



**GLOBAL ALLIANCE FOR VACCINES AND IMMUNIZATION (GAVI)  
HEALTH SYSTEM STRENGTHENING II (HSS-2) PROGRAMME**

***PRILIMINARY ASSESSMENT REPORT  
EPI BUILDING, NILPHAMARI***



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Submitted By



**Environment & Infrastructure Management Solution (EIMS) Limited**

Flat#5B (5<sup>th</sup> Floor), 126/3 Monipuri Para,  
Airport Road, Tejgaon, Dhaka-1215, Bangladesh

Tel: +88-02-9113078; +8801713034019

E-mail: [office@eimslbd.com](mailto:office@eimslbd.com); Website: [www.eimslbd.com](http://www.eimslbd.com)

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## 1. INTRODUCTION

GAVI (Global Alliance for Vaccines and Immunization) Health System Strengthening II (HSS 2) Programme is to facilitate the vaccine availability in 44 districts of Bangladesh. The objectives of this programme are (1) strengthening VPD surveillance and its integration into HMIS and (2) improving cold chain and supply chain management system performance. Under this programme, UNICEF is going to preserve various vaccines in the selected buildings of Civil Surgeon's office in those 44 districts. For this purpose, UNICEF is looking for a consultant engineering company to provide architectural and building design services by assessing the structural integrity & safety of the selected buildings, verifying the accessibility & availability of the space for Walk-in-Cold Rooms (WICs), water pack freezer & Ice Lined Refrigerators (ILRs) in those buildings and providing design services for new buildings if necessary. As a part of this programme, technical division of Environment & Infrastructure Management Solution (EIMS) Limited completed total 32 districts assessment, design, drawing, preparation of Bill of Quantity and finally successful implementation of civil work by forming a team of consultants, design expertise, and skilled team of Civil work implementation by assessing the structural integrity of selected buildings by UNICEF, providing logical & accurate design consultancy service and finally by supporting UNICEF to supervise the successful implementation of civil work to complete the project within schedule time. As a chronological part of the programme UNICEF GAVI HSS-2, EIMS again completed total 12 districts assessment out of 44 districts. Among these 12 districts, in order to observe the present physical conditions of the selected building visually and perform the assessment, three members of the team comprising Md. Aminur Rahman, Abidur Rahman and Md. Mizanur Rahman were assigned for the visit to Civil Surgeon Office at **Nilphamari** on April 22, 2018 to April 23, 2018. Although Civil Surgeon, **Nilphamari** was not present, Cold Chain Technician (CCT) was present during the assessment work.

## 2. OBJECTIVE

The main objectives of the structural integrity assessment by EIMS team are written below:

- i. To assess the structural integrity of existing building.
- ii. To verify architectural plan of the building.
- iii. Performing non-destructive tests and measuring physical dimensions for some major structural elements.
- iv. Performing some quick calculations based on the present occupancy and considering existing gravity loads as per NTPA Standard.
- v. Identifying the accessibility and availability of the space as per UNICEF recommendation.

- vi. Preparing relevant drawings for renovation purpose where space is available.
- vii. Coordinating with the District Civil Surgeon over phone to prepare a plan of allocation in case of space constraint.
- viii. Preparing the detail architectural and structural design with relevant drawings for the renovation, extension and new generator building.

### 3. GUIDELINE CODE

The works mentioned above are performed as per the guideline of National Tripartite Plan of Action (NTPA). It was prepared on July 25, 2013 jointly by the Ministry of Labour and Empowerment (MoLE) and International Labour Organization (ILO) for the fire safety and structural integrity of Readymade Garments Factory buildings.

### 4. BUILDING INFORMATION

At present there is one office building which is two storied RCC building. Structural and architectural drawings are found in the EPI Office. Based on drawings as well as verbal information, the building was constructed in one phases. This building is used for both Office, Storage, and conference room and meeting room purpose.

On the basis of preliminary observation of the building and discussion with the personnel and studying the collected information presented during site visit the following information are written below.

a) Building Occupancy	:	GF-Office, Cold Storage, 1F-Conference and Meeting room
b) Structural System	:	Slab System combined with Beam-Column Moment Resisting Frame
c) Structural Configuration	:	Regular in terms of framing pattern
d) Horizontal Plan Geometry	:	Regular pattern
e) Adjacent Building Distance	:	Adequate and no possibility to pounding
f) No. of storied at present	:	2 (Two)
g) Building Plan Dimension	:	12.53 m along East-West Direction and 17.29 m along North-South direction. Total area of the ground floor is 220 m <sup>2</sup> (approx.).
h) Construction Year	:	2012 ~ 2013
i) Constructed by	:	Health Engineering Department (HED)
j) Floor Occupancy	:	Ground floor- for office and storage, 1 <sup>st</sup> floor- for conference, and Dry Store along with office
k) Roof System	:	RC Beam supported slab system
l) Floor Live Load	:	Maximum allowed floor live load 2.5 KN/m <sup>2</sup> (BNBC 2006)

m) Architectural Drawing	:	Available
n) Structural Drawing	:	Available
o) Soil Investigation Report	:	Unavailable
p) Foundation Type	:	Shallow foundation
q) Materials Properties	:	Steel deformed bar (40 Grade or higher), Concrete with Brick aggregate.

During the site visit some physical dimensions were measured for the building. Each concrete moment resisting frame of main building is multiple bay and all columns are prismatic section. All corner columns sections are 300 mm x 500 mm and edge column sections are 300mm x 500mm, 375mm x 500mm; the central column sections are 375 mm x 500 mm, 500mm x 500mm. The main Beam sections are 300 mm x 550 mm, 300 mm x 600 mm, 375mm x 600mm. Thickness of all floor slabs is approximately 150 mm. The thickness of internal partition walls is found 125 mm & outside walls are 250 mm.

## 5. REPORTED DISTRESS HISTORY

Distress history wasn't issued to us from representative of CS authority, but our visual observation with no distress is found in the existing EPI building.

## 6. OBSERVATION

The observation of the visiting team members on the general physical condition of the super structure based on visual inspection of the exposed parts are as follows.

- The building is new and no major structural distress or cracks were observed in the assessed building. But some minor crack was found on exterior plaster of wall which can be enlarged in the near future.
- No major Dampness was found in the plastering surface and on the roof slab, but water logging was found on the roof slab which can be the cause of roof dampness.
- The factor of safety for three columns (selected as per the tributary area of gravity loading) is found satisfactory. Detail calculation of factor of safety are attached in **Annex-I**.
- No Settlement was found in the building by observing interior wall.

Major observations are highlighted in the following figures.



Figure 6.1: Trace of Water Logging and Roof Dampness



Figure 6.2: Minor Cracks Found On the Exterior Partition Wall



Figure 6.3: Measuring of physical dimension of column



Figure 6.4: Measuring of physical dimension of beam



Figure 6.5: Backside condition of building



Figure 6.6: Existing Vaccine Storage Room Condition (ground floor)





Figure 6.7: Existing Dry Storage Condition (ground floor)

## 7. CONCLUSION

From the above observation and based some quick calculation; it can conclude that:

- Based on the above observation, some quick calculation and the present information; it appears that the building in present condition is safe.
- Vertical & horizontal extension is strongly prohibited before doing any detail analysis of the existing structure.
- The existing EPI building has sufficient space to fulfill present requirement. For fulfilling the total requirement GF and 1<sup>st</sup> both floors are required.
- Simple renovation and rearrangement is required to fulfill the requirements.
- A new generator building is required for electricity supply to the WIC room continuously.

## 8. RECOMANDATION

On the basis of preliminary assessment of civil surgeon building, EIMS team is giving the following recommendations.

### **Recommendation for Existing Building:**

- As per provided guideline of UNICEF, in order to accommodate 2 nos. of WIC, 2 nos. of Freezer and dry store room, the EPI cold room must be renovated.

- It is mandatory to accommodate WIC, Precooling room, Freezer room and Monitoring room in ground floor. Dry store may remain at 1<sup>st</sup> floor.
- Recommended wash basin (sink) can also be installed within the renovated freezer room.
- Appropriate damp proofing measure should be taken in the affected area.
- Resurfacing is highly recommended for water logged area on the roof surface, because some spalling is found on the roof.
- Patent stone is required for maintaining proper slope.
- Re-plastering is recommended for walls with minor cracks on plaster.
- Repaint of the existing outer side as well as inner part is recommended.
- Electrical connections are new but need separate SBD for cold and dry store with required Nos. of ceiling fan & wall ventilation fan.

### **Recommendation for New Generator Building:**

- A piece of land is required for the construction of new generator room. During assessment work Civil Surgeon was not present. Generator space is ensured by Chief Officer of Upazila Health and Family planning Office. He proposed a place for generator building behind the existing EPI Building which will supply uninterrupted electricity to the WIC room.
- The land is slightly low from the road level. Need additional filling for land development purpose.

### **Recommendation for Site Clearance:**

- This land is occupied by Nursing Institute now. Need to confirm the ownership before commencement of work from the Civil Surgeon Office.
- A small tree needs to get cut down for cleaning the land.
- An electric pole is located inside the land. It needs to move away if the foundation of generator will be interrupted by Nursing Institute Building Foundation.



Figure 8.1: Proposed land for the construction of new generator building

**\*\*Disclaimer**

*The Above Comments Are Made From Visual Observations And Some Quick Calculation Of The Exposed Parts Of The Superstructure And Best Engineering Judgments Of The Visiting Member, Who Do Not Bear Responsibility For Any Deviation From The Predicted Behavior Of The Structure Caused By Uncertainties Of Construction, Performance Or Calamities Or Inappropriate Design.*

**Checked by**

**Assessed by**

**Md Shajal Khan**

B.Sc. Engg. (Civil, BUET)

MIEB- 35495

Date: 12-05-2018

**Md. Aminur Rahman**

B.Sc. Engg. (Civil, CUET)

Date: 12-05-2018

**Abidur Rahman**

B.Sc. Engg. (Civil, SUST)

AMIEB- 19147

Date: 12-05-2018

## **Annex-I**