

Apparel 21 Ltd.

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(24.171452N, 90.415817E)

3rd May 2014



Observations

Temporary opening formed in Boiler building without propping

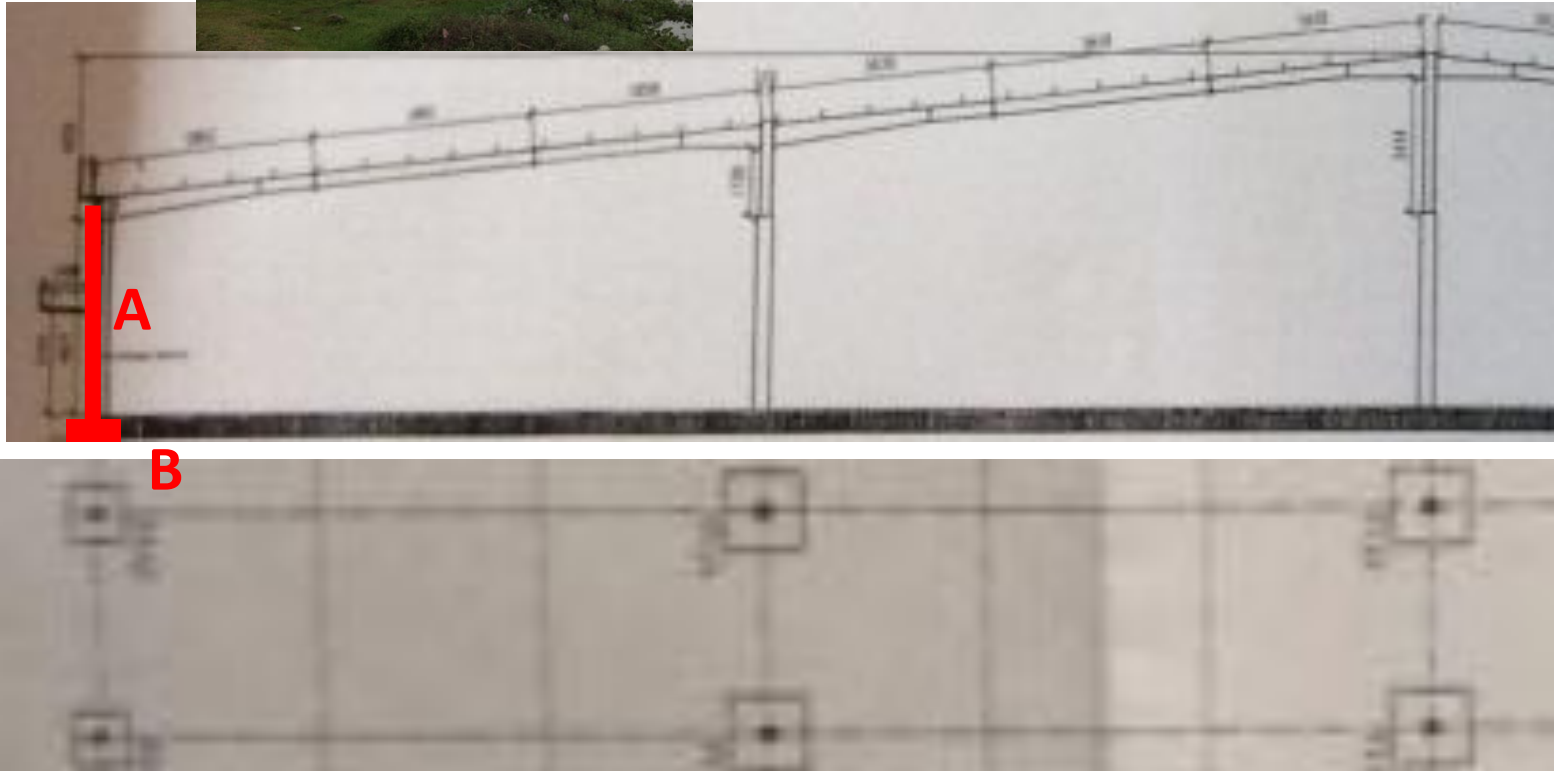
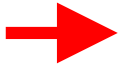


Opening without propping – Boiler building

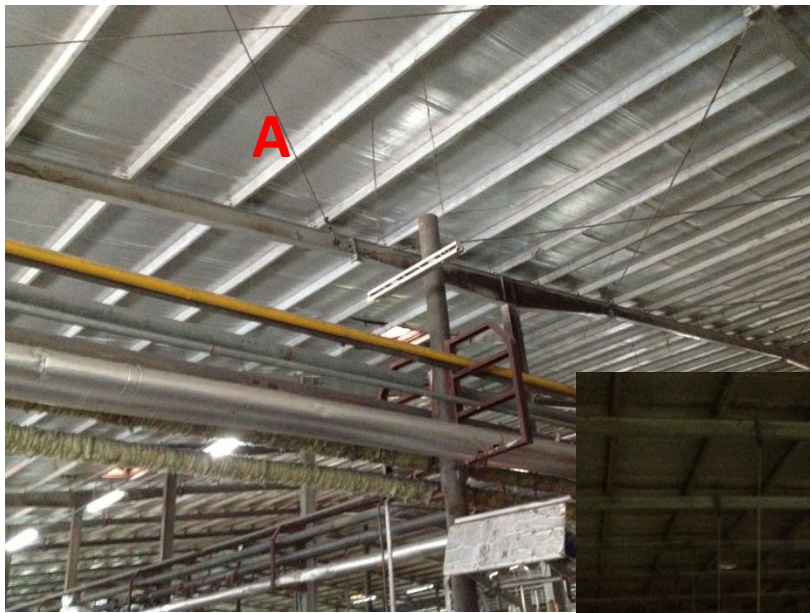
Lateral stability of Building 1 in E-W direction



- Lateral stability East-West relies on façade columns (A) cantilevering from small pad foundations (B).
- At the southern end of the building the curved structure along the W elevation (C) buttresses the columns, but most of this structure (D) has yet to be built.



Lateral stability of Building 1 in N-S direction

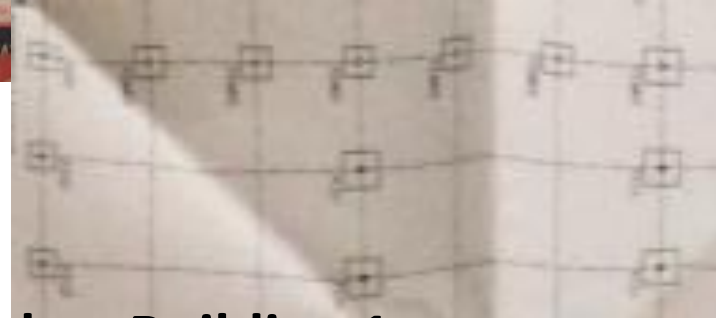


- In the North-South direction (36 bays), there is bracing across the width of the building (A) in bays 6 and 15 only.
- Vertical bracing missing – stabilised partially on West side.

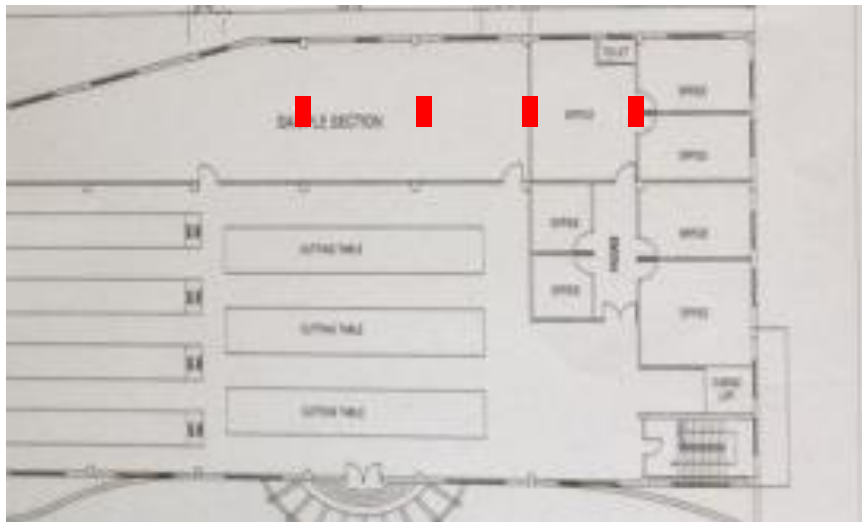


Lateral stability of North gable of Building 1

- Wind load on north gable is resisted by columns cantilevering from small pad foundations, as the mezzanine which buttresses the columns is not yet constructed.



Propped beams in Finish Fabric area of Building 2 (under 1st Floor Sample section)



- 4 Beams display a very small sag and flexural cracking towards mid-span.
- 4 brick props (A) have been installed at ground floor and 3 at first floor.
- Brick props appear to be built directly off ground slab with no other foundation .

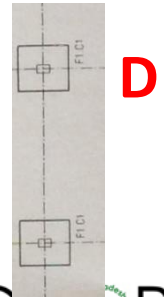
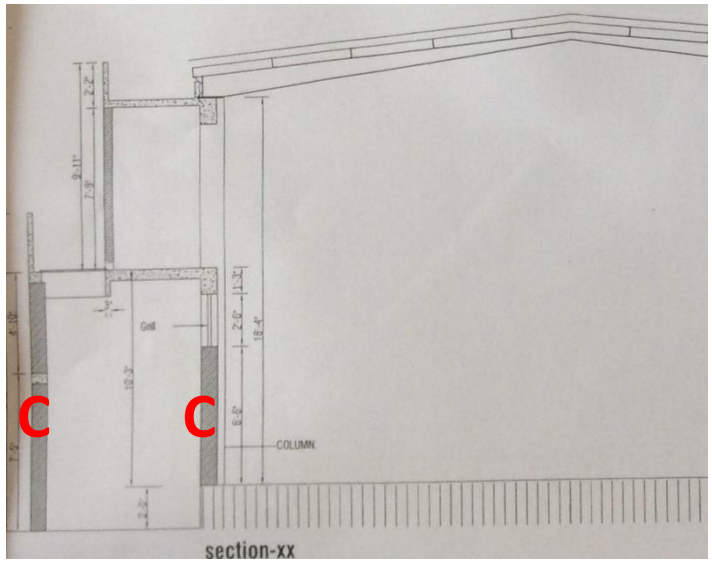


Propped beams

First floor cantilever to Generator building



- First floor cantilever (A) supporting brick façade does not have a backspan (B).
- Drawing suggests that this cantilever slab was actually intended to span between two lines of columns (C), but the outer line has not been constructed.
- Columns cantilever from small pads (D).



Stability of South gable of Boiler building

- Wind on gable will bend column (A) about its weak axis



Stability of gable – Boiler building

Priority Actions

Problems Observed

1. Prop temporary opening in wall of Boiler building
2. Lateral stability of Building 1
3. Wind load on gable walls of Building 1 and Boiler building
4. Edge cantilever of Generator building
5. Monitor performance of propped beams in Building 2

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Prop temporary opening in wall of Boiler building	Temporary opening to be propped. This was pointed out to the factory management on site.	Immediate - Now
2	Lateral stability of Building 1	Building engineer to check ability of column, wall and foundation structure on each side to resist E-W wind loading.	6-weeks
3	Lateral stability of Building 1	Building engineer to assess N-S stability of portal structure.	6-weeks
4	Lateral stability of Building 1	Building Engineer to advise on additional measures to provide structural resistance to lateral loads if required.	6-months
5	Wind load on gable walls of Building 1 and Boiler building	Building Engineer to check ability of the Building 1 gable columns and foundations to cantilever from ground to resist N-S wind loading.	6-weeks
6	Wind load on gable walls of Building 1 and Boiler building	A similar check is to be carried out on the gable walls for the Boiler building.	6-weeks
7	Wind load on gable walls of Building 1 and Boiler building	Building Engineer to advise on measures to stabilise gable columns and walls if required.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
8	Edge cantilever of Generator building	Building Engineer to check ability of facade columns and edge beams to resist bending and torsion from the first floor edge cantilever.	6-weeks
9	Edge cantilever of Generator building	Building Engineer to advise on remedial measures for cantilever slab structure if required.	6-months
10	Monitor performance of propped beams in Building 2	Building engineer to monitor behaviour of propped beams in Finish Fabric area (S-E side) of Building 2, and record any settlement of brick props or further deflection of beams.	6-weeks
11	Monitor performance of propped beams in Building 2	Building Engineer to provide remedial works to ensure effective propping of beams if required.	6-months