

ZALO KNITTING LIMITED

Tea Garden Road, Mouchak, Kaliakoir, Gazipur.1751, Bangladesh.

(24.029963, 90.298562)

29 July 2025



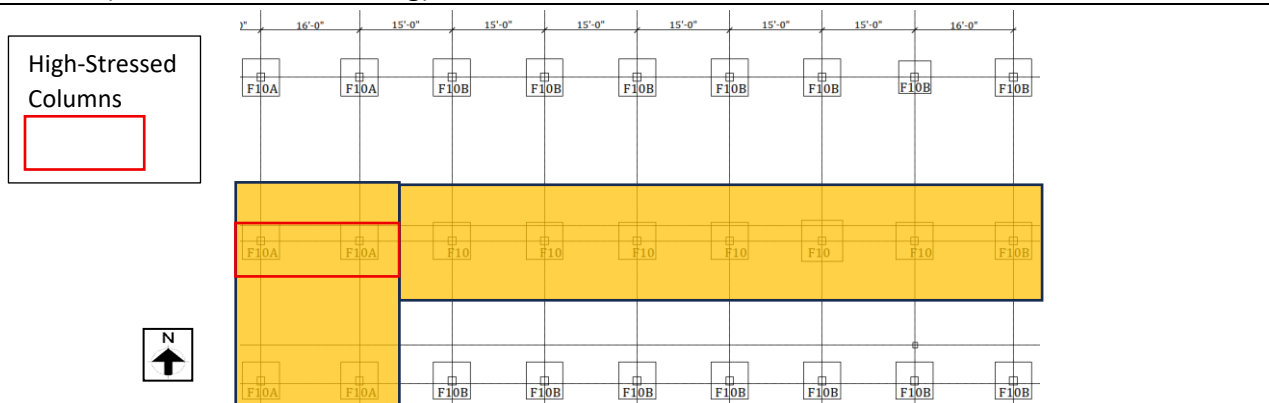
1. Building Information

There are ten (10) structures on the factory premises. The names of the structures are mentioned below,

1	Old Production Building	Mainly a two-storied RC building with a steel roof shed on the east side and a four-storied RC part on the west side.
2	New Production Building	Four-storied (G+3) RC structure with a steel roof shed.
3	Utility Building	Two-storied (G+M+1) RC structure.
4	Bonded Warehouse Shed	Single-storied steel shed.
5	Yarn Store Shed	Single-storied steel shed.
6	Jhute Store Shed	Single-storied timber shed.
7	Fuel Room	Single-storied masonry shed.
8	Security Shed	Single-storied mono slope shed.
9	Fire Pump Room	Single-storied mono slope shed.
10	RMS Room	Single-storied mono slope masonry shed.

2. Observation

Observation-01: High stress in the column and foundation, which requires immediate design review (Old Production Building).



Load coming from the brick wall



Load coming from the brick wall and plastic water tank

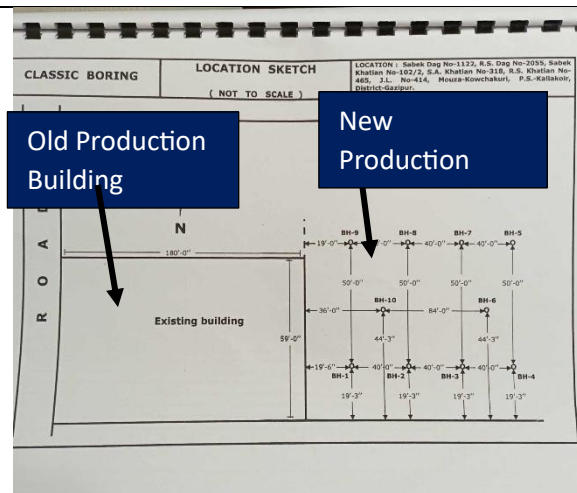
Description: Cursory calculation indicates high stress in the column, and punching shear of the foundation exceeds the normal design limit at the marked locations, considering the live load of 3 kPa, concrete strength 15.5 MPa (Column), 11 MPa (Footing) from the available core test report of the column and foundation, and minimum rebar strength 248 MPa.

Also, the calculation indicates that the bearing stress in the marked footing exceeds the normal design limit, considering the allowable soil bearing capacity of the adjacent “New Production building” (1 tsf, FoS:3).

The building engineer is required to take the following actions:

1. The two PVC water tanks on the roof and the stair roof at the 4-storied extension parts must be removed/relocated with immediate effect.
2. The roof (Open to Sky) should remain 0.5 kPa live load, and the live load of the 1st floor, 2nd floor, and 3rd floor must not exceed 1.0 kPa; the live load in the stairs must not exceed 4 kPa.
3. An interim live load plan must be prepared by the consultant and used by the factory with immediate effect.
4. A Detailed Engineering Assessment (DEA) must be commenced immediately.
5. Review design, load column, and foundation stress.
6. Produce and actively manage a loading plan according to the floor capacity.

Observation-02: Lack of geotechnical investigation report (Old Production Building).



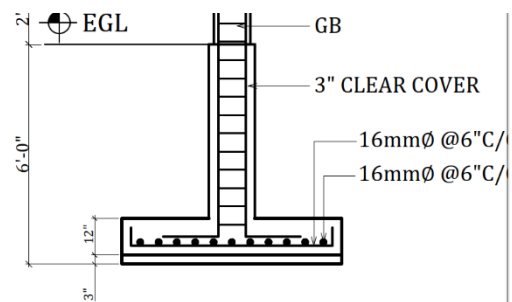
Description: A geotechnical investigation report was available on site, and the borehole layout shows that it covers only the area of the New Production Building. A geotechnical engineer must be engaged to prepare a new geotechnical investigation report to determine the actual soil bearing capacity of the Old Production Building.

Observation-03: Discrepancy between the as-built drawing and the onsite condition (Old Production Building).



Figure 12: Footing top is 70 inches from PL at the edge.

So, the footing thickness difference is 5 inches between center and edge due to slope as top surface.



SECTION X9-X9

Provided drawing during inspection



Figure 6: Footing thickness is 12 inches at edge. And at least 4 inches more at column end.



Figure 5: Footing edge is 2ft from column face. And footing top is sloped.

Description: In the provided as-built drawing, the thickness of footing F10 was shown as 300 mm, but after earth excavation, the footing thickness was found to be 300 mm~425 mm (with a slope), 300 mm~375 mm (with a slope), 300 mm~400 mm (with a slope). The building engineer is required to survey the whole structure and produce an accurate as-built drawing.

Observation-04: Lack of a remediation plan for structural members (New Production Building).

5.4 Concluding Remarks on Existing Structure for BNBC

Conclusion has been made from the assessment according to **Alliance** standard.

- **Serviceability:** The structure has torsional irregularity.
- **Foundation:** Foundation is inadequate at two points.
- **Column:** Columns are inadequate.
- **Beam:** Beams are inadequate.
- **Slab:** Slabs are adequate.

5.5 Recommendations on Existing Structure

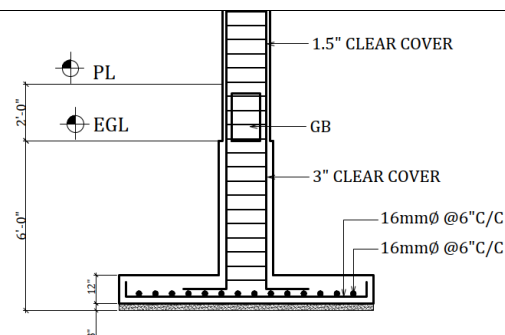
- Inadequate foundation size must be increased.
- Inadequate column size and reinforcement must be increased.
- Inadequate beam size and reinforcement must be increased.
- Shear wall can be provided to increase the serviceability and adequacy of the inadequate members.

Description: As per the provided Detailed Engineering Assessment (DEA) report, some structural members (footing, column, beam) are inadequate, but no remediation plan has been provided. The building engineer is required to submit the DEA report with a remediation plan for all inadequate structural members.

Observation-05: Discrepancy between the as-built drawing and the onsite condition (New Production Building).



Figure 29: Footing thickness is 18 inches at edge.

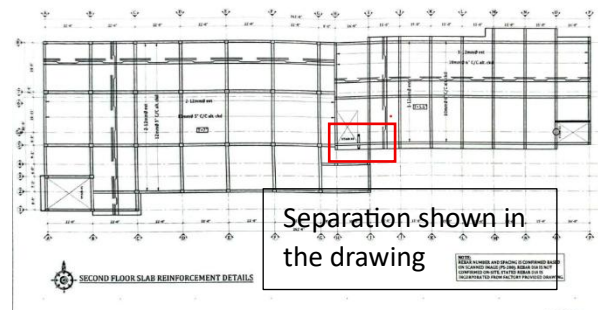
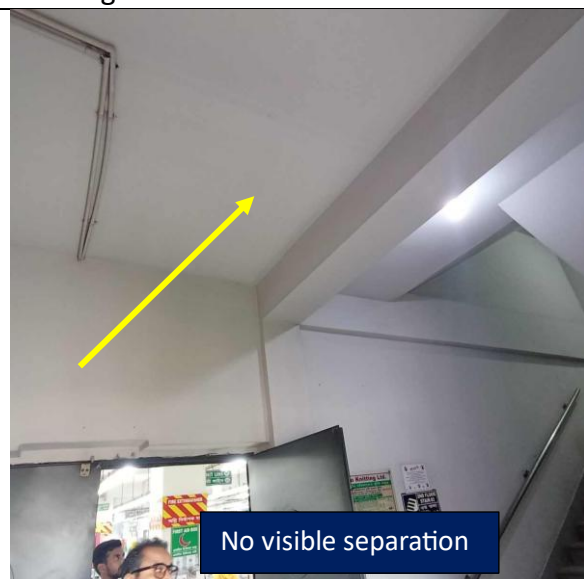


SECTION X1-X1

Provided drawing during inspection

Description: In the provided as-built drawing, the thickness of footing F-2 was shown as 300 mm, but after earth excavation, the footing thickness was found as 450 mm. The building engineer is required to survey the whole structure and produce an accurate as-built drawing.

Observation-06: Unclear separation between Old Production Building and New Production Building on several floors.



Description: As per the provided drawing Old Production Building and New Production Building are separated along the marked line, but the separation was not visible on several floors. The building engineer is required to verify the separation between two buildings.

Observation-07: Lack of lateral stability of roof shed (New Production Building).



Description: Load transfer media is not provided to transmit the lateral load. The building engineer is required to check the lateral stability of the shed and propose a remediation plan.

Observation-8: Lack of design documents and test reports (Utility Building).



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provisions of Section 1.9.1. 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. At the time of inspection, the design report, concrete cylinder test report, and geotechnical investigation report were not available. The building engineer is required to prepare the design report based on in situ concrete strength in compliance with section 1.9.1 (part 6, BNBC). Also, prepare a geotechnical investigation report.

Observation-9: Lack of lateral stability (Bonded Warehouse Shed).



Description: No bracing system (strut, horizontal/vertical bracing) is provided for the shed to transmit and resist the lateral load. The building engineer is required to check the lateral stability of the shed and propose a remediation plan.

Observation-10: Lack of a geotechnical investigation report and incomplete as-built drawing (Bonded Warehouse Shed).



Description: No geotechnical investigation report was available for the structure. Also, the as-built drawing for the superstructure was not available. A geotechnical engineer must be engaged to prepare a geotechnical investigation report to determine the soil bearing capacity. Based on geotechnical data, check the foundation adequacy. Also, a building engineer produces a full set of as-built drawings.

Observation-11: Missing bolts at steel connections (Bonded Warehouse Shed).



Description: Bolts were missing from steel connections at several locations. Identify all locations and install all missing bolts.

Observation-12: Lack of lateral stability (Yarn Store Shed).



Description: No bracing system (strut, horizontal/vertical bracing) is provided for the shed to transmit and resist the lateral load. The building engineer is required to check the lateral stability of the shed and propose a remediation plan.

Observation-13: Lack of a geotechnical investigation report (Yarn Store Shed).



Description: No geotechnical investigation report was available for the structure. A geotechnical engineer must be engaged to prepare a geotechnical investigation report to determine the soil bearing capacity.

Observation-14: Poor connection of steel members (Security Shed, Fire Pump Shed).



Security Shed



Fire Pump Shed

Description: Poor connection was found in the steel members at Security Shed and the Fire Pump Shed. The building engineer is required to prepare a connection adequacy check with a remediation plan and submit to RSC for review.

Observation-15: Incomplete as-built drawing (RMS Room, Fuel Room, Fire Pump Shed).



Fuel Pump Room



Fire Pump Shed



RMS Room

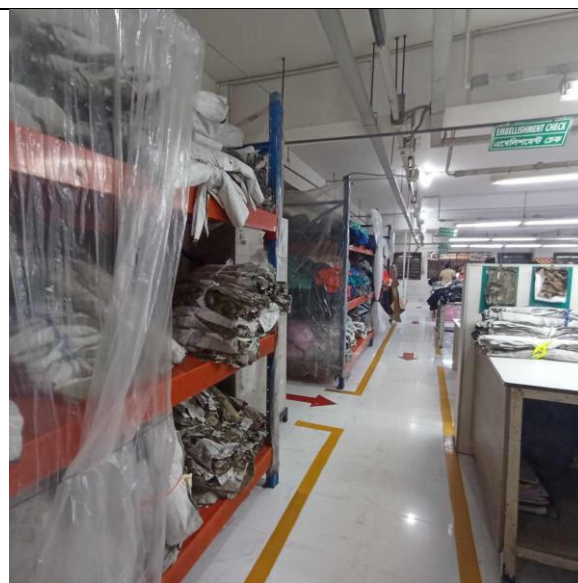
Description: A Full set of as-built drawings was not available for any of these structures. The building engineer produces a full set of as-built drawings.

Observation-16: Corroded steel members and deflected roof sheet (Fuel Room).



Description: Corroded steel members and deflected roof sheets were found in the Fuel Room. Provide rust-proof coating on steel members and repair/replace the deflected roof sheet.

Observation-17: Non-structural elements found unbraced/unanchored (Old Production Building, New Production Building, Bonded Warehouse Shed).



Description: Non-structural elements were found unbraced/unanchored at Old Production Building, New Production Building, and Utility Building. The building engineer is required to brace/anchor all non-structural elements.

Observation-18: Flimsy wooden structure (Jhute Store Shed).



Description: A wooden shed was found in factory premises, which appeared to be flimsy against lateral loading. The factory is required to demolish the shed or replace the shed with a well-designed structure.

3. Action Plan

Item No	Observation	Action Plan	Timeline
1.	High stress in the column and foundation, which requires immediate design review (Old Production Building).	The two PVC water tanks on the roof and the stair roof at the 4-storied extension parts must be removed/relocated with immediate effect.	Immediate
2.		The roof (Open to Sky) should remain 0.5 kPa live load, and the live load of the 1st floor, 2nd floor, and 3rd floor must not exceed 1.0 kPa; the live load in the stairs must not exceed 4 kPa.	Immediate
3.		An interim live load plan must be prepared by the consultant and used by the factory with immediate effect.	Immediate
4.		Detailed Engineering Assessment (DEA) should be commenced.	Immediate
5.		The building engineer is required to review the design, load, and stress.	within 6 weeks
6.		Verify the steel grade by testing.	within 6 weeks
7.		Produce and actively manage the loading plan according to the floor capacity.	within 6 weeks
8.		Implement remediation work after acceptance from RSC.	within 6 months
9.		Implement floor load plan.	within 6 months
10.	Lack of geotechnical investigation report (Old Production Building).	A geotechnical engineer must be engaged to prepare a new geotechnical investigation report to determine the actual soil bearing capacity of the Old Production Building.	within 6 weeks
11.	Discrepancy between the as-built drawing and the onsite condition (Old Production Building).	The building engineer is required to survey the whole structure and produce an accurate & detailed as-built drawing.	within 6 weeks

12.	Lack of a remediation plan for structural members (New Production Building).	The building engineer is required to submit the DEA report with a remediation plan for all inadequate structural members.	within 6 weeks
13.		Implement remediation work after acceptance from RSC.	within 6 months
14.	Discrepancy between the as-built drawing and the on-site condition (New Production Building).	The building engineer is required to survey the whole structure and produce an accurate & detailed as-built drawing.	within 6 weeks
15.	Unclear separation between Old Production Building and New Production Building on several floors.	The building engineer is required to verify the separation between two buildings and the requirements of the expansion joint.	within 6 weeks
16.	Lack of lateral stability of roof shed (New Production Building).	The building engineer is required to check the lateral stability of the shed and propose a remediation plan.	within 6 weeks
17.		Implement remediation work after acceptance from RSC.	within 6 months
18.	Lack of design documents and test reports (Utility Building).	The building engineer is required to verify in-situ material strength by taking a minimum of 4 concrete cores from the existing building column & floor (beam/slab) each. Also, provide a rebar test report to confirm the rebar strength.	within 6 weeks
19.		The building engineer is required to prepare the design report based on in situ concrete strength in compliance with section 1.9.1 (part 6, BNBC).	within 6 weeks
20.		Also, prepare a geotechnical investigation report.	within 6 weeks
21.		Implement remediation work after acceptance from RSC.	within 6 months
22.	Lack of lateral stability (Bonded Warehouse Shed).	The building engineer is required to check the lateral stability of the shed and propose a remediation plan.	within 6 weeks
23.		Implement remediation work after acceptance from RSC.	within 6 months
24.	Lack of a geotechnical investigation report (Bonded Warehouse Shed).	A geotechnical engineer must be engaged to prepare a geotechnical investigation report to determine the soil bearing capacity.	within 6 weeks

25.	Incomplete as-built drawing (Bonded Warehouse Shed).	The building engineer produces a full set of as-built drawings.	within 6 weeks
26.	Missing bolts at steel connections (Bonded Warehouse Shed).	Install all missing bolts.	within 6 weeks
27.	Lack of lateral stability (Yarn Store Shed).	The building engineer is required to check the lateral stability of the shed and propose a remediation plan.	within 6 weeks
28.		Implement remediation work after acceptance from RSC.	within 6 months
29.	Lack of a geotechnical investigation report (Yarn Store Shed).	A geotechnical engineer must be engaged to prepare a geotechnical investigation report to determine the soil bearing capacity.	within 6 weeks
30.	Poor connection of steel members (Security Shed, Fire Pump Shed).	The building engineer is required to prepare a connection adequacy check with a remediation plan and submit to RSC for review.	within 6 weeks
31.		Implement remediation work after acceptance from RSC.	within 6 months
32.	Incomplete as-built drawing (RMS Room, Fuel Room, Fire Pump Shed).	The building engineer produces a full set of as-built drawings.	within 6 weeks
33.	Corroded steel members and deflected roof sheet (Fuel Room).	Provide rust-proof coating on steel members and repair/replace the deflected roof sheet.	within 6 weeks
34.	Non-structural elements found unbraced/unanchored (Old Production Building, New Production Building, Bonded Warehouse Shed).	The building engineer is required to brace/anchor all non-structural elements.	within 6 weeks
35.	Flimsy wooden structure (Jhute Store Shed).	The factory is required to replace the shed with a well-designed structure.	within 6 months