# VANGUARD GARMENTS LTD

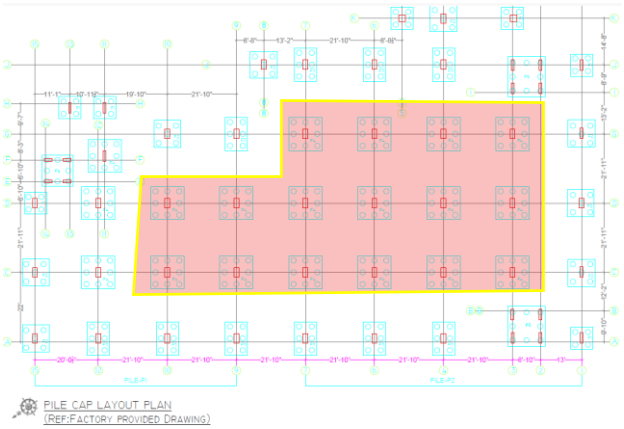
388/617, COLONEL JONES ROAD, NORTH KATTALI, PAHARTALI, CHATTOGRAM.
(22.36679477524, 91.7748365293)
20 October 2025

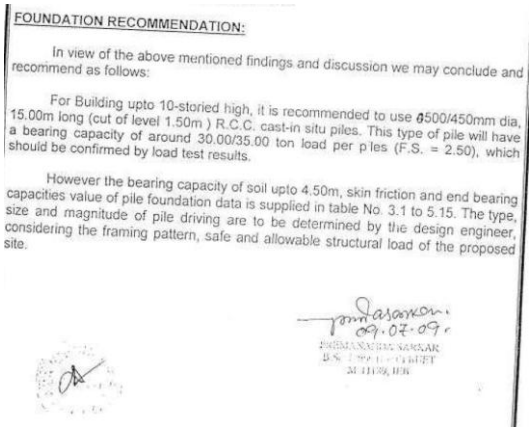
# 1. Building Information

1. Nine storied Main Production Building (B+G+8).
2. Single storied Substation & Generator Building.
3. Single storied Fire Pump Room.
4. Single storied Wastage godown, Security Room and IPS Room.
5. Single storied Prayer, Gas Meter & Security Room.
6. Single storied Compressor Room.

## 2. Observation:

**Observation-01:** Stress in the pile foundation exceeds the normal design limit. (Main Production Building)



FOUNDATION RECOMMENDATION:

In view of the above mentioned findings and discussion we may conclude and recommend as follows:

For Building upto 10-storied high, it is recommended to use Ø500/450mm dia, 15.00m long (cut of level 1.50m ) R.C.C. cast-in situ piles. This type of pile will have a bearing capacity of around 30.00/35.00 ton load per piles (F.S. = 2.50), which should be confirmed by load test results.

However the bearing capacity of soil upto 4.50m, skin friction and end bearing capacities value of pile foundation data is supplied in table No. 3.1 to 5.15. The type, size and magnitude of pile driving are to be determined by the design engineer, considering the framing pattern, safe and allowable structural load of the proposed site.

09.07.09

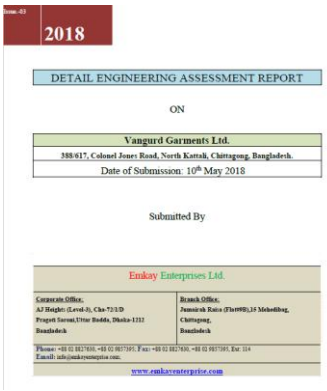
**Description:**

During the inspection and document review, preliminary calculations indicate that the typical internal pile foundations (P1 and P2) of the Main Production Building are below the required design capacity. No credible structural drawings were available for the partially nine-storied building. According to the provided as-built drawings, the pile lengths are 35 feet (P1) and 40 feet (P2); however, the pile type was not mentioned in the pile layout plan.

The factory is required to engage a qualified structural and geotechnical consultant to:

- Verify actual pile lengths and capacities, and
- Conduct a Detailed Engineering Assessment (DEA) based on verified data.

**Observation-02:** Inconsistency in the DEA report. (Main Production Building)



2018

DETAIL ENGINEERING ASSESSMENT REPORT

ON

Vangurd Garments Ltd.

388/617, Colonel Jonet Road, North Kattali, Chittagong, Bangladesh.

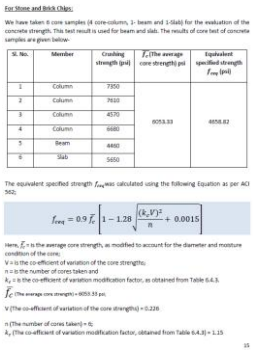
Date of Submission: 10th May 2018

Submitted By

Enkay Enterprises Ltd.

Prepared DEA Report

Main Production Building



For Stone and Brick Chips:

We have taken 6 core samples (4 core-column, 1- beam and 1-Slab) for the evaluation of the concrete strength. This test result is used for beam and slab. The results of core test of concrete samples are given below-

| Sl. No. | Member | Crushing strength (psi) | $f'_c$(The average core strength) psi | Equivalent specified strength $f'_{eq}$ (psi) |
|---|---|---|---|---|
| 1 | Column | 7350 | | |
| 2 | Column | 7610 | | |
| 3 | Column | 4570 | 6053.33 | 6858.82 |
| 4 | Column | 6680 | | |
| 5 | Beam | 4460 | | |
| 6 | Slab | 5650 | | |

The equivalent specified strength $f'_{eq}$ was calculated using the following Equation as per ACI 562;

$$f'_{eq} = 0.9\,\bar{f}'_c \left[1 - 1.28\sqrt{\frac{(k_v V)^2}{n}} + 0.0015\right]$$

Here, $\bar{f}'_c$ = is the average core strength, as modified to account for the diameter and moisture condition of the core;
V = is the co-efficient of variation of the core strengths;
n = is the number of cores taken and
$k_v$ = is the co-efficient of variation modification factor, as obtained from Table 6.4.3.

$\bar{f}'_c$ (The average core strength) = 6053.33 psi.

V (The co-efficient of variation of the core strength) = 0.226

n (The number of cores taken) = 6;

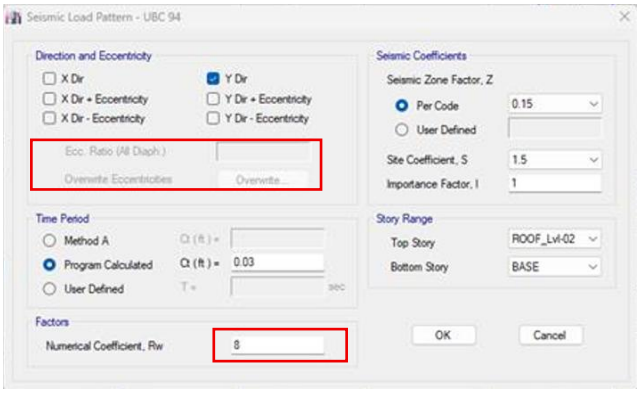
$k_v$ (The co-efficient of variation modification factor, obtained from Table 6.4.3) = 1.15

Insufficient concrete core test report

## 5.2 REBAR STRENGTH

The factory management has confirmed that they used 72.5 grade rebar for the construction of the Building. Based on the certification latter provided by the Structural design Engineer M. kamrul Islam (F-9189)(see appendix-03)

Lack of re-bar test report



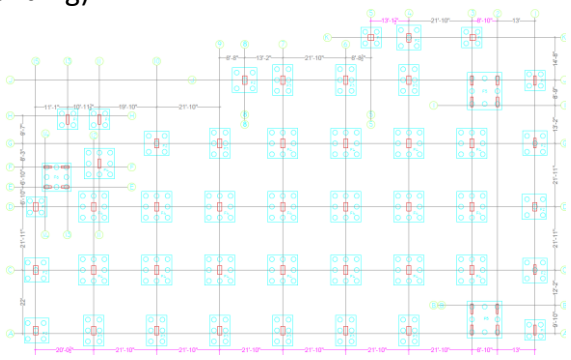

IMRF is considered in the analysis model

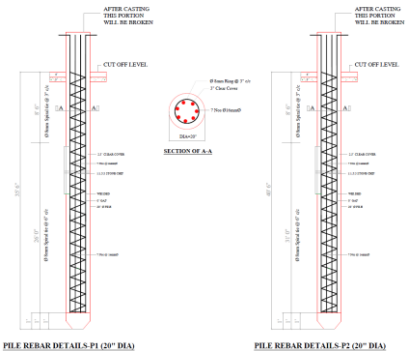
**Description:** A design report has been prepared for the 9-storied Main Production Building. Several inconsistencies were observed in the DEA report.

- Steel rebar strength was 500 MPa (72.5 ksi), considered in the design report without any test report.
- Factory collected six core samples (four from columns, one from a beam, and one from a slab). However, during inspection, the core locations could not be identified, and no core layout plan was available. Additionally, the number of cores tested for the beams and slabs in the submitted report is insufficient.
- The Intermediate Moment Resisting Frame (IMRF) system was adopted in the software-based analysis without proper justification. Necessary checks must be incorporated to confirm the IMRF framing system and ensure it does not adversely affect structural irregularities.

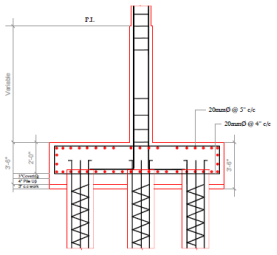
The Building Engineer is required to verify the actual material strengths and revise the design documents based on verified data and the actual framing system and submit to RSC for detailed review against lateral loadings.

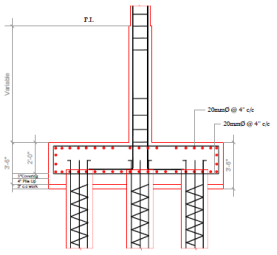
**Observation-03:** Discrepancies and lack of information in the as-built drawing. (Main Production Building)

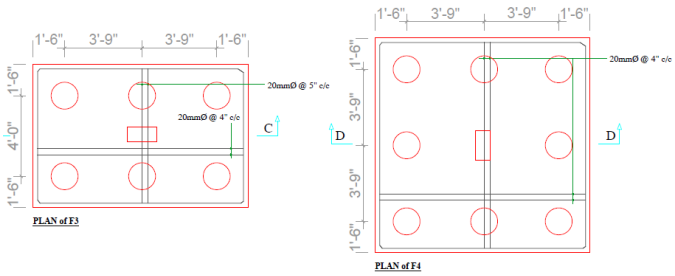




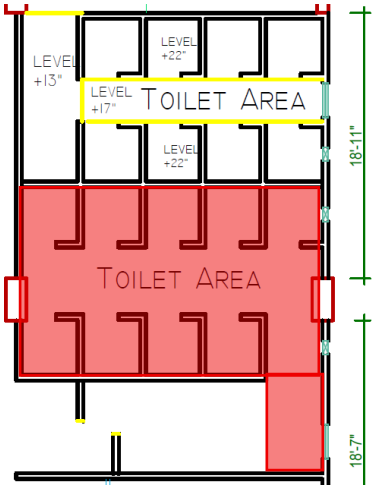

There are two types of pile P1 and P2. But in the pile layout plan pile type was not mentioned.



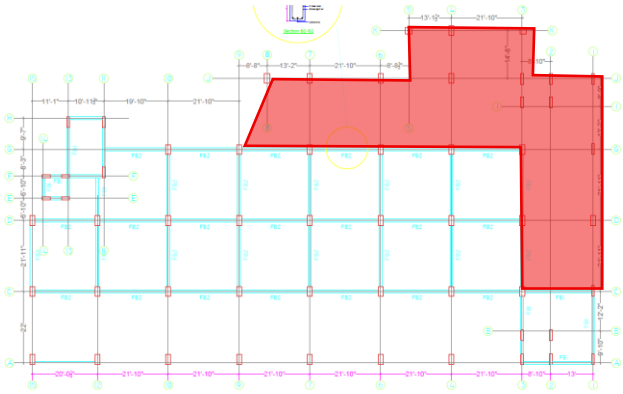




Grade beam and basement slab level was not shown in the drawing




<u>In the marked area floor build-up was found, but not shown in the drawing</u>



<u>Beam layout missing at marked area</u> at top level (101.5 ft level).



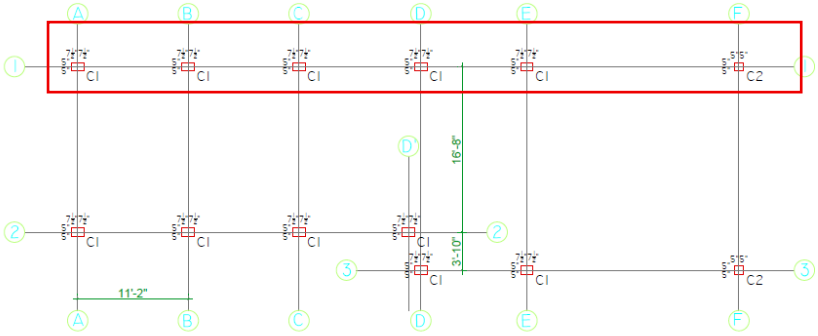
Lack of structural information of O.H.W.T. and U.G.W.R

**Description:** During inspection, mismatches and lack of information were observed between drawings and the existing condition.

- Type of pile P1 and P2 not shown in the drawing.
- Grade beam and basement slab levels were not shown in the drawing.
- Structural details of the Overhead water tank U.G.W.R were found missing in the drawing.
- Floor building up in the floor toilet area was not shown fully.
- Floor beam layout was missing at the rooftop level (101.5 ft level). Also, beam layout mismatch was found at grid 8.

The building engineer is required to survey the structural components and produce accurate as-built structural drawings.

**Observation-04:** Lack of information in the as-built drawing. (Substation & Generator Building)



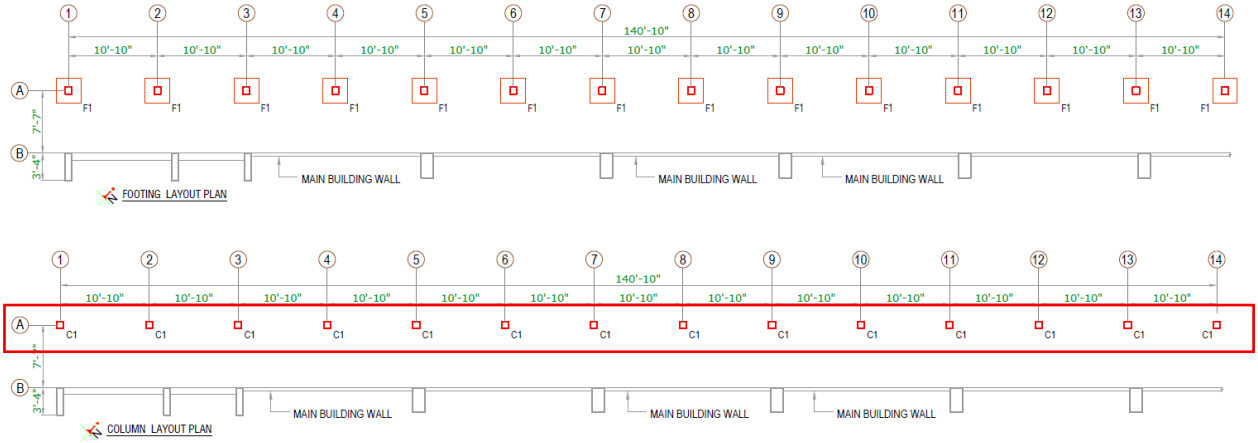

COLUMN LAYOUT PLAN

COLUMN SCHEDULE

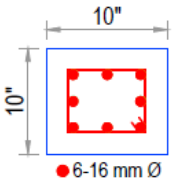
| COLUMN | C1 | C2 |
|---|---|---|
| BELOW G.L | Size= 12"x17" | Size= 12"x12" |
| GROUND FLOOR | 6-16mmØ bar 8mmØ @ 6"c/c | 4-20mmØ bar 8mmØ @ 6"c/c |

**Description:** During inspection, lack of information was observed between drawings and the existing condition. The grid dimension was found missing in the provided as-built drawing. The building engineer is required to survey the structural components and produce accurate as-built structural drawings.

**Observation-05:** Discrepancies in the as-built drawing. (Wastage Go-down, Security Room and IPS Room)



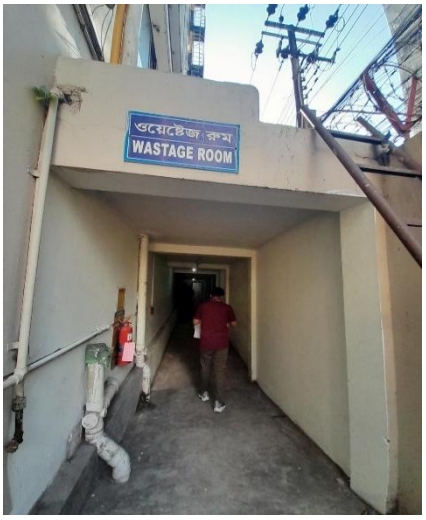

SCHEDULE OF COLUMN REINFORCEMENT

| NAME OF COLUMN | UP TO ROOF LEVEL |
|---|---|
| C1 |  |



**Description:** During inspection, mismatches were observed between drawings and the existing condition. At the "A" grid, the grid distance and position of the marked columns were found changed from the as-built drawing. Also, during inspection, 4 rebars were found at the C1 column instead of 8 rebars. The building engineer is required to survey the structural components and produce accurate as-built structural drawings.

**Observation-06:** Lack of design documents. (Wastage Go-down, Security Room and IPS Room)




Wastage Go-down, Security Room and IPS Room

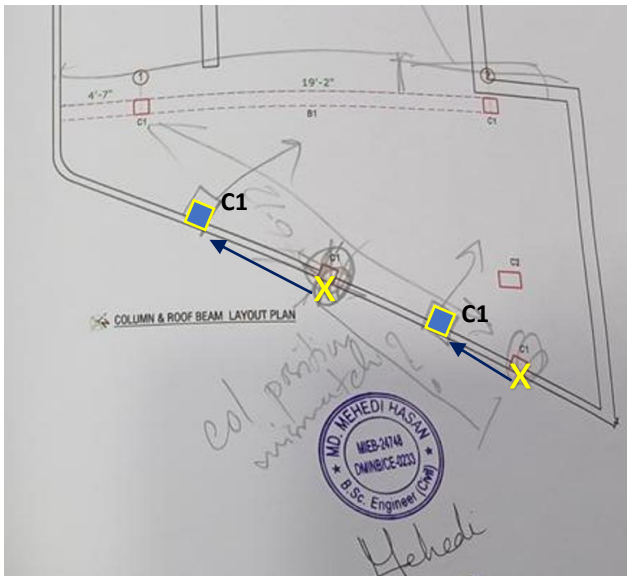
**Description:** As per BNBC, every building or structure designed shall have its design documents prepared under the provisions of Section 1.9.
At the time of inspection, no design report and material test reports were available on-site. Building engineer is required to prepare a safety check report.

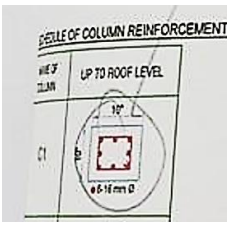
**Observation-07:** Lack of design documents. (Prayer, Gas Meter & Security Room)

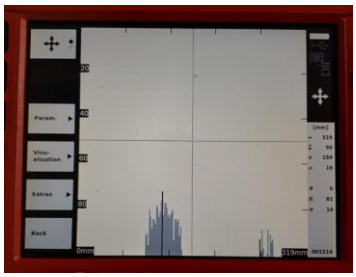
Prayer, Gas Meter & Security Room

**Description:** As per BNBC, every building or structure designed shall have its design documents prepared under the provisions of Section 1.9.
At the time of inspection, no design report and material test reports were available on-site. Building engineer is required to prepare a safety check report.

**Observation-08:** Discrepancies in the as-built drawing. (Fire Pump Room)



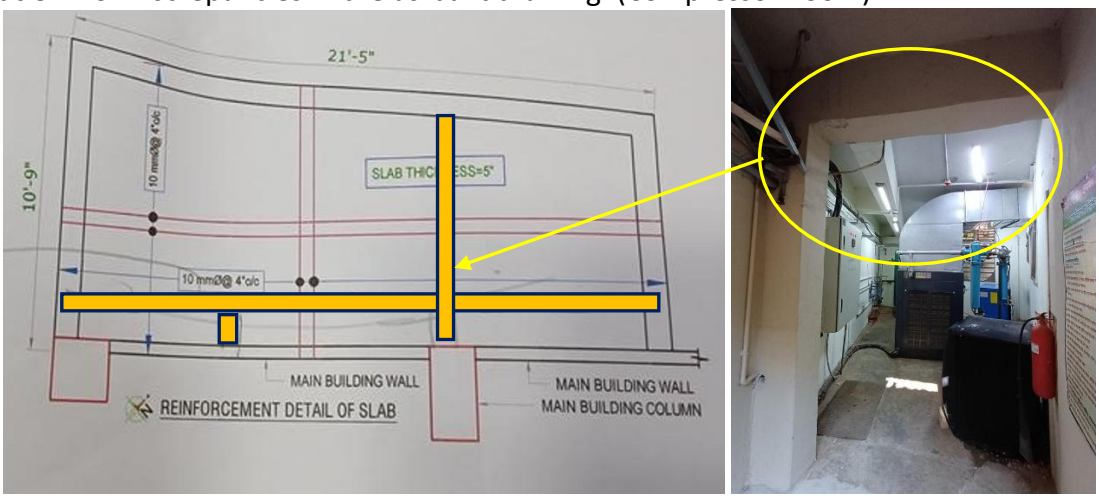



**Description:** During inspection, mismatches were observed between drawings and the existing condition. At the inclined grid, grid distance and position of the marked columns were found changed from the as-built drawing. Also, during inspection 4 rebars was found at C1 column instead of 8 rebars. The building engineer is required to survey the structural components and produce accurate as-built structural drawings.

**Observation-09:** Lack of design documents. (Fire Pump Room)

**Description:** As per BNBC, every building or structure designed shall have its design documents prepared under the provisions of Section 1.9.
At the time of inspection, no design report and material test reports were available on-site. Building engineer is required to prepare a safety check report.

**Observation-10:** Discrepancies in the as-built drawing. (Compressor Room)




**Description:** During inspection, mismatches were observed between the as-built drawings and the existing condition. Beam layout was found changed with the on-site condition. Also, sectional details of beam not provided in the as-built drawings. The building engineer is required to survey the structural components and produce accurate as-built structural drawings.

**Observation-11:** Unclear structural load path. (Compressor Room)


**Description:** The Compressor room has been constructed as an extension, projecting outward from the Main Production Building. This extension is connected to the Main Building's beam.
However, the slab is supported mostly on the brick walls.
Given this unconventional structural configuration, the unclear structural load path must be thoroughly investigated and structurally evaluated to ensure safety, stability, and compliance.

## 3. Action Plan

| Item No | Observation | Action Plan | Timeline |
|---|---|---|---|
| 1. | Stress in the pile foundation exceeds normal design limit. (Main Production Building) | The factory is required to engage a qualified structural and geotechnical consultant to verify actual pile lengths and capacities and conduct a Detailed Engineering Assessment (DEA) based on verified data. | within 6 weeks |
| 2. | | Implement floor load plan. | within 6 months |
| 3. | | Carry out the suggested remedial works. | within 6 months |
| 4. | Inconsistency in DEA report. (Main Production Building) | The Building Engineer is required to verify the actual material strengths and revise the design documents based on verified data and the actual framing system and submit to RSC for detailed review against lateral loadings. | within 6 weeks |
| 5. | | Carry out the suggested remedial works. | within 6 months |
| 6. | Discrepancies and lack of information in the as-built drawing. (Main Production Building) | The building engineer is required to survey the structural components and produce accurate as-built structural drawings. | within 6 weeks |
| 6. | Lack of information in the as-built drawing. (Substation & Generator Building) | The building engineer is required to survey the structural components and produce accurate as-built structural drawings. | within 6 weeks |
| 7. | Discrepancies in the as-built drawing. (Wastage Go-down, Security Room and IPS Room) | The building engineer is required to survey the structural components and produce accurate as-built structural drawings. | within 6 weeks |
| 8. | Lack of design documents. (Wastage Go-down, Security Room and IPS Room) | Building engineer is required to prepare a safety check report. | within 6 weeks |
| 9. | | Carry out the suggested remedial works. | within 6 months |
| 10. | Lack of design documents. (Prayer, Gas Meter & Security Room) | Building engineer is required to prepare a safety check report. | within 6 weeks |
| 11. | | Carry out the suggested remedial works. | within 6 months |

| | | | |
|---|---|---|---|
| 12. | Discrepancies in the as-built drawing. (Fire Pump Room) | The building engineer is required to survey the structural components and produce accurate as-built structural drawings. | within 6 weeks |
| 13. | Lack of design documents. (Fire Pump Room) | Building engineer is required to prepare a safety check report. | within 6 weeks |
| 14. | | Carry out the suggested remedial works. | within 6 months |
| 15. | Discrepancies in the as-built drawing. (Compressor Room) | The building engineer is required to survey the structural components and produce accurate as-built structural drawings. | within 6 weeks |
| 16. | Unclear structural load path. (Compressor Room) | The unclear structural load path must be thoroughly investigated and structurally evaluated to ensure safety, stability, and compliance. | within 6 weeks |
| 17. | | Carry out the suggested remedial works. | within 6 months |