

Ahsan Knitting Ltd.

Siddhirgonj Pool, Siddhirgonj Narayangonj.

(23.689758, 90.515151)

04th October 2022



Building Information

Ahsan Knitting Building (G+5)

Observations

Incomplete geotechnical investigation report

14.0 RECOMMENDATIONS

Shallow Raft Foundation over improved soil condition may be another potential type of foundation for building structure in this plot at 2.0m footing.

The allowable bearing capacity (for factor of safety of 2.5) of shallow foundation over improved soil condition shall be as follows:

Bore Hole, BH	All
Depth of Sand Pile Below E.G.L.	6.0
Allowable bearing capacity of improved ground (ksf)	4.5

Average Allowable bearing capacity of improved ground (ksf) = 4.5 may be used considering permissible settlement of underlying soil. The design, supervision, quality control and this completion certificate for Sand Compaction Column has been issued by a Geotechnical Engineer experienced on Sand Compaction Column.



Sharifullah Ahmed
07/08/19
ENGR. SHARIFULLAH AHMED
Ph. D. (Geotechnical) BUET, On Study
M. Sc. Engg. (Geotechnical & Structural-48 Credits) BUET
B. Sc. Engg. (Civil) BUET, MIEB/23142, MBSGE
Enlisted to RAJUK (DMINB/CE 230), CDA (CE/0384)
Member of BES, Enlisted to RDA (CE/029), KDA, CoxDA

ENGR. SHARIFULLAH AHMED
Geotechnical Engineer
STRAIN FIELD GEOTECHNICS LTD.

Geotechnical certificate



Ahsan Knitting Building

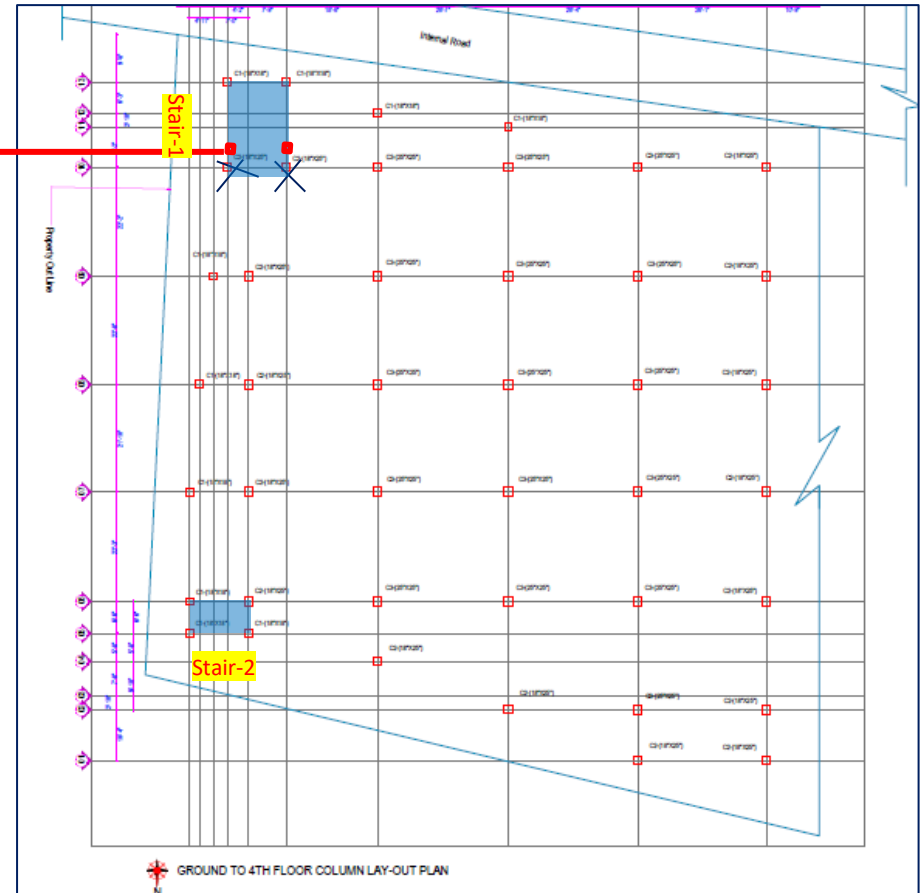
Incomplete geotechnical investigation report was found for the six storied factory building. Only a geotechnical certificate was available on site which shows allowable bearing capacity 4.5 ksf without having any bore log data. Thus, complete geotechnical investigation report for the building is required be prepared to confirm the foundation adequacy.

Discrepancies in as built drawings

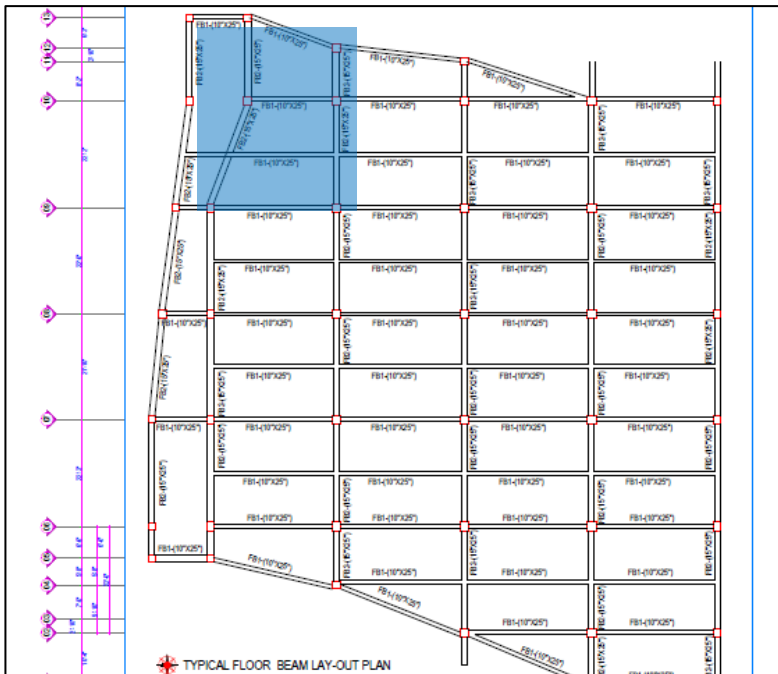


Column found offset from beam-column joint

Column and beam layout were not fully matched with drawings near stair-1. Mismatches are shown in the figure.



Column Layout



Beam Layout

Size of corner column of stair-2 did match with column schedule. 15 X 10 inches were measured instead of 18 X 18 inches.

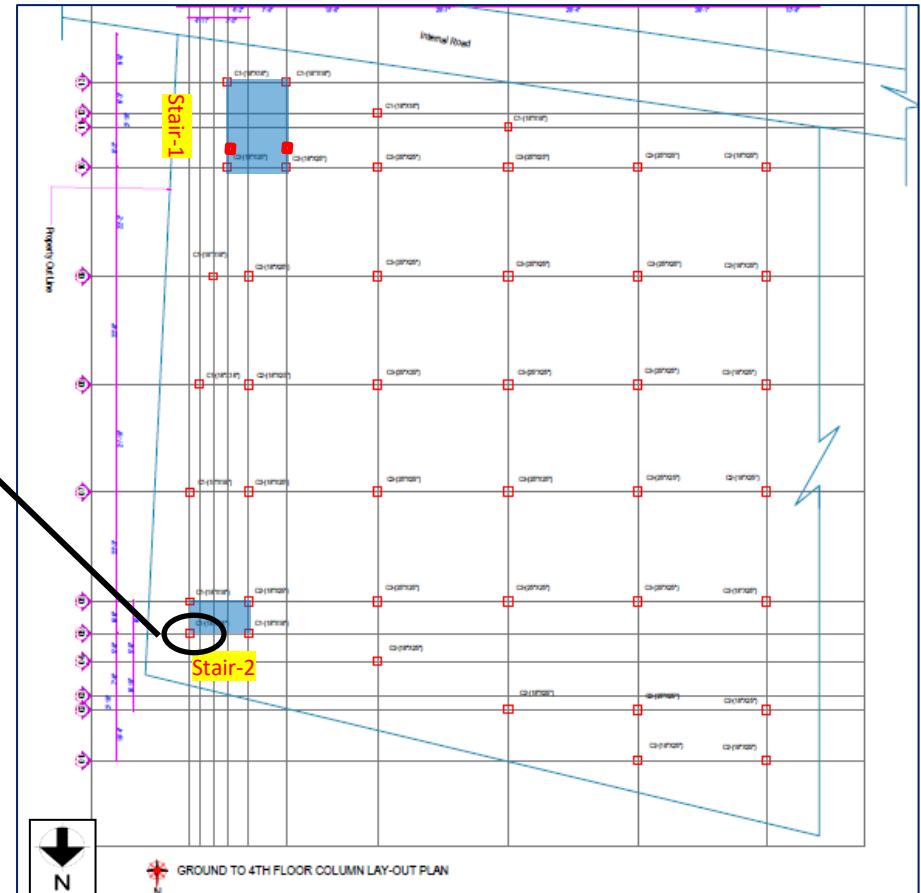


Stair column

SCHEDULE OF COLUMN SIZE AND REINFORCEMENT DETAILS.

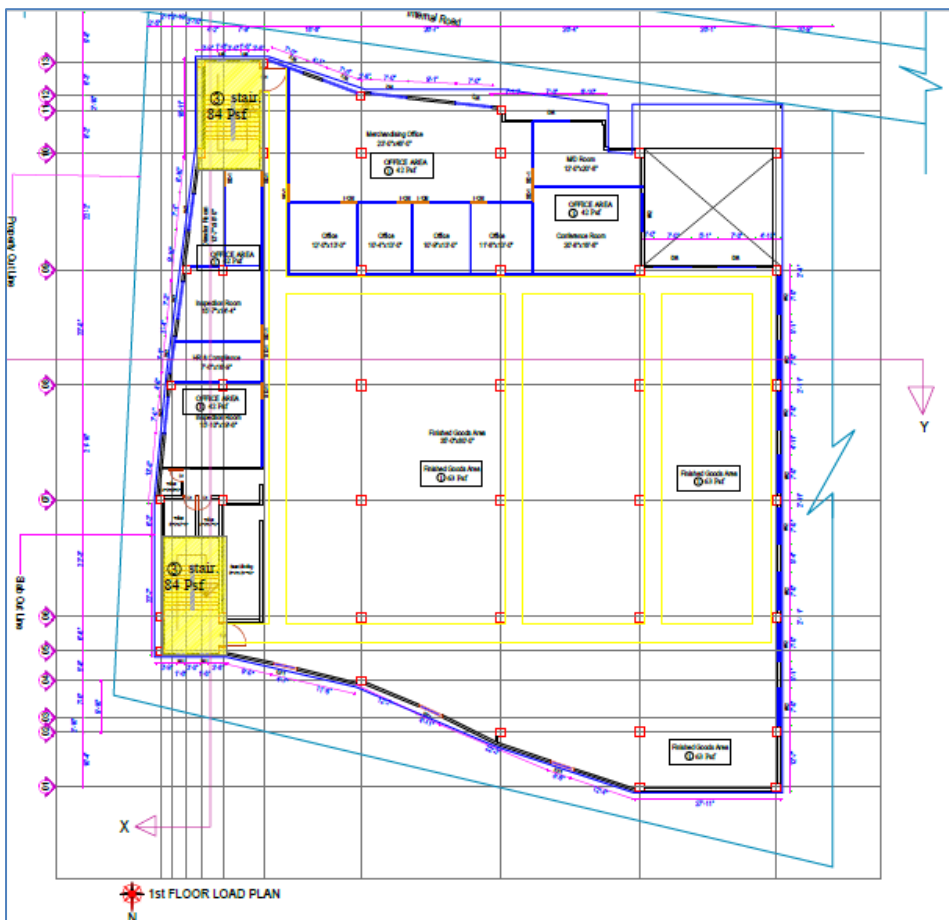
COL NO.	BELOW PL (2" CLEAR COVER)	Ground Floor	1st to 4th Floor	5th Floor to Roof
	SIZE	20"x20"	18"x18"	18"x18"
C1				
	TIE	16-20Ø	16-20Ø	8-20Ø+8-16Ø
	SIZE	20"x20"	18"x18"	18"x18"
C2				
	TIE	20-20Ø	20-20Ø	10-20Ø+10-16Ø
	SIZE	27"x27"	25"x25"	22"x22"
C3				
	TIE	28-20Ø	28-20Ø	28-20Ø
	SIZE	27"x27"	25"x25"	22"x22"
	TIE	D10-4"-6"-4" C/C	D10-4"-6"-4" C/C	D10-4"-6"-4" C/C

Beam Layout



Column Layout

**Prepared load plan do not comply with BNBC
and lack of design report**



load plan with 3 kN/m² (63 psf) loading limit

As per BNBC, the minimum floor live load for light storage is 6 kN/m² (125 psf). But, floor load plan for storage areas was found considering 3 kN/m². The building engineer is required to revise the live load plan as per BNBC requirement and prepare the design documents accordingly.



Floor Loading

4.5		1 Light workroom without storage	3.0	2.7
		2 Machinery hall & circulation area	4.0	4.5
		3 Factory, workshop etc.	5.0	4.5
1.8		4 Manufacturing : light	6.0	4.5 ⁽⁵⁾
		heavy	12.0	9.0 ⁽⁵⁾
		ice	15.0	9.0 ⁽⁵⁾
2.7		5 Printing plant :		(5)
4.5		Press room	7.0	11.0
		Composing and linotype room	5.0	9.0 ⁽⁵⁾
		Paper storage room	12.0	9.0 ⁽⁵⁾
2.7		6 Motor room, fan room etc. including the weight of machinery	7.5	4.5
4.5		7 Cold storage, grain storage	15.0	9.0 ⁽⁵⁾
4.5		8 Storage warehouses : light	6.0	4.5 ⁽⁵⁾
		heavy	12.0	9.0
7.0		9 Foundries	20.0	12.0

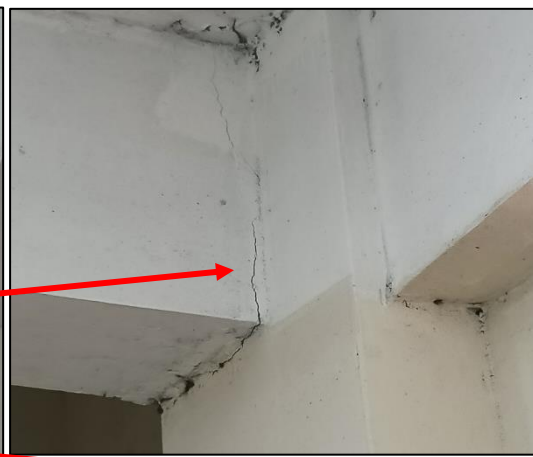
BNBC Minimum Live Load Table



Factory Building

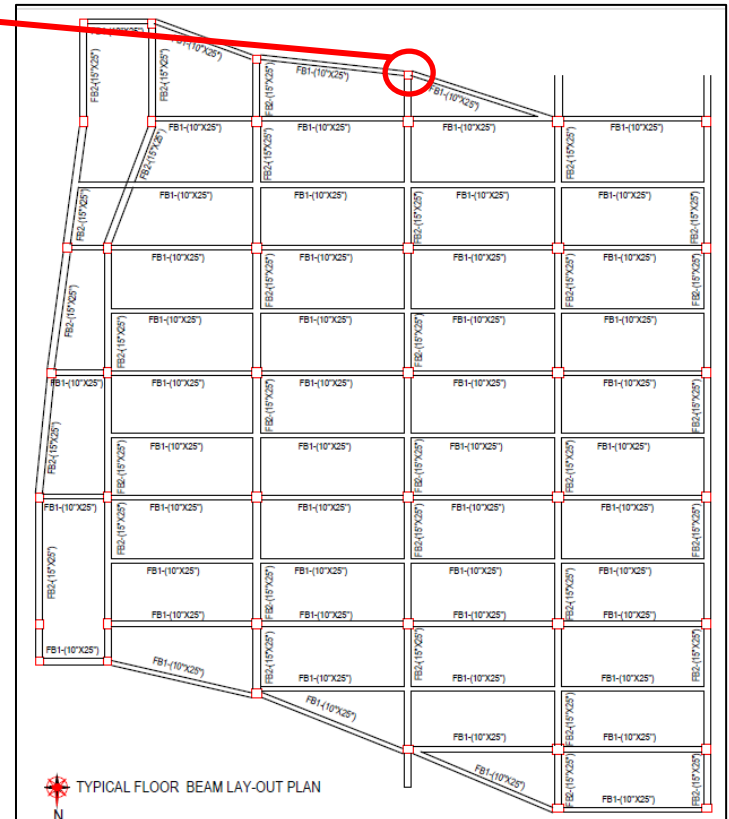
As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2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

Crack in beam-column joint



Crack found in Beam-Column Joint

Crack found in beam-column joint (4th floor level) at south side of the building may caused due to poor workmanship. The factory engineer is required to investigate the causes of crack and repair with a suitable method.



Beam Layout Plan

Water proofing layer not found



The roof slab is made of brick chips aggregate. Water proofing layer has not been applied yet. The factory is required provide water proofing layer with adequate sloping on the roof.

Undocumented Boiler and Generator Room

Observation: Boiler & Generator Room

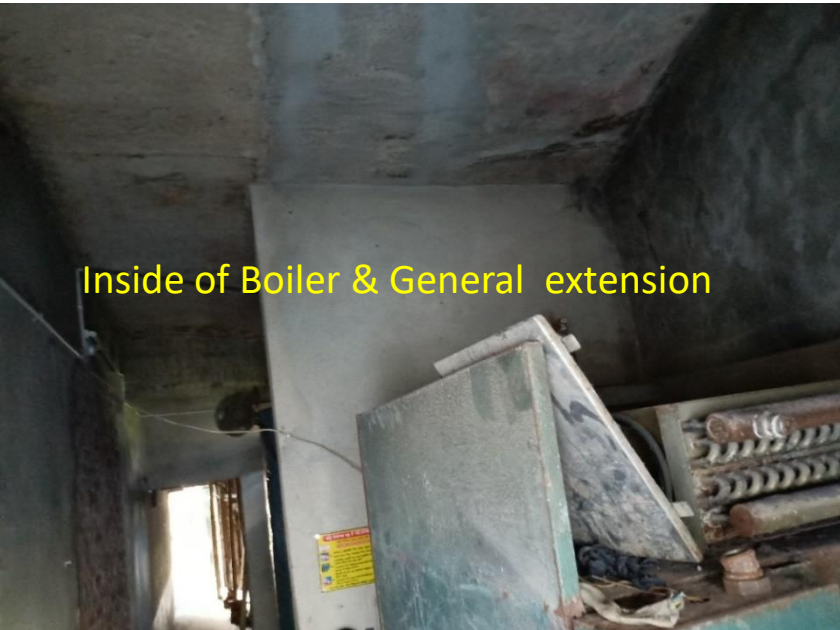
Undocumented single storied Boiler & Generator room was found at North side on ground floor level adjacent to the Ahsan Knitting Building. The roof of the boiler & generator room is supported by the cantilever portion of the Ahsan Knitting Building and boundary wall.

Building engineer is required to prepare as built drawings for the Boiler & Generator room and check the adequacy of the cantilever slab of Ahsan knitting building that supports the roof of the Boiler & Generator room.



Factory Building

Inside of Boiler & General extension



Boiler & Generator Building



Unsupported Lintel in Boiler & Generator Room

The Building engineer is required to check the capacity of unsupported lintel and suggest proper remedial actions.

Priority Action

Problems Observed

Ahsan Knitting Building:

Item-01: Incomplete geotechnical investigation report.

Item-02: Discrepancies in as built drawings.

Item-03: Prepared load plan do not comply with BNBC and lack of design report.

Item-04: Crack in beam-column joint.

Item-05: Water proofing layer not found.

Item-06: Undocumented Boiler and Generator Room.

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Incomplete geotechnical investigation report	The factory is required to provide credible geotechnical investigation report with all bore log data.	6-weeks
02	Incomplete geotechnical investigation report	Verify the foundation adequacy of the building.	6-weeks
03	Incomplete geotechnical investigation report	Implement remedial actions if necessary.	6-months
04	Discrepancies in as built drawings	Building engineer is required to survey the structure and prepare accurate as-built drawing in compliance with section 1.9.1.2 (part-6, BNBC).	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
05	Prepared load plan do not comply with BNBC and lack of design report	The building engineer is required to revise the live load plan as per BNBC requirement.	6-weeks
06	Prepared load plan do not comply with BNBC and lack of design report	Prepare the design report in compliance of section 1.9.1 of BNBC (part-6).	6-weeks
07	Prepared load plan do not comply with BNBC and lack of design report	Implement the recommendations of design report.	6-months
08	Prepared load plan do not comply with BNBC and lack of design report	Implement floor load plan.	6-months
09	Crack in beam-column joint	The building engineer is required to investigate the causes of crack and suggest a suitable remedial method.	6-weeks
10	Crack in beam-column joint	Carry out suggested remedial works.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
11	Water proofing layer not found	The factory is required provide water proofing layer with adequate sloping on the roof.	6-months
12	Undocumented Boiler and Generator Room	Building engineer is required to survey the structure and prepare accurate as-built drawing in compliance with section 1.9.1.2 (part-6, BNBC).	6-weeks
13	Undocumented Boiler and Generator Room	Building Engineer is required to check the capacity of cantilever slab.	6-weeks
14	Undocumented Boiler and Generator Room	The factory engineer is required to check the capacity of unsupported lintel.	6-weeks
15	Undocumented Boiler and Generator Room	Carry out required remedial works.	6-months