

Reaz Knitwear Ltd.

Holding#163, Block-B, Hatimara, Kashempur, Gazipur
(23.990488, 90.298408)
11 September 2023

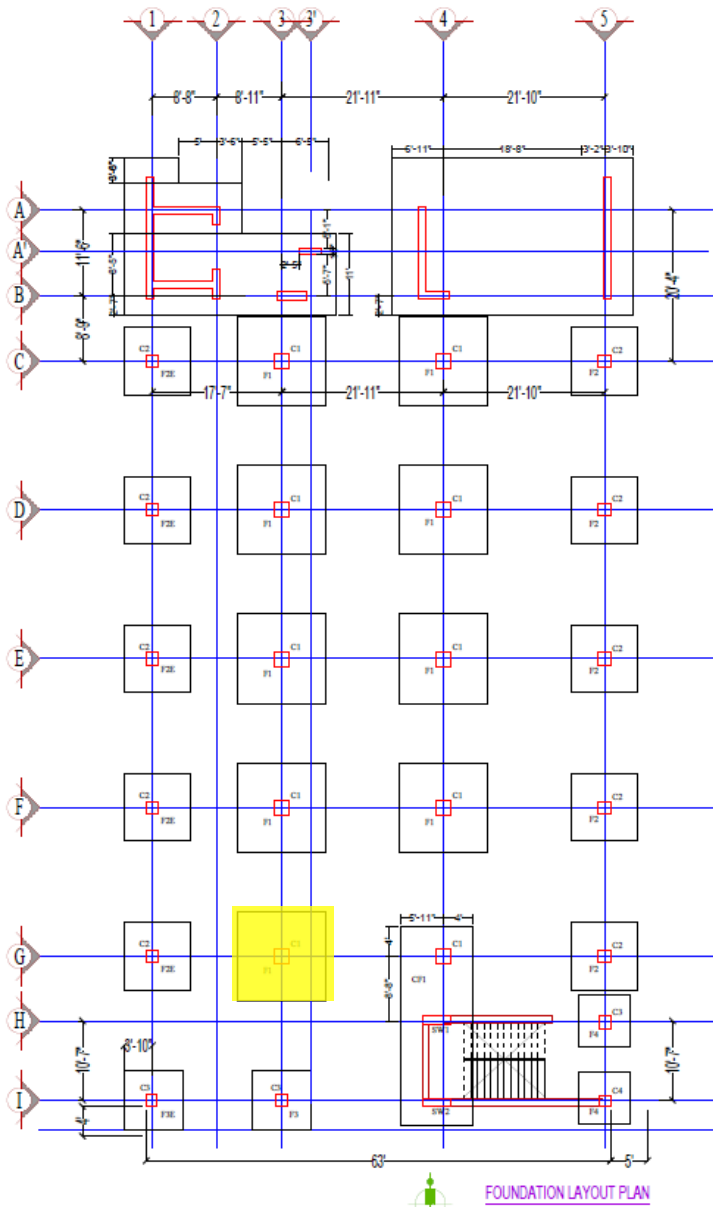


Building Information

1. **Building-1 (Production Building):** The structure is a six storied (G+5) reinforced concrete (RC) building.
2. **Building-2 (Office Building):** The structure is partially seven storied (G+6) reinforced concrete (RC) building.
3. **Building-3 (Utility Building):** The structure is a single storied reinforced concrete (RC) building.
4. **Building-4 (Medical & Daycare Building):** The structure is a single storied reinforced concrete (RC) building.
5. **Building-5 (Boiler Room):** The structure is a single storied reinforced concrete (RC) building.
6. **Shed-1 (Yarn Store):** The structure is a single storied shed with steel truss roof.
7. **Shed-2 (Accessories Store):** The structure is a single storied shed with steel truss roof.
8. **Shed-3 (Production Shed):** The structure is a single storied shed with steel truss roof.
9. **Shed-4 (Bonded Warehouse):** The structure is a single storied shed with steel truss roof.
10. **Shed-5 (Finish Goods Store):** The structure is a single storied shed with steel truss roof.
11. **Ancillary Structure-1 (Security Building):** The structure is a single storied reinforced concrete (RC) building.
12. **Ancillary Structure-2 (Dining Shed):** Single storied shed made by bamboo frame & tin roof.
13. **Ancillary Structure-3 (Fabric Store Shed):** Single storied shed made by bamboo frame & tin roof.
14. **Ancillary Structure-4 (Wastage Store Shed):** Single storied shed made by bamboo frame & tin roof.
15. **Ancillary Structure-5 (Toilet Block):** Single storied shed made by peripheral brick wall with wooden roof frame.

Observations

Stress in foundation above normal design limit



Foundation layout.

RECOMMENDATION:

On the basis aforesaid condition, the following recommendations are suggested for 8 (Eight) Storied Residential Building At Dag No. – C. S & S. A – 299, R. S – 439/675, Khatian No. – S. A – 350, R. S – 911, Mouza – Gobindhabari, P. S. – Joydebpur, Dist. – Gazipur.

The bearing capacity of soil Under the Bh-1, Bh-3, to Bh-8, Considered as Isolated Column Footing (Shallow Foundation) in the Following Way:

To be Considered 1.50 Tsf. (F.S. = 2.50) at a depth 10'-0" from the E.G.L.

Note.

- a) $1Tsf = 2ksf = 1.09 \text{ Kg/cm}^2$, $1\text{Ton} = 1000\text{kg} = 2000 \text{ Lbs}$, E.G.L. = Existing Ground Level.
- b) The theories on the ultimate bearing capacity presented in this report are based on idealized conditions of soil profiles. This is, in most field conditions, not true. Soil profiles are not always homogenous and isotropic. Hence, experience and judgment are always necessary in adopting proper soil parameters to use the calculation of ultimate bearing capacity.

However, the design Engineer may select any other alternative type, depth as well as the bearing capacity of the foundation in the light of information provided in this report.

Allowable bearing capacity 1.5 TSF (FS 2.5)

Cursory calculation indicates that stress in foundation exceeds normal design limit in highlighted foundation (marked in the layout) considering live load as per BNBC 2006 and bearing capacity from geotechnical investigation report. Building engineer is required to review the design, load and

Water ponding on the roof



Water ponding observed on the roof slab due to poor drainage system. The building engineer is required to develop proper drainage system with adequate sloping on

Dampness in shear walls



Dampness on outer face of shear walls

The building engineer is required to investigate the source of dampness and suggest proper remedial actions accordingly.

Expose rebar at roof top column



Exposed rebar at roof top column

Exposed rebars were found at roof top column. Building engineer is required to take proper measure to protect the rebar.

Dampness on exterior walls



Dampness on brick wall

Building engineer is required to seal the source of water and repair the damped area with suitable method.

Falling Hazard



Falling hazard from lift core & 1st floor

Falling hazard observed in the lift core & 1st floor. Building engineer is required to take necessary measures to avoid possible falling hazard.

Column susceptible to vehicle impact



Column susceptible to vehicle impact

A column in the west direction of the building was found adjacent to the driveway of parking. This column is susceptible to vehicle impact. The factory engineer is required to take necessary measures to prevent the vehicle impact by providing the barrier around the column.

Water ponding and exposed rebar on the roof



Water ponding and exposed rebar on the roof.

Exposed rebars were found at roof top column. Building engineer is required to take proper measure to protect the rebar. Also, develop proper drainage system to remove water ponding on roof.

Exposed rebar at roof top column



Exposed rebar on roof

Exposed rebars were found at roof top column. Building engineer is required to take proper measure to protect the rebar.

Lack of lateral stability system



No compression or vertical bracing observed

No vertical bracing and compression strut was observed in the structure that indicates the lateral load path is not logical in long direction against lateral loading. Building engineer is required to check the lateral stability of the structure and connection adequacy.

Lack of stability of roof truss



Absence of load transfer media (strut) and load resisting (bracing) system

No horizontal bracing and compression strut was observed in the roof which indicates the lack of lateral stability of the roof trusses. Also, the truss member sizes seems to be inadequate. The building engineer is required to check the overall stability of the structure for lateral loading and suggest necessary remedial action accordingly.

Lack of stability of roof truss



Absence of load transfer media (strut) and load resisting (bracing) system

No horizontal bracing and compression strut was observed in the roof which indicates the lack of lateral stability of the roof trusses. Also, the truss member sizes seems to be inadequate. The building engineer is required to check the overall stability of the structure for lateral loading and suggest necessary remedial action accordingly.

Lack of lateral stability of roof truss



No load transfer media & bracings at roof



Improper connection between steel column and steel roof

No bracing system was observed along transverse direction of roof truss. Also, the connection between steel column and steel roof truss was improper. The building engineer is required carry out Engineering Assessment (EA) to check the connection & lateral stability of the structure and suggest proper remedial actions accordingly.

Lack of lateral stability system



Absence of load transfer media along transverse direction and absence of bracing



Improper connection between steel column and steel roof

No bracing system was observed along transverse direction of roof truss. Also, the connection between steel column and steel roof truss was improper. The building engineer is required carry out Engineering Assessment (EA) to check the connection & lateral stability of the structure and suggest proper remedial actions accordingly.



Slender pipe column (63mm steel pipe) at the center of truss

Slender pipe column (63mm steel pipe) was observed at the center of roof truss. The building engineer is required to carry out Engineering Assessment (EA) to check the adequacy of slender pipe column and suggest proper remedial actions accordingly.

Apparently non-engineered structure

Observation: Ancillary-2, 3, 4 & 5

(Dining, Fabric Store, Wastage Shed & Toilet Block)



Ancillary-2



Ancillary-3



Ancillary-4



Ancillary-5

Apparently non-engineered structure

Ancillary 2,3,4 & 5 are bamboo structure & the stability system of these structures are apparently non-engineered. The building engineer is required to suggest proper alternatives to make the structure adequate and prepare necessary design documents accordingly. Otherwise, the factory is required to replace the building with well-designed structure.

Observation: Ancillary-2, 3, 4 & 5

(Dining, Fabric Store, Wastage Shed & Toilet Block)

Lack of building permit



Building 3



Building 4



Building 5



Shed-1



Shed-2



Shed-3



Shed-4



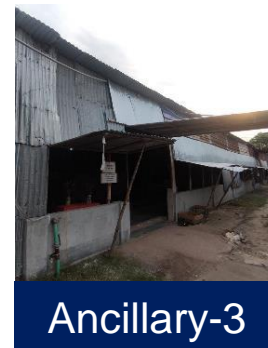
Shed-5



Ancillary-1



Ancillary-2



Ancillary-3



Ancillary-4



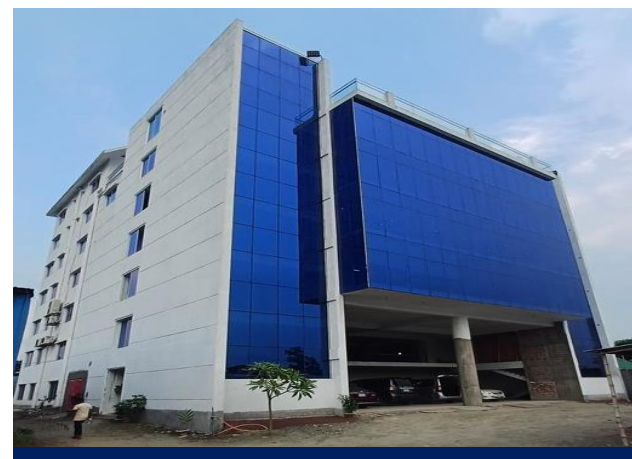
Ancillary-5

Building permit drawing was not available for the mentioned structure. The factory is required to collect building permit from BNBC prescribed local building permit authority.

Absence of design documents



Building 1



Building 2



Building 3



Building 4

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1, part-6 of BNBC. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. During inspection design report was not found which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

Problems Observed

Building-1 (Production Building):

Item 01: Stress in foundation above normal design limit

Item 02: Water ponding on the roof.

Item 03: Dampness in shear walls.

Building-2 (Office Building):

Item 04: Expose rebar at roof top column

Item 05: Dampness on exterior walls.

Item 06: Falling hazard.

Item 07: Column susceptible for vehicle impact.

Building-3 (Utility Building):

Item 08: Water ponding and exposed rebar on the roof

Building-4 (Medical & Daycare):

Item 09: Exposed rebar at roof top column

Shed-1 (Yarn Store Shed):

Item 10: Lack of lateral stability system.

Shed-2 (Accessories Store Shed):

Item 11: Lack of stability of roof truss.

Problems Observed (continued)

Shed-3 (Production Shed):

Item 12: Lack of stability of roof truss.

Shed-4 (Bonded Warehouse Shed):

Item 13: Lack of lateral stability of truss roof.

Shed-5 (Finish Goods Store Shed):

Item 14: Lack of lateral stability system

Ancillary-2, 3, 4 & 5(Dining, Fabric Store, Wastage Shed & Toilet Block):

Item 15: Apparently non-engineered structure

All structures except Building 1 & 2:

Item 16: Lack of building permit.

Building 1,2,3 & 4:

Item 17: Absence of design documents.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Stress in foundation above normal design limit (Building-1).	Building engineer is required to review the design, load and foundation stress.	6-weeks
02	Stress in foundation above normal design limit (Building-1).	Produce actively manage loading plan considering the capacity of structural members.	6-weeks
03	Stress in foundation above normal design limit (Building-1).	Carry out suggested remedial works (if required).	6-months
04	Water ponding on the roof. (Building-1)	Building engineer is required to develop proper drainage system with adequate sloping on roof.	6-months
05	Dampness in shear walls. (Building-1).	Building engineer is required to investigate the source of dampness and suggest proper remedial actions accordingly.	6-weeks
06	Dampness in shear walls. (Building-1).	Carry out further remedial actions as required.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
07	Expose rebar at roof top column (Building-2)	Apply corrosion resistance coating to the exposed rebar to protect from corrosion.	6-weeks
08	Expose rebar at roof top column (Building-2)	Develop proper water drainage system on the roof with adequate slope and water outlets.	6-months
09	Dampness on exterior wall (Building-2)	Building engineer is required to seal the source of water and repair the damped area with suitable method.	6-months
10	Falling hazard.(Building-2)	Building engineer is required to take necessary measures to avoid possible falling hazard.	6-weeks
11	Column susceptible for vehicle impact. (Building-2)	Building engineer is required to provide barrier around the column and take necessary measures to protect from possible vehicle impact.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
12	Water ponding and exposed rebar on the roof (Building-3)	Building engineer is required to take proper measure to protect the rebar.	6-weeks
13	Water ponding and exposed rebar on the roof (Building-3)	Building engineer is required to develop proper drainage system to remove water ponding on roof.	6-months
14	Exposed rebar at roof top column. (Building-4)	Building engineer is required to take proper measure to protect the rebar.	6-weeks
15	Lack of lateral stability system. (Shed-1)	Building engineer is required to check the lateral stability of the structure and connection adequacy accordingly.	6-weeks
16	Lack of lateral stability system. (Shed-1)	Carry out suggested remedial works.	6-months
17	Lack of stability of roof truss. (Shed-2)	Building engineer is required to check the lateral stability of the structure and connection adequacy accordingly.	6-weeks
18	Lack of stability of roof truss. (Shed-2)	Carry out suggested remedial works.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
19	Lack of stability of roof truss. (Shed-3)	Building engineer is required to check the lateral stability of the structure and connection adequacy accordingly.	6-weeks
20	Lack of stability of roof truss. (Shed-3)	Carry out suggested remedial works where required.	6-months
21	Lack of lateral stability of roof truss. (Shed-4)	Building engineer is required to check the lateral stability of the structure and connection adequacy accordingly.	6-weeks
22	Lack of lateral stability of roof truss. (Shed-4)	Carry out suggested remedial works where required.	6-months
23	Lack of lateral stability system (Shed-5)	Building engineer is required to check the lateral stability of the structure and connection adequacy accordingly.	6-weeks
24	Lack of lateral stability system (Shed-5)	Carry out suggested remedial works where required.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
25	Apparently non-engineered structure. (Ancillary-2, 3, 4 & 5)	The building engineer is required to suggest proper alternatives to make the structure adequate and prepare necessary design documents accordingly.	6-weeks
26	Apparently non-engineered structure. (Ancillary-2, 3, 4 & 5)	Otherwise, remove the non-engineered structure.	6-months
27	Lack of building permit (All structures except Building 1 & 2).	The factory is required to collect building permit from BNBC prescribed local building permit authority.	6-months
28	Absence of design documents (Building 1,2,3 & 4).	The building engineer is required to prepare a set of design documents (as-built drawings & design report) in compliance with section 1.9.1.1 (part-6, BNBC). And suggest remedial action if required.	6-weeks
29	Absence of design documents (Building 1,2,3 & 4).	Carry out suggested remedial works (if required).	6-months