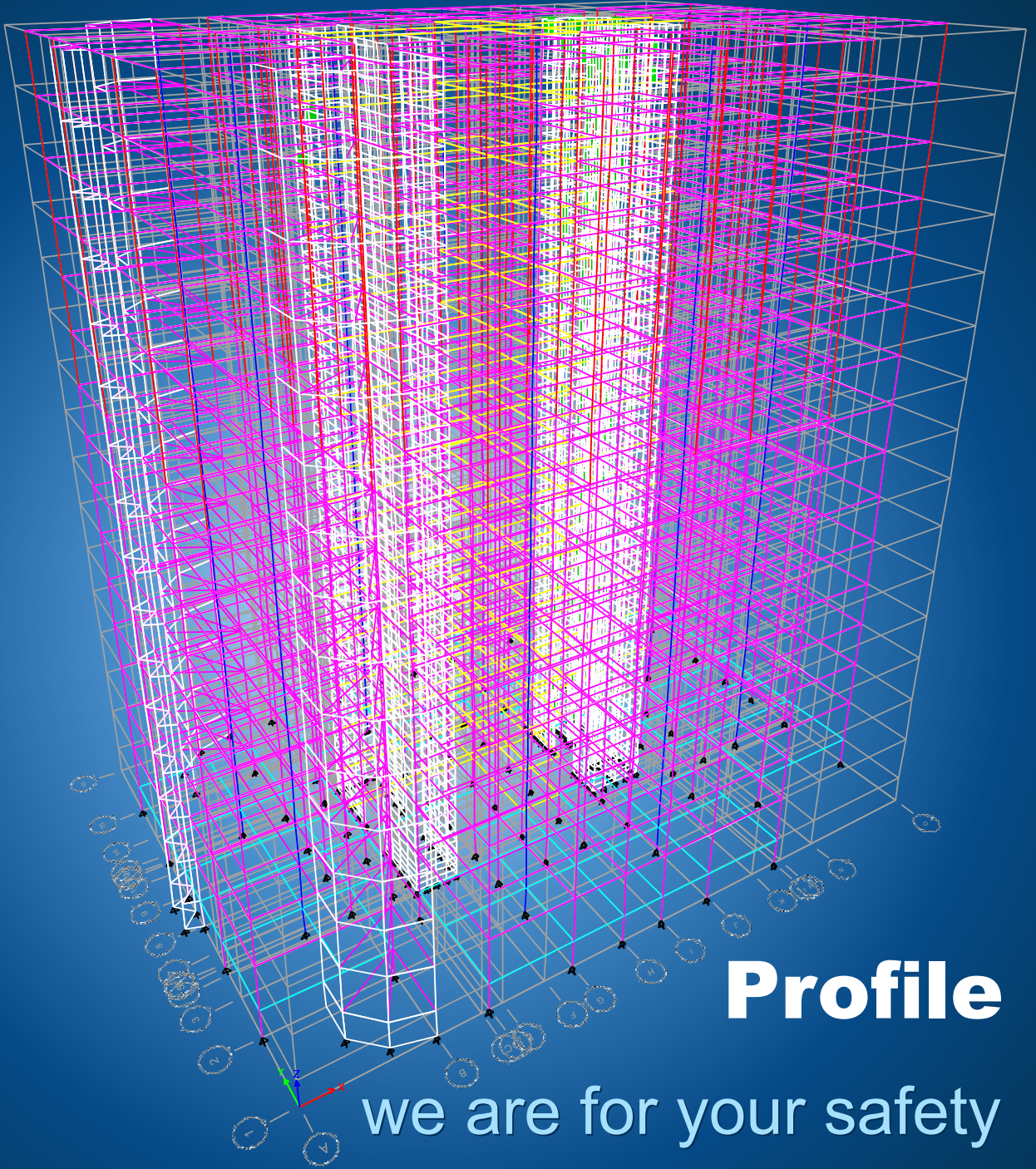


**Environment and Infrastructure
Management Solution (EIMS) Ltd.**



Profile

we are for your safety

Message

As the chairman of the company, I am honored to serve EIMS along with our outstanding leadership team and dedicated staff.

EIMS is celebrating more than 5 years of successful endeavours. Despite the remarkable pace of change in the world around us, we have demonstrated our ability to face challenges and remain focused on what we do best – structural vulnerability and integrity assessments, seismic analysis and retrofitting construction, and natural resources and environmental analysis.

At EIMS, we value integrity, hard work, accountability, respect, client satisfaction and personal dedication. These values are embedded within our slogan, 'We are for your safety', and we believe that we have a responsibility to our clients to live by them.

As a technical think tank, we envision safe and sustainable infrastructure across the world. I am confident that our integrity, creativity and skills will carry us even further in fulfilling our mission.

I trust you will appreciate our services and dedication.

Sincerely,

Ahmadul Hassan, PhD
Chairman





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 practice.
4. Developing resilient infrastructure by harmonizing technological solution, societal needs and environmental safeguard through participatory approach.

VISION

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

Introduction

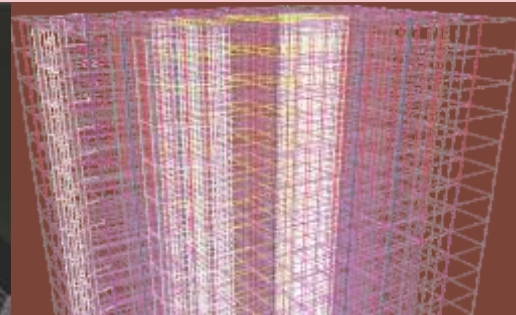
Environment & Infrastructure Management Solution (EIMS) is a fast growing multidisciplinary engineering organization engaged in the areas of civil and structural engineering, urban planning and design, construction and project management services. EIMS started its journey in 2005 and registered as a limited company on 17th October 2011 with the motto "we are for your safety". In recent years, an urgency has arisen to strengthen deficient buildings as part of disaster risk mitigation. In addition, modifications are made to existing structures to improve their structural performance during an earthquake. The dedicated team of EIMS provides specialized services such as structural design, retrofitting works, visual inspection and Detailed Engineering Assessment (DEA) with a close eye on the vulnerability of buildings or structures to earthquakes and other natural hazards. Most building retrofittings, DEA and inspections are intended to protect life, ensure safety, or to

reduce the risk of casualties in the event of an earthquake. EIMS is enlisted as a Qualified Assessment Firm (QAF) of the Alliance for Bangladesh Workers' Safety, and also as a consulting firm to the Department of Inspection for Factories and Establishments, Government of the People's Republic of Bangladesh to conduct DEA of garments factories. Within a very short time, it has conducted structural integrity assessments of about 50 garments factories through visual inspections, DEA of 40 garments factory buildings, retrofitting designs of 20 buildings, and has been awarded to undertake retrofitting construction works of 12 garments factories. EIMS uses the highest quality construction materials and finishing products to ensure durability and customer satisfaction.

EIMS Organogram



Design Division



Structural Design, supervision and retrofitting:

- Structural design, supervision and retrofitting
- Pioneer in seismic retrofitting of existing structures in Bangladesh
- Earthquake engineering with Special Moment Resisting Frame SMRF design;
- Structural safety assessment and evaluation as per US standards
- Destructive/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, hotels, guest houses, and shopping complexes
- Vulnerability assessment of buildings;
- Retrofitting design with state-of-the-art technology and knowledge

Initial Structural Integrity Assessment:

- Initial Structural Integrity Assessments of 37 factory buildings under the Alliance for Bangladesh Workers Safety.
- Structural integrity assessments by visual inspection (Type-C) on three garments building of Hop Lun (BD) Ltd. at DEPZ, Ganakbari, Savar, Dhaka .
- Initial Structural Engineering Assessment for structural adequacy for vertical and horizontal extension of proposed multi-storied building for United Surgical Ltd. at Islampur, Kadda, Gazipur, Bangladesh.

Building Inspection and Checking:

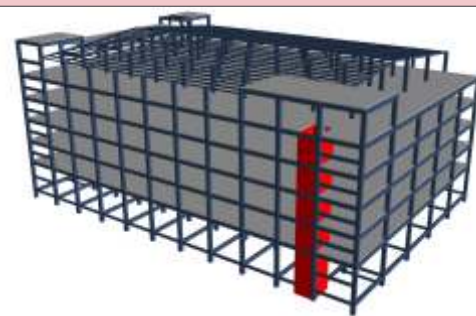
EIMS offers building inspection and checking of existing structures by expert engineers and carries out the vulnerability analysis with modern tools and techniques. In a short span of time, EIMS has inspected a number of buildings including several garments buildings and has conducted detailed structural vulnerability assessments of numerous garments factories. In addition, EIMS has

been selected as a “Qualified Structural Assessment firm” for the Alliance for Bangladesh Workers' Safety and has been contracted to perform visual inspections for 61 buildings, with more expected 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.

Detail Engineering Assessment

- Two buildings of MBM Garments Ltd at M-19 & M-14, Mirpur
- One building of Unique Washing & Dyeing Ltd at Kalemeshar, KB Bazar, Gazipur
- Three buildings of Medlar Apparels Ltd at East Narsinghapur, Ashulia, Savar, Dhaka.
- 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.

Design Division



Detailed Engineering Assessment of buildings following preliminary assessments by ACCORD:

- One building of 4A Yarn Dyeing Ltd at Savar, Dhaka
- One building of Brother Fashions Ltd at Kawran Bazar
- Retrofitting design of two buildings of Medlar Apparels Ltd at Ashulia
- Retrofitting design of academic building of American International School, Dhaka
- Retrofitting design of one building of Brothers Fashions Ltd, Karwan Bazar, Dhaka
- Three buildings of Kenpark-1, BD Apparel Ltd at CEPZ, Chittagong
- Eight buildings of Opex and Sinha Textiles Ltd, Dhaka
- Three buildings of Kenpark-3, BD Apparel Ltd at CEPZ, Chittagong.



Structural Design of Residential & Factory Buildings

Top: Kenpark Bangladesh Apparel (Pvt.) Limited (K-5, Building-A)

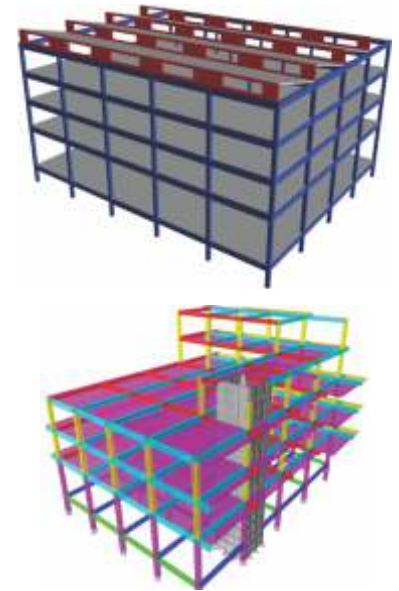
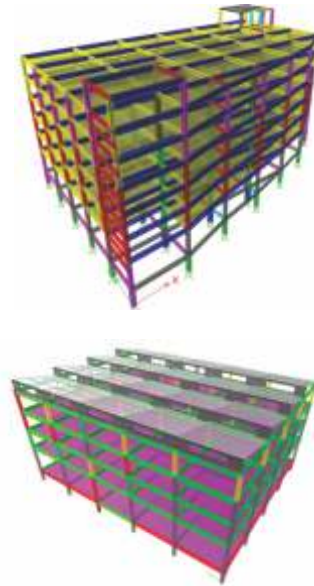
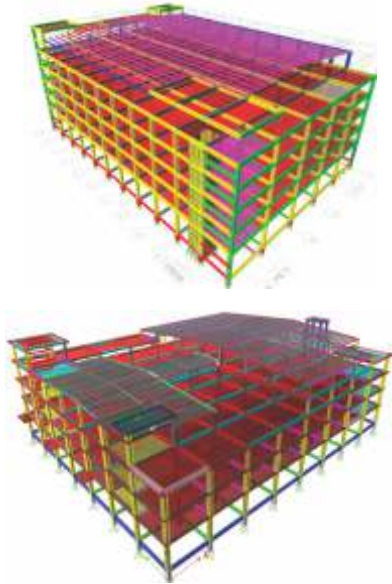
Bottom: Kenpark Bangladesh Apparel (Pvt.) Limited (K-5, Building-B)

Top: Matrix Styles Limited (Building-1)

Bottom: YMA Building (Part-5) of Youngone Group (CEPZ) Limited

Top: YMA Building (Part-5) of Youngone Group (CEPZ) Limited

Bottom: Kenpark Bangladesh Apparels (Pvt) Limited.



Design and consultancy services for WFP and UNICEF.

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

- Topographical surveys
- Geotechnical surveys
- Hydrological surveys
- Architectural services
- Building design services
- Large civil engineering projects
- Blast design and seismic analysis
- Environmental assessment and permitting
- Project management
- Site supervision



Structural Design of Residential & Factory Buildings

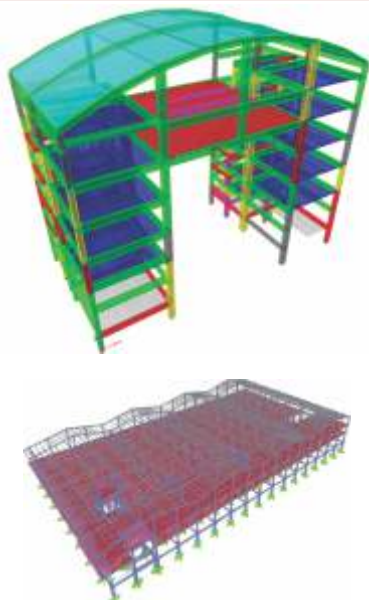
Top: YMA Building (Part-4) of Youngone Group (CEPZ) Limited

Bottom: Goldtex Garments Limited.

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).

Top: Detail architectural and structural design for Commercial-cum-residential building at Jurain (14-storied which is about 14,500 sft each floor)

Bottom: Consultancy Services for Structural Design of Garments Manufacturing Unit at Dhamrai (8-storied with 48,000 sft floor area).



Detailed Engineering Assessment (DEA) of Padma Pictures Limited.
Floor areas 80,000 square feet.

- Sub-soil Investigation and 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.
- Structural Design Checking of Factory Building of South End Sweater Co. Ltd. at Uttara, Dhaka.
- DEA 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.

Project management (technical):

EIMS provides project management services by our professional architects and engineers in the following areas:

- Preparation of cost estimates, phasing and prioritization of activities
- Cost control by preparing time-bound work plans, rates and labor input planning
- Implementation of project plans and assistance in ensuring the quality of materials and services involved in construction works
- Implementation, supervision, monitoring and evaluation of overall construction works
- Valuation of works-in-progress
- Dealings with suppliers and contractors

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.

Construction Division



Alliance for Bangladesh Workers' Safety Project: Structural Integrity Assessment

EIMS has been selected as QAF by Alliance to assess structural integrity of garment manufacturing factories in Bangladesh, which are mostly located in Dhaka, Savar, Gazipur and Chittagong. EIMS has thus far completed integrity assessments of 37 garments factories. The assessments were conducted by renowned professional engineers and academicians of the country's top engineering universities to have the best quality output and customer's satisfaction. EIMS is also performing Detailed Engineering Assessments (DEA) of several export oriented garments buildings which have been visually inspected by international groups such as ILO, Accord, ARUP etc. Within a short period of time,

EIMS has proved itself and gained the trust of its customers to deliver quality products and services on time.



Retrofitting Construction of TSL Extension Building

The TSL Extension Building of Youngone Group (CEPZ) Ltd is a six-storied concrete structure with an Intermediate Moment Resisting Frame (IMRF) system (beam column framing). A BUET technical team conducted a visual inspection of the building and recommended a Detailed Engineering Assessment of the building. EIMS conducted the detailed engineering assessment, which found some beams, columns and foundations to be of inadequate capacity. EIMS then conducted the retrofitting design, which was implemented in its entirety, with some minor deviations. The building is now considered safe for a 63 psf live load and the combination of BNBC 2006.



Retrofitting Construction of YMA Building

YMA Building of Youngone Group (CEPZ) Ltd is a five-storied concrete structure with an Intermediate Moment Resisting Frame (IMRF) system (beam column framing), with a mezzanine above the ground floor in two blocks of the building. A BUET technical team conducted a visual inspection of the building and recommended a Detailed Engineering Assessment of the building. After conducting the detail engineering assessment, some beams, columns and foundations were found inadequate in capacity. Based on this, EIMS conducted a retrofitting design and implementation of proposed design was done accordingly.



Supervision

- All the construction works were performed as per the retrofitting design.
- All the works were supervised continuously with drawings by site engineers.
- Construction works were checked by the head of construction engineer.
- Senior consultants of EIMS frequently visited during construction and provided necessary guidelines and suggestions.

Concluding Remarks

1. With some minor deviation, all the retrofitting work was done as per retrofitting design
2. After retrofitting the building is safe considering 63 psf live load and the combination of BNBC 2006



EIMS Publications



Environment Division

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 and interior design

Initial Environmental Examination of Coal-based Power Plant

Pre-feasibility 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 as follows:

- Hydraulic and hydrodynamic modeling
- Structural design of the plant
- Geotechnical engineering service
- Legal advice regarding environmental law

Environmental and Social Management

Besides structural design works, EIMS also provides services and solutions to environmental problems and issues, and various consultancy services on social issues. It has qualified and experienced environmentalists, hydrologists, water modelers and sociologists to perform cost effective and sustainable environmental and social management consultancy services including:

- Environmental Impact Assessments
- Initial Environmental Assessments
- Environmental Management Frameworks
- Social Management Frameworks
- Social Vulnerability Assessments
- Rural livelihood improvement
- Climate change impacts

Open Cities Dhaka Project:

EIMS has been contracted by the World Bank to participate in the Open Cities Dhaka Project by assessing the vulnerability of the buildings in the old part of Dhaka. Through this project EIMS has surveyed over 8,500 buildings in Old Dhaka in three wards (Ward 67, 68 and 69) and collected in depth critical infrastructural information such as number of stories, construction type, and vertical irregularity which can be used to inform scientific risk modeling and vulnerability assessment of the building. From the surveyed buildings, it was found that 8.3% of the buildings are soft storied and 26.6% of the buildings have vertical irregularity, both of which are very important factors in seismic modeling and make the structure more vulnerable to earthquake.

EIMS's extensive survey also identified buildings that are important to Bangladesh's cultural heritage, possible evacuation centers in case of emergency. The survey also examined the existing water and sanitation network of old Dhaka. The following table shows building conditions in these three wards identified using the 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

Environment Division



Social Management Framework

This project is under the Bangladesh Urban Resilience Project (URP) of the World Bank which is being implemented in two cities, Dhaka (DNCC, DSCC) and Sylhet (SCC). EIMS has been contracted to develop the Social Management Framework (SMF) for the project. The SMF will be submitted to the World Bank for review and clearance by the designated regional safeguards unit of the Bank and formally agreed upon with the Government of Bangladesh. The following activities have 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
- Development of the Resettlement Policy Framework

Environmental Management Framework

EIMS has also been contracted by the World Bank to develop the Environmental Framework for the Bangladesh Urban Earthquake Resilience Project which seeks to create an enabling environment for Disaster Risk Management through coordinated, locally managed efforts (the project was initially intended for the Dhaka city area). The Environmental Framework has been adopted to ensure screening and assessment of all the project's activities for environmental issues and to prepare site-specific Environmental Management Plans. The following steps have been carried out for the preparation of this framework.

- Review of existing documents
- Field visit and consultations
- Drafting the framework
- Bengali translation of the framework

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 and EIMS was initially contracted for soil investigation of 80 acres of land and analysis of the feasibility of constructing apartment buildings of different heights.



Environment Division



SunEdison Solar Plant Project

As part of the feasibility study of the proposed Ground-mount Photovoltaic Solar Power Plant Project at seven different locations in Bangladesh, EIMS has been contracted to conduct the Environmental and Social Impact Assessment, Soil Investigation, Hydrological Analysis and Topographic Survey. The total area of the project locations is 2,619 acres. EIMS has conducted the topographical survey and hydrological analysis to assess the risk from floods and cyclones on the proposed interventions. EIMS also

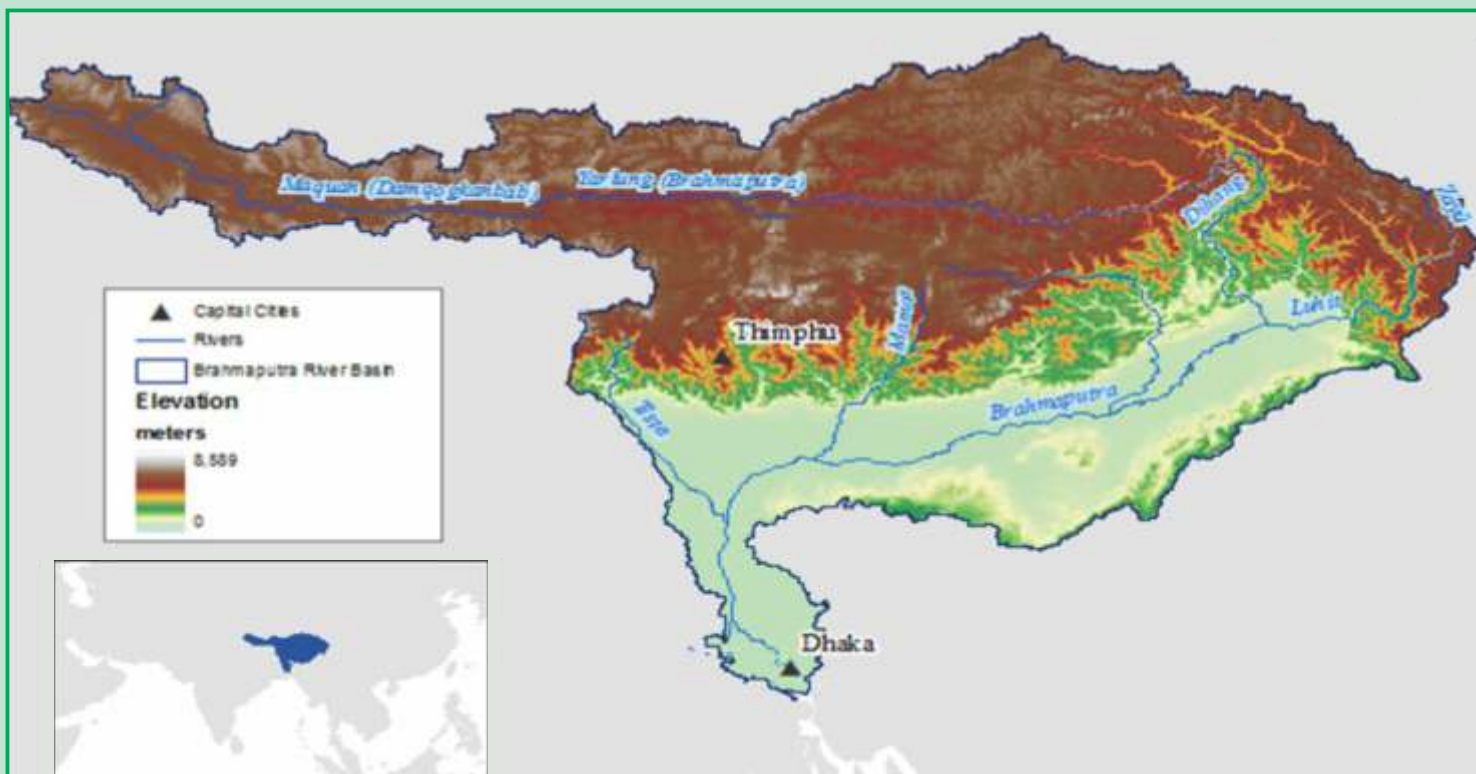
identified measures to reduce risks from floods and cyclones by raising the existing embankment and improving nearby drainage canals. Under the same contract, EIMS conducted a geological survey to explore the soil's texture bearing capacity and sharing strength (digging 150 bore holes for the seven sites). In addition, EIMS produced an Environmental Impact Assessment report for the seven sites following Department of Environmental (DoE) guidelines and local ecological methods and social conditions.



Basin Modeling of the Brahmaputra River System in Bangladesh

EIMS is partnering with Riverside Technology Inc, Colorado, USA, on this project. The project is being funded under the World Bank's South Asia Water Initiative (SAWI) as part of its multi-country effort aimed at increasing regional cooperation in the management of the Himalayan river systems to deliver sustainable, fair, and inclusive development and climate resilience. The guiding principle of the Brahmaputra Focus Area Strategy set up by SAWI is that a shared vision of transboundary water resources development and management in the basin could be achieved when countries have a greater understanding of the Brahmaputra and subsequently realize the potential economic benefits of transboundary cooperation. This project follows SAWI's "shared

vision" concept and proposes a knowledge base and stakeholder engagement plan specifically targeting Bangladesh. The objective of the project is to gain a better understanding of the dynamics of the Brahmaputra river basin in Bangladesh through (i) an inventory and assessment of available basin data and knowledge; (ii) , prioritizing development issues through a stakeholder consultation process; (iii) examining the potential development in the basin and attendant impacts of development using the existing knowledge base; and (iv) supporting an information-based dialogue within and between riparian basin entities.



EIMS has several high-tech equipment for various testing and consultancy services:

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

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 ± 3 mm. On-board processing allows the device to add, subtract, calculate areas and volumes and to triangulate.

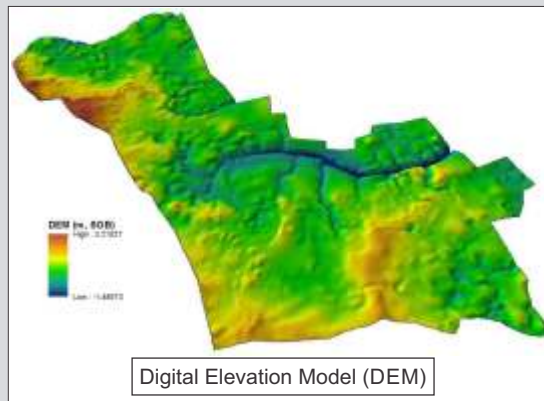
Parallel Seismic Instrument (psi): It occasionally happens that doubts about the integrity and length of concrete and sheet piling arises after the structure is completed. At that stage, the pile heads are no longer accessible and other nondestructive test methods are of little use. The Parallel Seismic 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 a 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 an X-ray of the 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 the pulse to get through the structure. Higher velocities indicate good quality and continuity of the material, while lower velocities may indicate concrete with many cracks or voids.

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 has arbitrary scale ranging from 10 to 100.

Survey & GIS Division





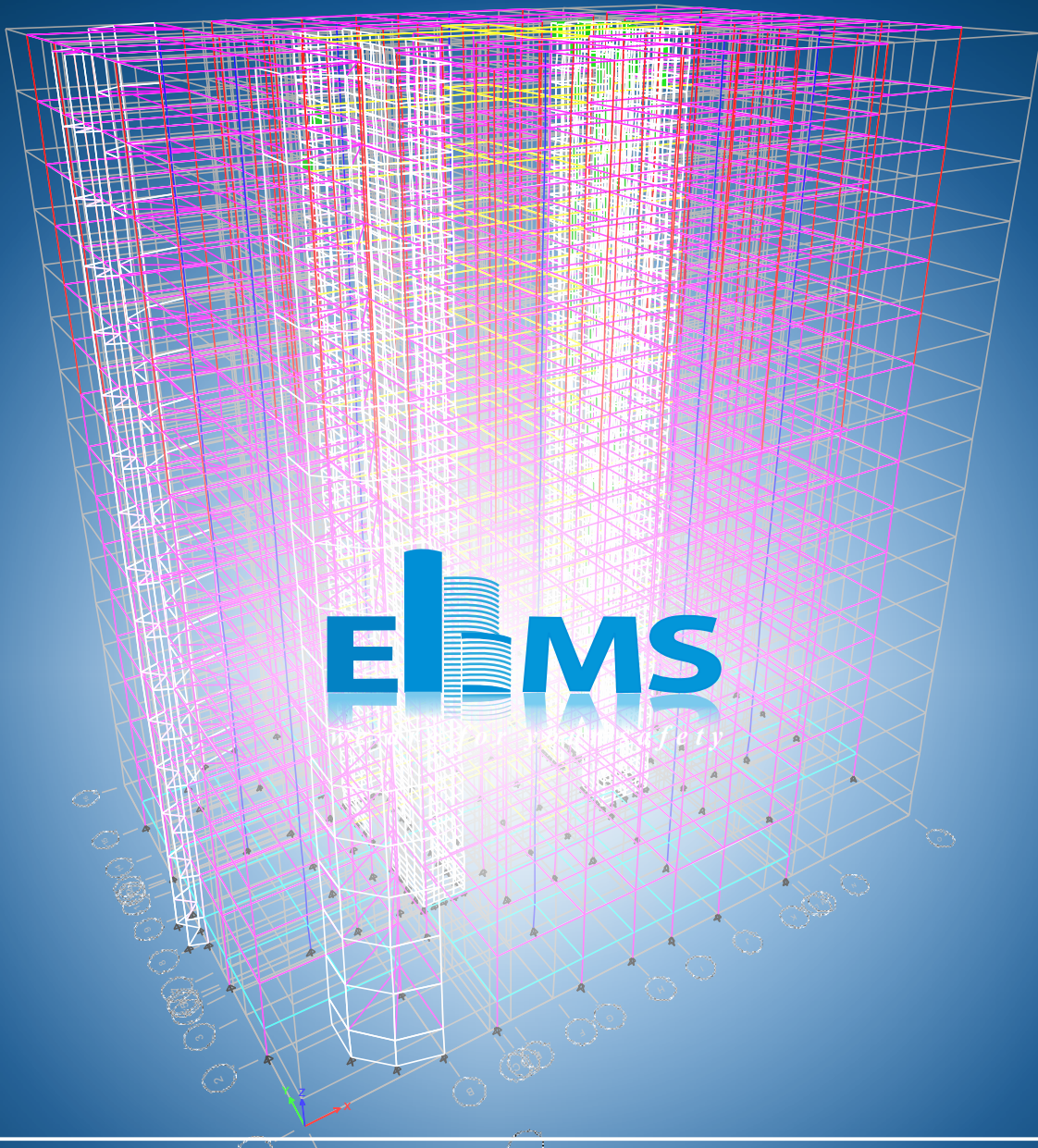
Using Schmidt Hammer



EIMS's Client Members

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

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