

Orbitex Knitwear Ltd Debonair Ltd

Gorat, Sarker Market Road, Ashulia, Dhaka - 1341
(N23.943, 90.305E)

01 June 2014



Observations

Risk of vehicle accidentally colliding with the columns to the delivery area.

At ground level, the delivery and parking area is located between columns, and no barrier was in place to protect the columns from vehicle collision.

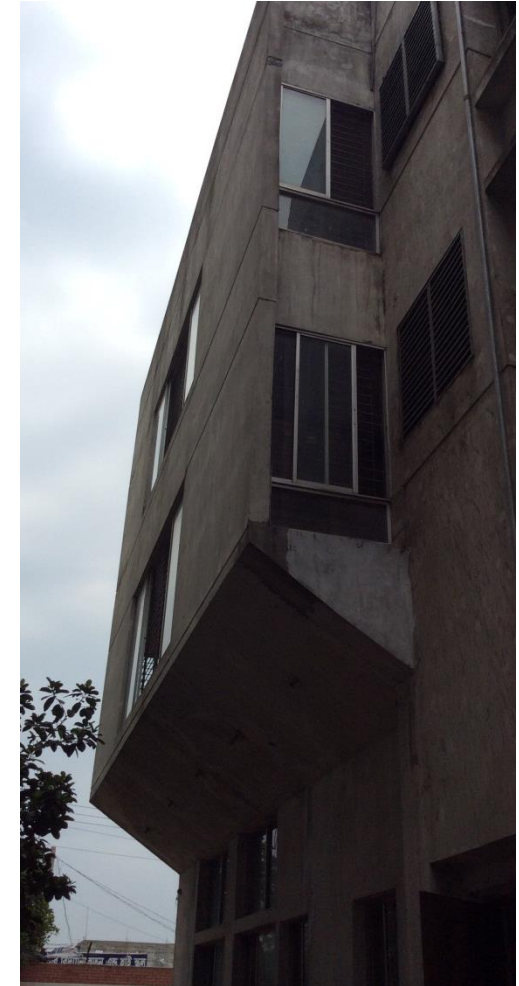
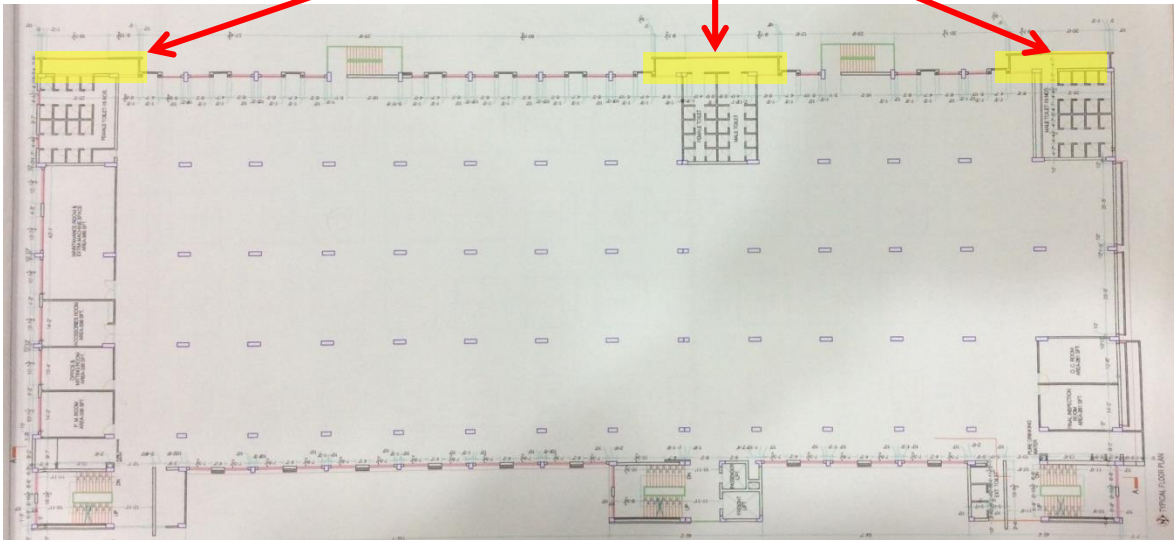


Columns vulnerable to collision loading

Design check for cantilever structures on north facade.

The structural design of the cantilever extensions along the northern elevation of the main building could not be verified by observation alone. A more detailed investigation into the structure will be required to verify the structural adequacy.

Locations of cantilever structures



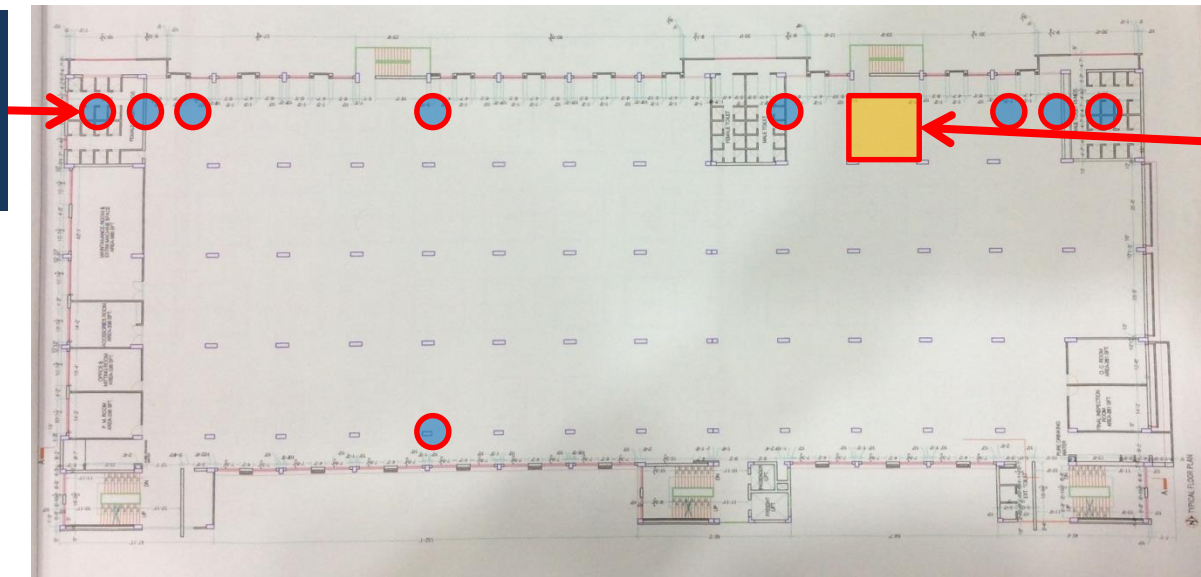
Design check for slab loading in areas noted.

Nine water tanks (5000lts each) were observed on roof level at various locations. Some were positioned directly above columns, whilst others were positioned within the bays between columns. The plinths that the tanks are positioned on varied significantly in height.

Several bays of storage were observed on level 2. Material was generally stacked to a high level.

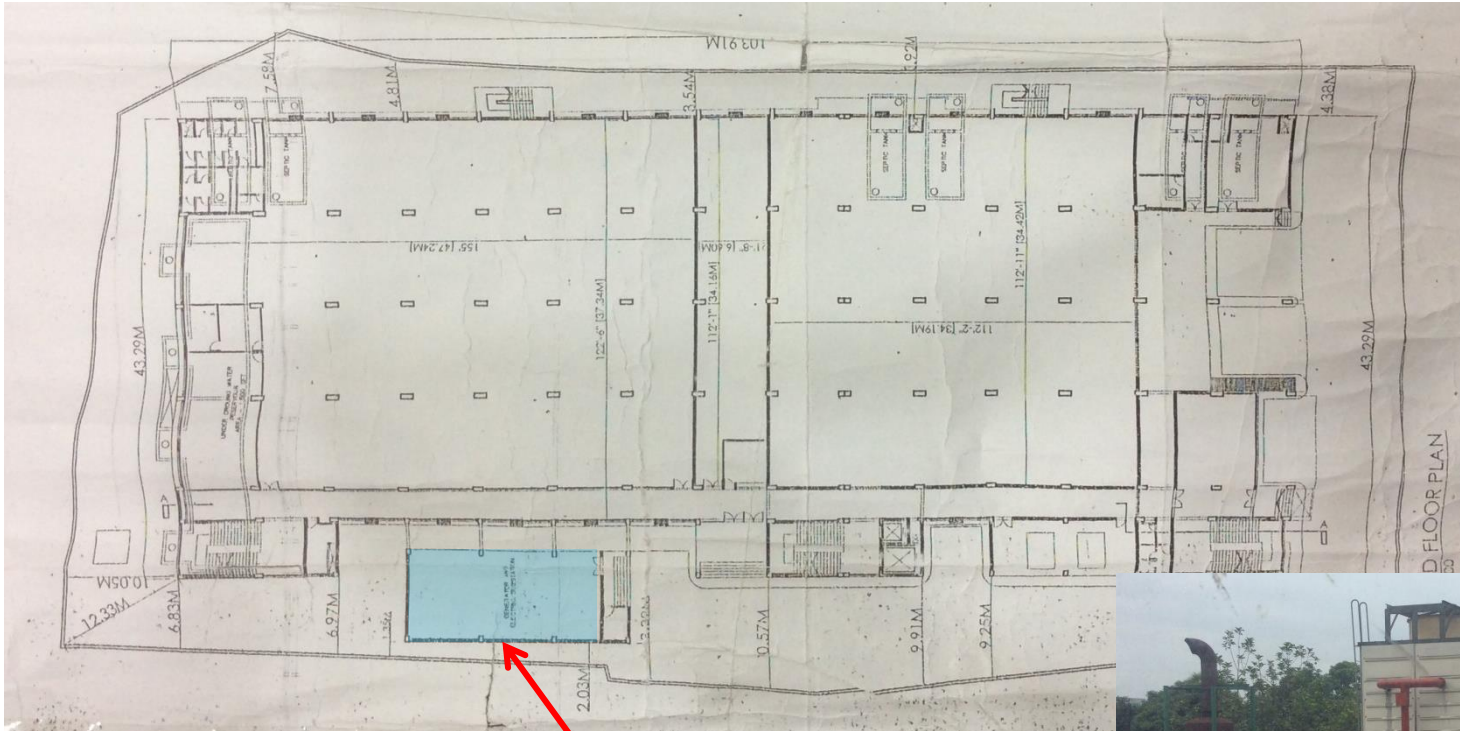


Approximate water tank locations (roof level)



Location of most significant storage area (L2)

Water tanks and a Chiller were located on the roof slab of the Generator Building



Location of generator building



It is noted that the building has permit approval for 3 additional storeys. Any proposed additions to the existing building structure should be reviewed by the Building Engineer

The Building Permit drawings allow for 6 storeys. 3 Storeys plus a shed at roof level are presently constructed.

Storeys allowed to be constructed according to Permit Drawings

Rebar had been exposed at roof level, in anticipation of expansion upwards



A steel shed (with masonry walls) is currently in place on level 3 of the building. This will be demolished to allow for construction of additional concrete slabs

Storeys constructed on day of inspection

Design check for the light steel roofs to the Dining/ Prayer Room/ Storage Building.

Various steel roof structures across the site.



Storage Shed – steel roofing on timber purlins positioned on concrete columns



Dining/Prayer room – roof truss appeared to be hanging from box section columns



Edge protection to the stairs and roof drainage.

There was no apparent roof drainage system. This was the case for the Main Building as well as the Generator Building – both had concrete roofs supporting water tanks.

Edge protection was not in place on the stairs of the Main Building or on the roof of the Generator Building.



Roof of Main Building, with no clear drainage strategy



Roof of Generator Building, with no edge protection and water tanks positioned directly onto the slab



Lack of edge protection on stairs of main building

Inconsistencies were noted between the Structural drawings and the as-constructed building on site.

Column dimensions were seen to vary across the building, and were generally larger than structural drawings suggested. The rebar content was observed to be less than was shown on column schedules.

COLUMN SIZE & REINF. SCHEDULE

INDEX	COLUMN SIZE & REINFORCEMENT			
	BELOW G.B.	GROUND TO 1ST FLOOR	2ND TO 3RD FLOOR	4TH TO 5TH FLOOR
C - 1	10-20mmØ 23" x 18"	10-20mmØ 20" x 15"	8-20mmØ 20" x 15"	8-20mmØ 20" x 15"
C - 2	16-25mmØ 33" x 18"	16-25mmØ 30" x 15"	14-25mmØ 30" x 15"	14-25mmØ 30" x 15"
C - 3	16-25mmØ 38" x 18"	16-25mmØ 35" x 15"	14-25mmØ 35" x 15"	14-25mmØ 35" x 15"
C - 4	22-25mmØ 49" x 18"	22-25mmØ 46" x 15"	20-25mmØ 46" x 15"	20-25mmØ 46" x 15"
	25" x 13" x 12" 12-20mmØ	22" x 10" x 12" 12-20mmØ	22" x 10" x 12" 12-20mmØ	22" x 10" x 12" 12-20mmØ

C-4 column sizes varied across ground floor, but were generally seen to be larger than specified here. Ferros scanning indicated that 14 bars were present, rather than the 22 shown here.

Priority Actions

Problems Observed

ITEM 1: Risk of vehicle accidentally colliding with the columns to the delivery area.

ITEM 2: Design check for cantilever structures on north facade.

ITEM 3: Design check for slab loading in areas noted.

ITEM 4: It is noted that the building has permit approval for 3 additional storeys. Any proposed additions to the existing building structure should be reviewed by the Building Engineer.

ITEM 5: Design check for the light steel roofs to the Dining/ Prayer Room/ Storage Building.

ITEM 6: Edge protection to the stairs and roof drainage.

ITEM 7: Inconsistencies were noted between the Structural drawings and the as-constructed building on site.

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Risk of vehicle accidentally colliding with the columns to the delivery area	Building Engineer to check that the columns have been adequately designed for impact loading	6-months
2	Risk of vehicle accidentally colliding with the columns to the delivery area	Suitable column protection barriers to be designed and constructed.	6-months
3	Design check for cantilever structures on north facade	The Building Engineer is to carry out a full design check of the cantilever structure and produce detailed drawings for the structural support as this is not presently shown in sufficient detail on the structural drawings.	6-months
4	Design check for slab loading in areas noted	The Building Engineer is to carry out a full design check on the slabs and beams in the areas noted to confirm their ability to transfer the loadings back to the columns.	6-months
5	Design check for slab loading in areas noted	The Building Engineer is to produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-months
6	It is noted that the building has permit approval for 3 additional storeys. Any proposed additions to the existing building structure should be reviewed by the Building Engineer	If any additions to the building structure are proposed, the Building Engineer shall provide calculations showing the structural adequacy of all columns taking into account any additions to the existing structure, the loading plans and as built structure, including in-situ concrete strength testing.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Design check for the light steel roofs to the Dining/ Prayer Room/ Storage Building.	The Building Engineer is to assess the structural adequacy of the light steel roof structures to resist lateral wind loading (pressure, suction and uplift).	6-months
8	Design check for the light steel roofs to the Dining/ Prayer Room/ Storage Building.	Any works deemed necessary following the above assessment to be implemented on site and overseen by the Building Engineer.	6-months
9	Edge protection to the stairs and roof drainage	The Building Engineer is to design an appropriate edge protection system and to oversee its construction on site.	6-months
10	Edge protection to the stairs and roof drainage	The Building Engineer is to design and oversee the construction of an appropriate rain water drainage system for the roofs to prevent water damage to the building.	6-months
11	Inconsistencies were noted between the Structural drawings and the as-constructed building on site	Building Engineer to check, collect information and produce accurate and fully complete as-built documentation.	6-months