



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

***PRILIMINARY ASSESSMENT REPORT
EPI BUILDING, BAGERHAT***



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Submitted By



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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 **Bagerhat** on April 16, 2018 to April 17, 2018. Civil Surgeon of **Bagerhat** and EPI Superintendent were 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 single storied RCC building. No credible documents were found during the assessment work on site. Based on the verbal information the building was constructed in one phases. This building is used for both Office & Storage 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	:	Office, Storage and EPI Cold chain
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	:	14.87 m along East-West Direction and 11.06 m along North-South direction. Total area of the ground floor is 164.33 m ² (approx.).
h) Construction Year	:	2002 ~ 2004.
i) Constructed by	:	Health Engineering Department (HED)
j) Floor Occupancy	:	Ground floor- for office and storage,
k) Roof System	:	RC Beam supported slab system and waffle slab system
l) Floor Live Load	:	Maximum allowed floor live load 2.5 KN/m ² (BNBC 2006).
m) Architectural Drawing	:	Unavailable
n) Structural Drawing	:	Unavailable
o) Soil Investigation Report	:	Unavailable
p) Foundation Type	:	Unknown
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 column sections are 300 mm x 500 mm. The main Beam sections are 300 mm x 650 mm and secondary waffle beam section is 180 mm x 650mm. 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.

- Cracks were found in the column of the exposed part on the roof.
- Dampness was found in the plastering surface.
- Plaster condition was excessively worse and spalling was observed on the wall and column's plaster.
- Roof condition was excessively bad, severe dampness was found due to inappropriate drainage outlet.
- Paint condition especially in outside was remarkably worse.
- Many cracks were visible in waffle beam in the cold storage room.
- 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: Crack in Column



Figure 6.2: Dampness on the wall



Figure 6.3: Damaged outside plaster



Figure 6.4: Damaged on column plaster



Figure 6.5: Existing roof condition



Figure 6.6: Outside paint condition



Figure 6.7: Dampness in interior wall of cold storage room



Figure 6.8: Crack in Waffle beam in cold storage room



Figure 6.9: Existing vaccine storage room



Figure 6.10: Scanning for Column Reinforcement

7. CONCLUSION

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

- Based on the above observation and the present information, it appears that the existing building in present condition is safe for gravity load.
- The building was built 16 years ago, due to the weathering constrains excessive plaster damage, dampness on the wall, roof; crack in the column and waffle beams was found, So renovation is required for making it usable and DEA for checking the structural safety.

- Vertical & horizontal extension is strongly prohibited before doing any detail analysis of the existing structure.
- The existing EPI building is one storied, has no sufficient space for meeting the present requirement.
- There is a small dry store room into the EPI building which is not sufficient for meeting the present requirement.
- A new generator building is required for electricity supply to the WIC room continuously.
- So, new location is required for the construction of new EPI and generator building.

8. RECOMANDATION

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

Recommendation for New EPI & Generator Building:

- As per provided guideline of UNICEF, in order to accommodate 1 nos. of WIC, 1 nos. of Freezer and the necessary rooms and office like pre-cooling room, monitoring room, CCT room, Office rooms for store keeper and EPI superintendent EPI, total required space is 900 m³. But existing available space in ground floor is 492.99 m³. So, ground floor is not sufficient to fulfill the entire requirement.
- As cracks are visible both in column and supporting waffle beam, so DEA is required for this building within 6 months for further use.
- It is mandatory to accommodate WIC, Precooling room, Freezer room and Monitoring room in ground floor. Dry store may remain at 1st floor.
- From the above observations, new EPI and generator building is recommended.

Recommendation for Site Clearance:

Considering the condition of the existing EPI building, EIMS team consults with Civil Surgeon of Bagherhat for future provision of land to construct new EPI building if required. Civil surgeon has also agreed to construct it newly considering present condition of the EPI building. He proposed a land for new construction besides old EPI building. This land needs to get develop before commencement of any civil work. The land related issues are represented below with supporting pictures.

- An unused building needs to get demolished and existing road needs to be moved towards inner side.
- Some trees need to be logged off before commencement of work.



Figure 8.1: Proposed land for the construction of new EPI & 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.

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Annex-I