of the Plant
- Geotechnical Engineering service
- Legal advice regards Environmental Laws

Environmental Management Framework

This project has been awarded to EIMS by World Bank in which an environmental framework has been adopted to ensure screening and assessing of all the activities for the environmental issues and to prepare site specific Environmental Management Plan (EMP). Initially the project was intended for Dhaka city area. The objective of the EMF is to ensure the activities of the proposed operation in the report. This project is intended for the Bangladesh Urban Earthquake Resilience Project (URP) of the World Bank. This project seeks to create an enabling environment for coordinated, locally managed Disaster Risk Management (DRM). The following steps has been carried out for the preparation of this framework.

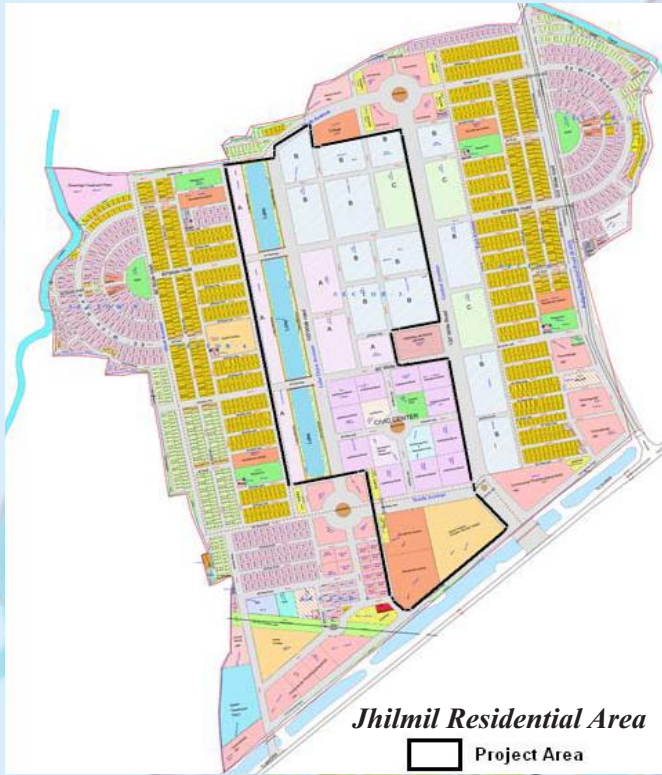
- Review of Existing Document.
- Field Visit and Consultation
- Drafting the Framework
- Bengali Translation of the Framework

SunEdison Solar Plant Project

Environment & Infrastructure Management Solution (EIMS) Limited, conduct Environmental & Social Impact Assessment, Soil Investigation, Hydrological Analysis and Topographic Survey for feasibility study of proposed Ground-mount Photovoltaic Solar Power Plant Project at seven different locations in Bangladesh. Area of the project locations are in total 2619 acres. The consultant conducted topographical survey and hydrological analysis to assess the risk from flood and cyclone on the proposed interventions solar power plant. The consultants identify measures to reduced risks from flood and cyclone by raising existing embankment and improving and drainages canals. Under the same contract EIMS conducted Geo logical Survey to explore soil texture bearing capacity and sharing strength (the total bore hole is 150) etc for the seven sites. Besides EIMS produced environmental impact assessment report based on Department of Environmental (DOE) guidelines and local ecological methods of social conditions.

Jhilmil Residential Area Apartment Project

This is an ongoing project of EIMS. The project area is at Jhilmil Residential Area located near Keraniganj, Dhaka. This project is under RAJUK where EIMS is initially intended for soil investigation of 80 acres of land and analyzing the feasibility of constructing apartment buildings of different height.



EQUIPMENTS :

Jet Grouting: is a technique characterized by the use of pressurized fluid jet to hydraulically either before or concurrent with the addition of the grout material to form a solidified in situ element known as Soilcrete (specialized cementitious slurry mixture designed specifically for soil stabilization/modification). Jet grouting as a soil improvement technique is currently utilized throughout the world.

Parallel Seismic Instrument (psi): It occasionally happens that doubts about the integrity and length of concrete and sheet piling arise only after the structure is complete. The pile heads are no longer accessible and other nondestructive test methods are of little use. The Parallel Seismic test has been developed as a test that can be used when the pile is still connected to the superstructure.

Ferro Scanner: Reinforcement of concrete is an important part for RCC buildings. To evaluate the existing embedded reinforcement for assessing any RCC structure scanning is very important test. It is a non destructive test and also used for checking the concrete clear cover. The mechanism of ferro scanning is almost like X-ray of human body.

Ultrasonic Pulse Velocity (upv): An ultrasonic pulse velocity is an in-situ, nondestructive test to check the quality of concrete and natural rocks. This test is conducted by passing a pulse of ultrasonic wave through concrete to be tested and measuring the time taken by pulse to get through the structure. Higher velocities indicate good quality and continuity of the material, while slower velocities may indicate concrete with many cracks or voids.

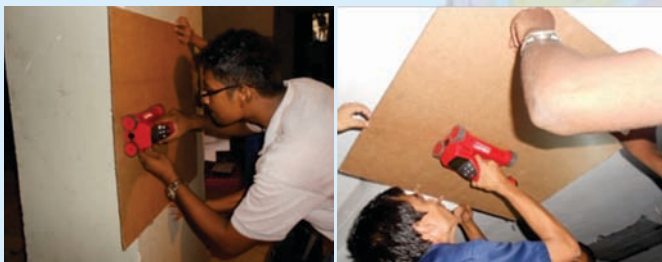
Laser Distance Meter: A Laser Distance Meter sends a pulse of laser light to the target and measures the time it takes for the reflection to return. For distances up to 30m, the accuracy is ±3mm. On-board processing allows the device to add, subtract, calculate areas and volumes and to triangulate.

Schmidt Hammer: A Schmidt hammer, also known as a Swiss hammer or a rebound hammer, is a device to measure the elastic properties or strength of concrete or rock, mainly surface hardness and penetration resistance. The Schmidt hammer is an arbitrary scale ranging from 10 to 100. Schmidt hammers are available from their original manufacturers in several different energy ranges.

At a glance to some inhouse equipment of EIMS: EIMS has several high-tech equipment for various testing and consultancy services.



7. Destructive & non-destructive test facilities to assess structural adequacy of the building components.

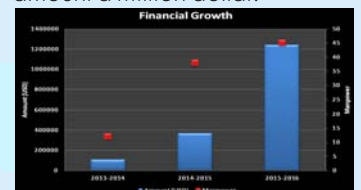


Rebar Scanning Using Ferro Scan in Column, Beam & Slab respectively

Overview of Financial Growth (Revenues)

Last three years, EIMS grew exponentially by engaging experts in the field of Engineering, Consultancy and specialized construction (retrofitting) works. In the financial period 2013-15 there were 12 professional engineers and now 45 engineers and other experts are working. The

gross revenue was in 2013-14 only 1,00,000 USD but now it is just over one million. EIMS currently running 11 projects with different size and contract amount a million dollar.



EIMS's Client Members

The generosity of our Client Member companies provides the foundation for EIMS's ability to meet the needs of its members and promote a healthy business environment for all businesses. EIMS is grateful for their support.



OPEX & SINHA GROUP



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