

Croydon-Kowloon Designs Ltd

Plot# 285-288, Dhaka EPZ (Extension Area), Ganakbari, Ashulia, Savar, Dhaka
(23.946883N, 90.274114E)

8th July 2019





Observation



Overall stability of the building



Partially fixed in N-S/ Short Direction



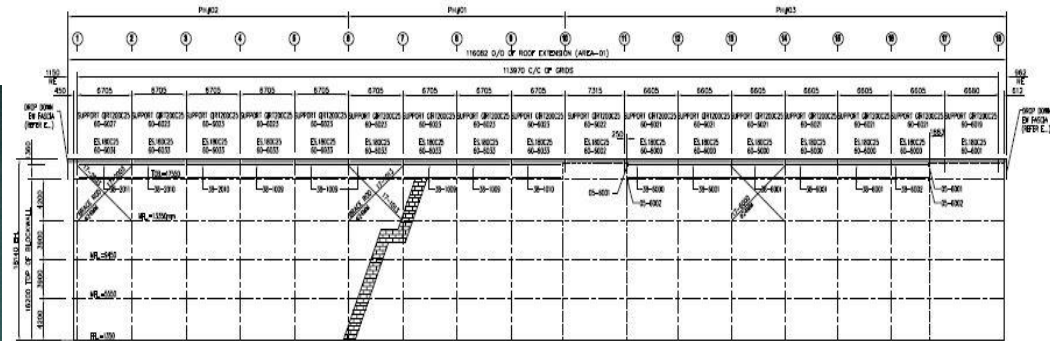
Pin/hinge Connection in E-W/ Long Direction



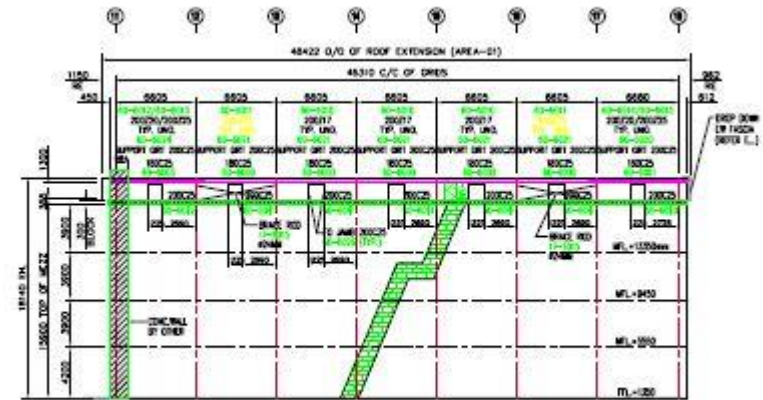
Pin/partially fixed Connection at beams and column joint connected by shear cleat and bolts. Apparently partial moment resisting frame action may govern that may affect the stability.



No vertical bracing/lateral load resting system in any long direction.



NEAR SIDE WALL FRAMING ELEVATION (GRID LINE A)

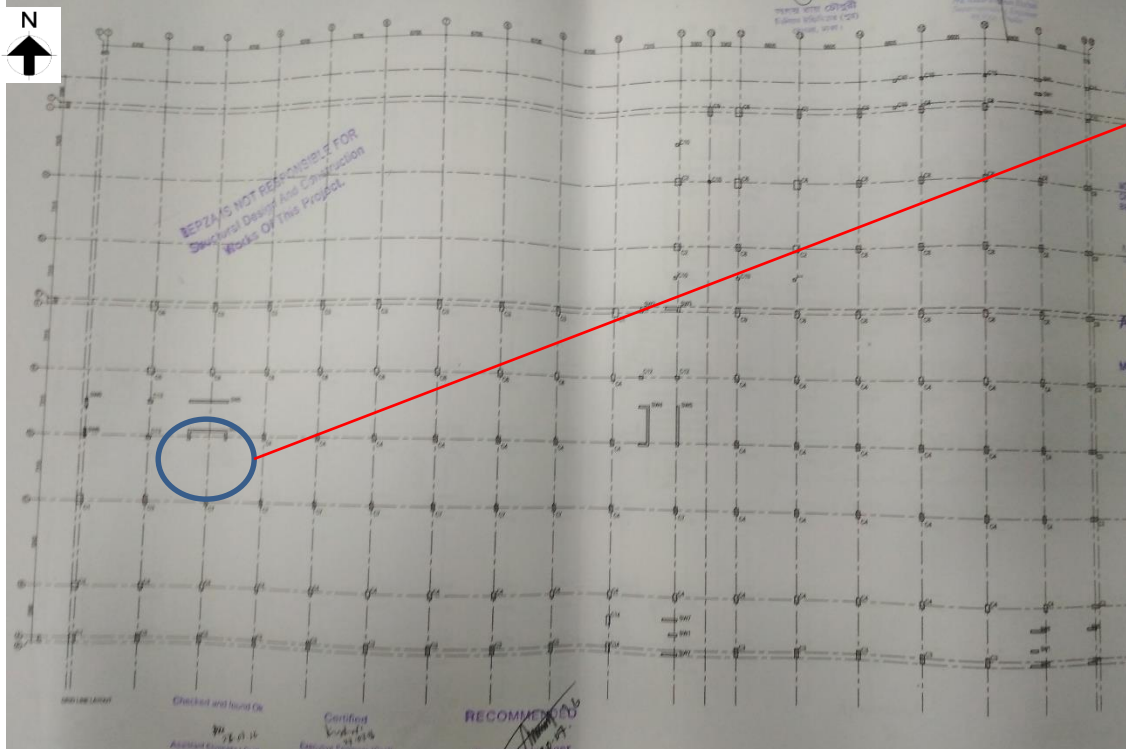


NEAR SIDE WALL FRAMING ELEVATION (GRID LINE F)

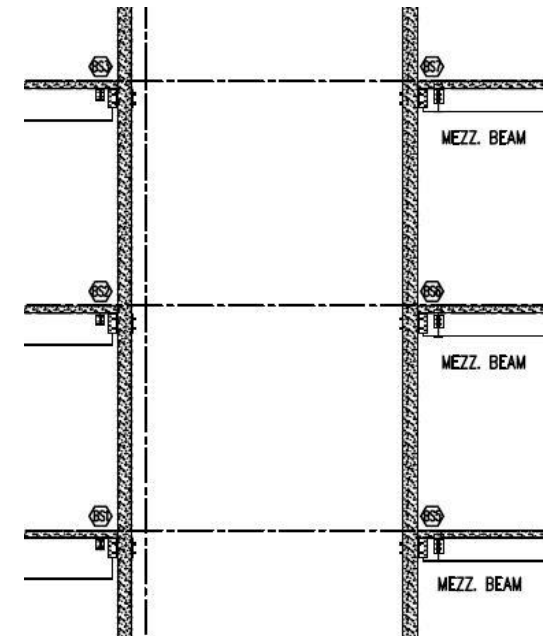
Vertical bracing only in 3rd floor of portal frame.



Steel beams in the several grids are connected to the RC walls. Design report was not available to determine the contribution of RC wall and diaphragm action in lateral stability system.



Column and RC wall layout plan



Connection between steel beam and RC wall

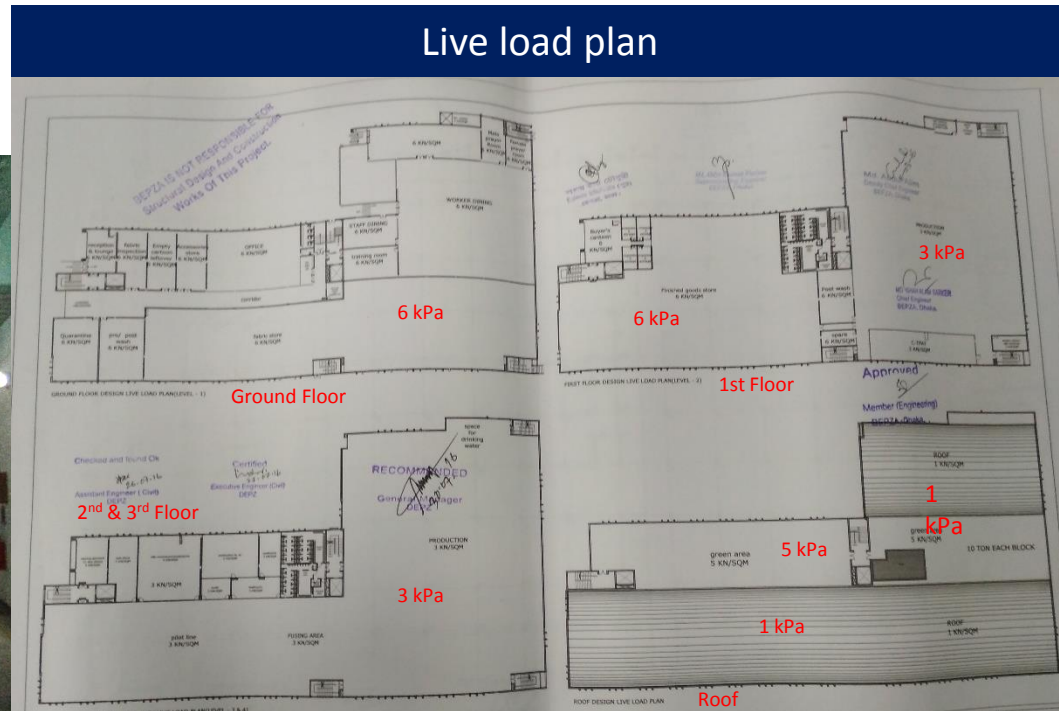
Building engineer is required to check the overall stability system and the connections.



Steel plate test for column capacity



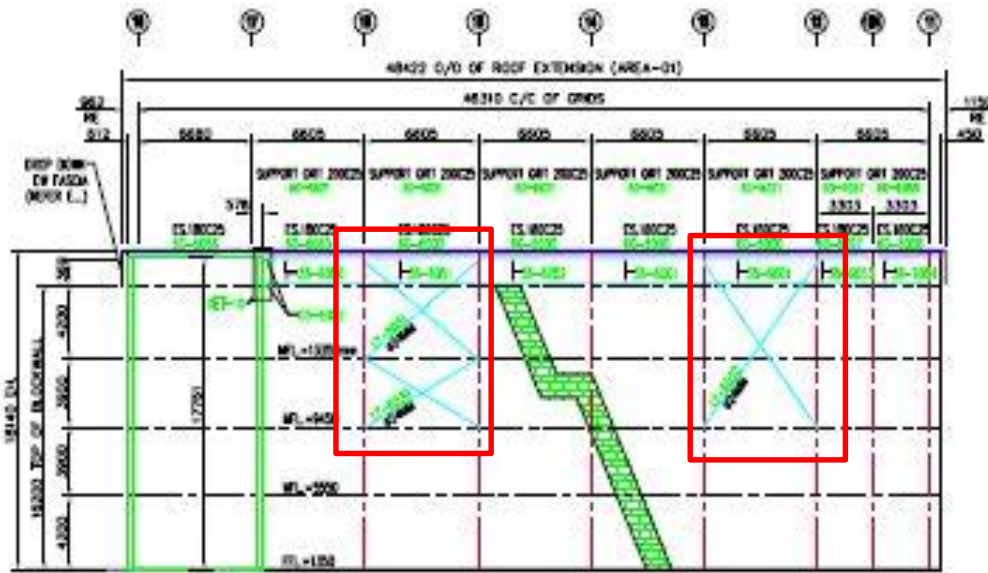
Ground floor column



During inspection, steel plate test report was not available. Cursory calculation indicates that the working stress of ground floor steel columns (considering $f_y=248$ Mpa (36 ksi)) are above the normal design limits. However, calculation indicates that the working stress of ground floor steel columns are satisfactory by considering the $f_y=345$ MPa (50 ksi). Building engineer is required to carryout plate load test to confirm the steel grade and review the design based on the test report.



Wall bracing plan at grid-J



Wall bracing between in grid J-15~16 & 12~13 does not match with the onsite condition. This bracings were not found on 2nd floor.

Roof

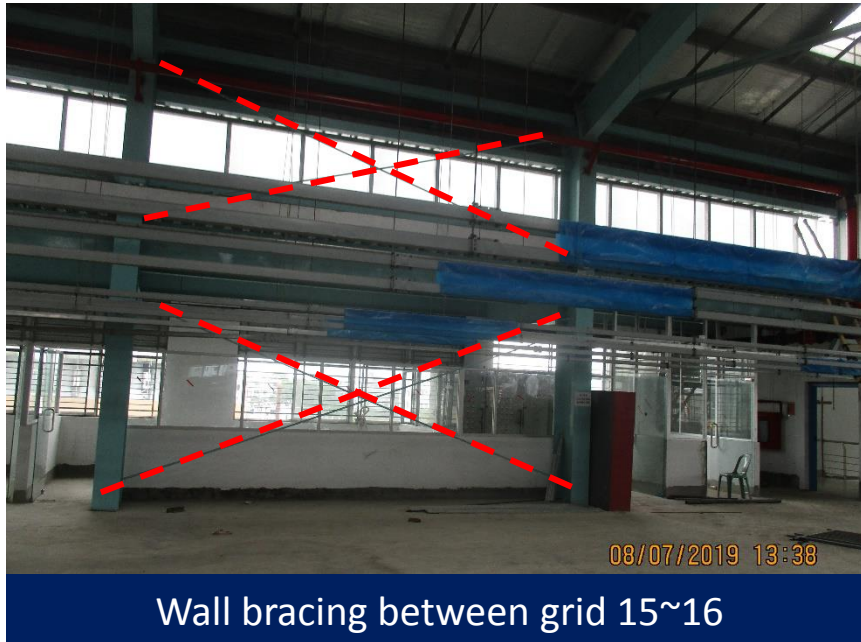
3rd Floor

2nd Floor

1st Floor

Ground Floor

FAR SIDE WALL FRAMING ELEVATION (GRID LINE J)



Roof

3rd Floor

Wall bracing between grid 15~16



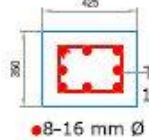
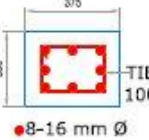
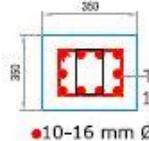
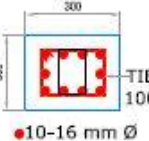
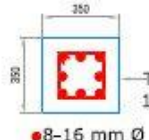
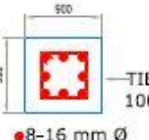
Wall bracing between grid 12~13



Column sizes not matched with site condition



SCHEDULE OF COLUMN REINFORCEMENT

NAME OF COLUMN	UP TO P.L	ABOVE P.L
C1	 TIE 10mmØ @ 100~150mm C/C ●8-16 mm Ø	 TIE 10mmØ @ 100~150mm C/C ●8-16 mm Ø
C2	 TIE 10mmØ @ 100~150mm C/C ●10-16 mm Ø	 TIE 10mmØ @ 100~150mm C/C ●10-16 mm Ø
C3	 TIE 10mmØ @ 100~150mm C/C ●8-16 mm Ø	 TIE 10mmØ @ 100~150mm C/C ●8-16 mm Ø

NOTES:

$f_c = 3.5 \text{ KSI}$, $f_y = 72.5 \text{ KSI}$

CASTING RATIO :

CEMENT : SAND : AGGREGATE- 1:1.5:3

USING STONE CHIPS AS AGGREGATE.

CLEAR COVER FOR COLUMN = 38mm



345 mm
with
render

C1 column measured
300mm X 300 mm
instead of 300 mm X
375 mm

C3 measured 300 mm X 300 mm
900 mm X 900mm shown on drawing



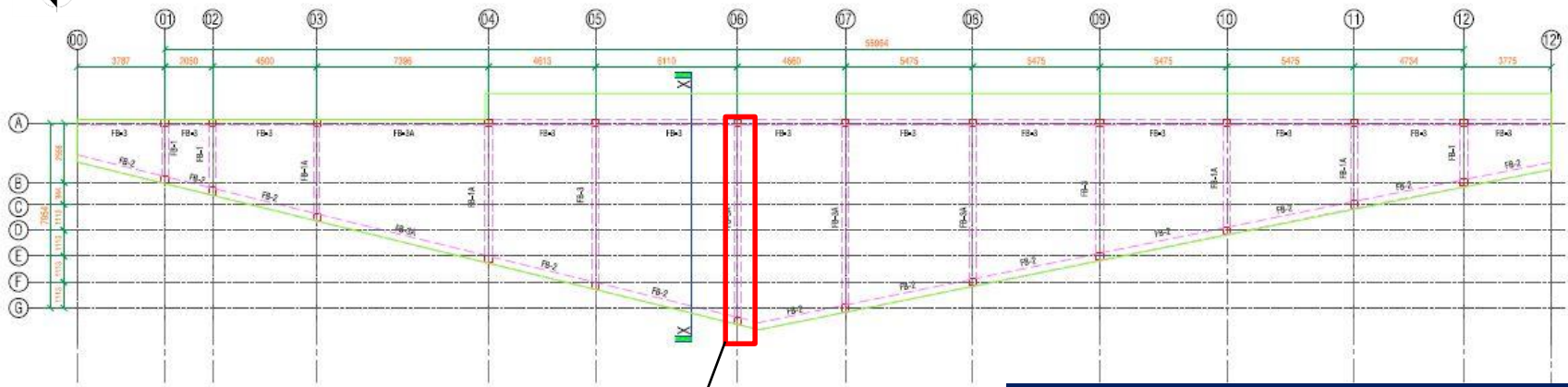
Missing floor beam and tie beam



Tie beam layout plan



Tie beam missing



FLOOR BEAM LAYOUT PLAN

Floor beam layout plan



Floor beam missing

The missing beam makes the slab span of 10.2 m X 6.85m .



Priority Action



Problem Observed

Factory building:

- 1: Overall stability of the factory building.
- 2: Steel plate test for column capacity .
- 3: Wall bracing plan at grid-J.

Utility Building:

- 4: Column size not matched.
- 5: Missing floor beam and tie beam.



Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Overall stability of the building (Factory Building)	Factory engineer is required to check stability of the existing structure taking into consideration the adequacy of the connections.	6-weeks
2	Overall stability of the building (Factory Building)	Carryout remedial works arise from Engineering Assessment where necessary.	6-months
3	Steel plate test for column capacity (Factory Building)	Building engineer is required to perform the steel plate test to confirm the steel grade.	6-weeks
4	Steel plate test for column capacity (Factory Building)	Review the design based on the test report.	6-weeks
5	Steel plate test for column capacity (Factory Building)	Carry out any repair work according to suggestion of factory engineer	6-months



Item No.	Observation	Recommended Action Plan	Recommended Timeline
6	Wall bracing plan at grid-J (Factory Building)	Review the bracing system as part of Engineering Assessment.	6-weeks
7	Wall bracing plan at grid-J (Factory Building)	Update the as-built drawings as per site condition.	6-weeks
8	Wall bracing plan at grid-J (Factory Building)	Carryout remedial works where necessary.	6-months
9	Column sizes not matched with site condition (Utility Building)	Building engineer is required to survey the structure and prepare as built drawings.	6-weeks
10	Missing floor beam and tie beam (Utility Building)	Install the missing floor and tie beams as part of the remedial scheme.	6-weeks