MAS SUMANTRA 2 PRIVATE LIMITED

SFB 08, Factory Bay Area, CEPZ, CHATTOGRAM 4223

(22.289302, 91.779017)

22 January 2025

RSC RMG SUSTAINABILITY COUNCIL

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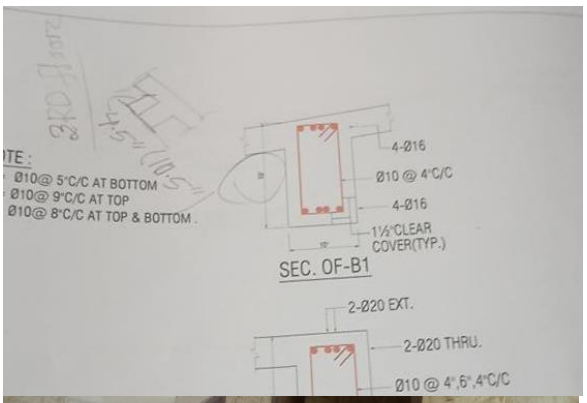
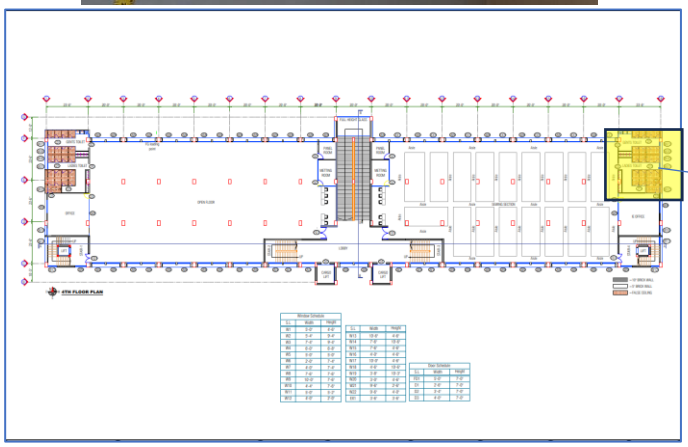
1. Building Information

1. Main building: Six storied RC Building.
2. Utility Building: Single-story RC Building.
3. Security and Recruitment Building: Single-story RC Building.
4. Dry Kitchen Building: Single-story RC Building.
5. Fire Hydrant Room: Single-story RC Building.

2. Observation:

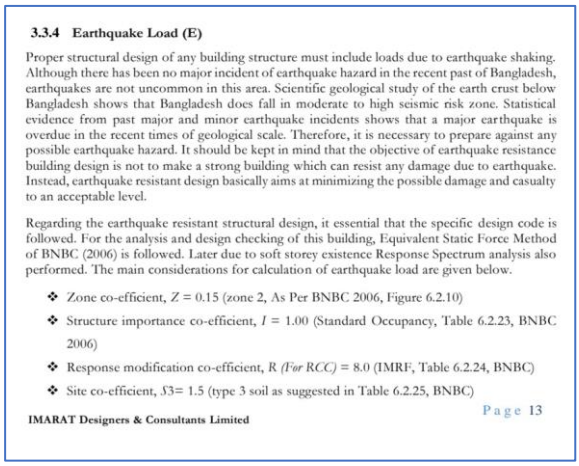
Observation-01: Discrepancies in as built drawings (Main Building).





Description: Beam size of the ramp didn't match with drawings. Down stand of beam at ramp area was found 115mm instead of 240mm. Also, the architectural floor layout of the toilet zone did not fully match with the provided drawings. The building engineer is required to update the as-built drawing as per onsite condition.

Observation-02: Inconsistencies in design report (Main Building).



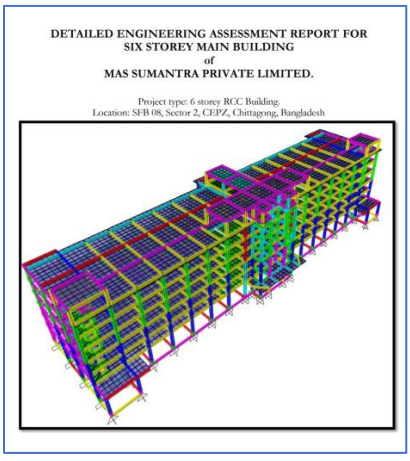
3.3.4 Earthquake Load (E)

Proper structural design of any building structure must include loads due to earthquake shaking. Although there has been no major incident of earthquake hazard in the recent past of Bangladesh, earthquakes are not uncommon in this area. Scientific geological study of the earth crust below Bangladesh shows that Bangladesh does fall in moderate to high seismic risk zone. Statistical evidence from past major and minor earthquake incidents shows that a major earthquake is overdue in the recent times of geological scale. Therefore, it is necessary to prepare against any possible earthquake hazard. It should be kept in mind that the objective of earthquake resistance building design is not to make a strong building which can resist any damage due to earthquake. Instead, earthquake resistant design basically aims at minimizing the possible damage and casualty to an acceptable level.

Regarding the earthquake resistant structural design, it essential that the specific design code is followed. For the analysis and design checking of this building, Equivalent Static Force Method of BNBC (2006) is followed. Later due to soft storey existence Response Spectrum analysis also performed. The main considerations for calculation of earthquake load are given below.

- Zone co-efficient, Z = 0.15 (zone 2, As Per BNBC 2006, Figure 6.2.10)
- Structure importance co-efficient, I = 1.00 (Standard Occupancy, Table 6.2.23, BNBC 2006)
- Response modification co-efficient, R *(For RCC)* = 8.0 (IMRF, Table 6.2.24, BNBC)
- Site co-efficient, $S3$= 1.5 (type 3 soil as suggested in Table 6.2.25, BNBC)

IMARAT Designers & Consultants Limited Page 13



DETAILED ENGINEERING ASSESSMENT REPORT FOR SIX STOREY MAIN BUILDING of MAS SUMANTRA PRIVATE LIMITED.

Project type: 6 storey RCC Building.
Location: SFB 08, Sector 2, CEPZ, Chittagong, Bangladesh

Description: Response modification co-efficient factor, R=8 has been considered but required justification/calculation has not been provided in the design report. The building engineer is required to revise the design report as per existing condition and incorporate all kinds of serviceability checks in the design report.

Observation-03: Diagonal cracks on stair walls (Main Building).

Description: Diagonal cracks were found on the stair wall near the roof. The building engineer is required to investigate the cause of cracking and repair the cracks with suitable methods.

Observation-04: Column susceptible to vehicle impact (Main Building).

Description: Columns at loading/unloading areas are susceptible to vehicle impact. The factory has provided steel angles to column surface which is not appropriate. The building engineer is required to provide separate barriers outside the columns to avoid possible vehicle impact on columns.

Observation-05: Dampness in the stair slab and walls (Main Building).

Description: Dampness was found in the stair slab and walls. The building Engineer is required to investigate the damped portion and repair accordingly

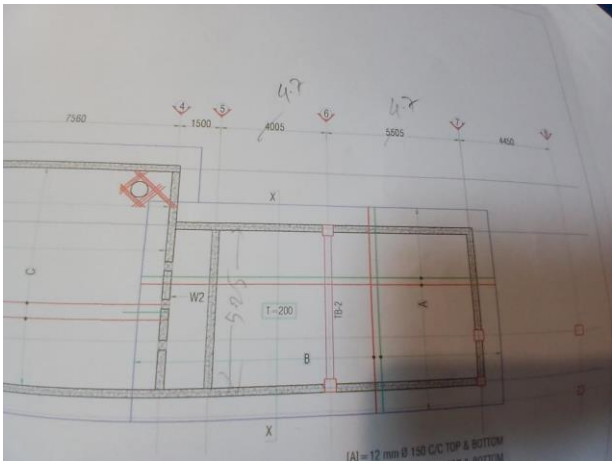
Observation-07: Non-structural elements not fully anchored or braced (Main Building).

Description: Non-structural elements were found on different floors of the building which were not fully anchored or braced. The building engineer is required to anchor or brace all non-structural elements to avoid falling hazard during earthquake.

Observation-08: Improper drainage on roof (Utility Building, Dry Kitchen).

Description: Sign of water clogging was observed on the roof of Utility Building, Dry Kitchen. Building engineer is required to improve the roof drainage with proper slope and adequate number of water outlets.

Observation-09: Inconsistencies in as-built drawings. (Fire Hydrant Room)



Description: Grid dimension and beam layouts were not fully matched with the drawings. The building engineer is required to prepare complete as-built drawing as per onsite condition.

Observation-10: Crack on floor and wall (Fire Hydrant Room).

Description: Cracks were found on the floor and walls of Fire Hydrant Room. The building engineer is required to investigate the cause of the crack, prepare an investigation report and submit it to the RSC. Repair the cracks as per the recommendation of investigation report.

1. Action Plan

Item No	Observation	Action Plan	Timeline
1.	Discrepancies in as built drawings (Main Building).	The building engineer is required to update the as-built drawing as per onsite condition.	within 6 weeks
2.	Inconsistencies in design report (Main Building).	The building engineer is required to revise the design report as per existing condition and incorporate all kinds of serviceability check in the design report.	within 6 weeks
3.		Implement remediation work if required.	within 6 months
4.		Implement floor loading plan.	within 6 months
5.	Diagonal cracks on stair walls (Main Building).	The building engineer is required to investigate the cause of cracking and repair the cracks with suitable methods.	within 6 weeks
6.	Column susceptible to vehicle impact (Main Building).	The building engineer is required to provide separate barriers outside the columns to avoid possible vehicle impact on columns.	within 6 weeks
7.	Dampness in the stairs and walls (Main Building).	The building Engineer is required to investigate the damped portion and repair with suitable method.	within 6 weeks
8.	Non-structural elements not fully anchored or braced (Main Building).	The building engineer is required to anchor or brace all non-structural elements to avoid falling hazard during earthquake.	within 6 months
9.	Improper drainage on roof (Utility Building, Dry Kitchen).	The building engineer is required to improve the roof drainage with proper slope and an adequate number of water outlets.	within 6 months
10.	Inconsistencies in as-built drawings. (Fire Hydrant Room)	The building engineer is required to revise the as-built drawing as per onsite condition.	within 6 weeks
11.	Crack on floor and wall (Fire Hydrant Room).	The building engineer is required to investigate the cause of the cracking, prepare an investigation report and submit it to the RSC. Repair the cracks as per the recommendation of investigation report.	within 6 weeks

Survey Limitations and Assumptions

This report is for the private and confidential use of RSC for whom it was prepared together with their professional advisors as appropriate. It should not be reproduced as a whole or in part or relied upon by third parties for any use without the express written permission of RSC.

This report can be used in discussion with the supplier or factory owner to rectify or address any observations made. The report is not comprehensive and is limited to what could be observed during a visual inspection of the building.

This Report is not intended to be treated as a generalized inspection and does not cover the deterioration of structural members through dampness, fungal or insect attack, nor does it deal with problems and defects of a non-structural nature. Other non-structural aspects of the building such as fire safety have not been assessed in this survey.

Except as otherwise noted, drains and other services were not viewed or tested during our inspection and are therefore similarly excluded from this Report. We have not inspected any parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

External inspection of the façade walls has generally been carried out from ground level only by visual sighting. No opening up works were carried out (except as noted) and we relied on the Architects and Engineers drawings provided to us for our views on concealed parts of the structure and in particular foundations. Strengths of materials and components are untested, and we recommend that the factory owners Building Engineer carries out in situ testing over and above those suggested to satisfy themselves with the material strengths and component details.

Recommendations, given, are for the purpose of providing indicative advice only, are not exhaustive, relate solely to identifying key and obvious structural defects as identified in this presentation, and do not take the form of or constitute a specification for works. We take no responsibility for the construction. This report does not interfere with the factory owners Building Engineers responsibility for the structural performance of this building, The Building Engineer remains fully responsible for the structural adequacy of the building.

This report does not comment in detail on the future seismic performance of the building and only highlights the fact that the building may experience significant damage or collapse in a seismic event along with many others in the Dhaka region.

The observations in this report are based on the Engineering Judgement of the lead surveyor/engineer at the time of the survey. We assume in making these observations that no covering up of faults defects, filling or plastering over cracking or significant repair work has been carried out by the building owner. Any future alteration or additional work by the building owner will void this report.