Deluxe Fashions Ltd

178/179 Baizid Bostami Road, Nazirabad Area, Chittagong
(22.39048N, 91.81110E)

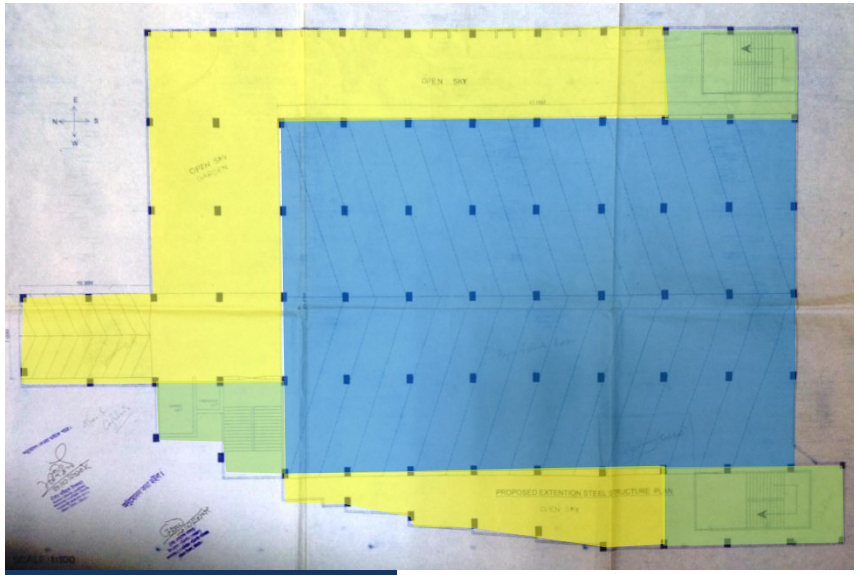
18 March 2014

ACCORD on Fire and Building Safety in Bangladesh

ARUP

Observations

Columns at the building corners and columns which support the concrete water tanks appear to be stressed in excess of normal design limits



Typical column layout & Water Tank Layout

Cursory calculations indicate column working stress is in excess of normal design limits – for columns at the building corners and columns which support the concrete water tanks

Building Engineer is to perform detailed calculations and concrete tests to prove column size and (if required):

- **Reduce loads by vacating floors**
- **Reinforce columns**

Water Tanks

Tested Basement Column – Stone Chips

Column Strength

Management of Storage Loads

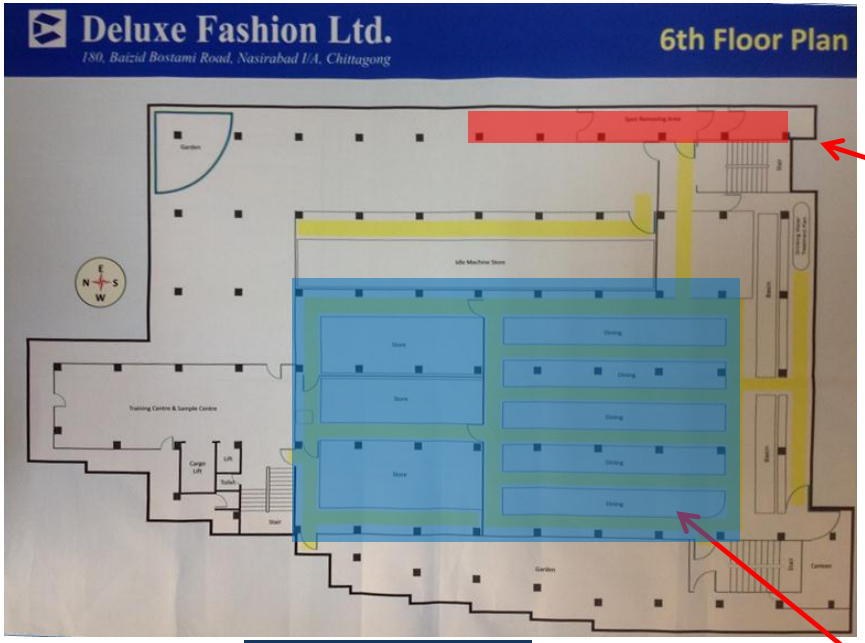
2th Floor Storage Area

Building Engineer to prepare controlled loading plans for all floors which will designate where storage can be placed.

Ground Floor Storage Area

Management of Storage Loads

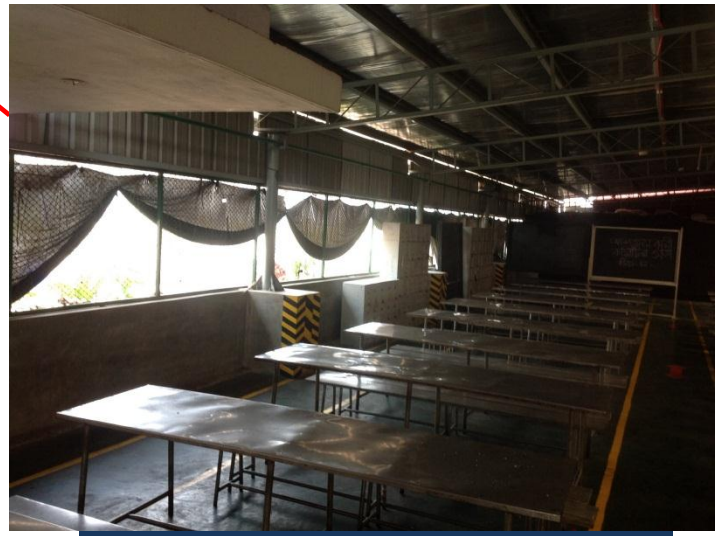
Stability of Roof Support Structures



6th Floor Plan

Lean-to structure on 6th Floor

Steel structure used for dining on the roof does not appear to have any vertical bracing. Also, lean-to structure appears to be non-engineered. Building Engineer to review both issues.



Steel structure on 6th Floor with no vertical bracing

Stability of Roof Support Structures

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Inconsistencies between structural drawings and the as-constructed arrangement of the factory

Mezzanine structure not shown on structural drawings.

Mezzanine support column applies point load to Ground Floor suspended slab – which also supports heavy storage loads. Building Engineer to review design of ground floor slab.

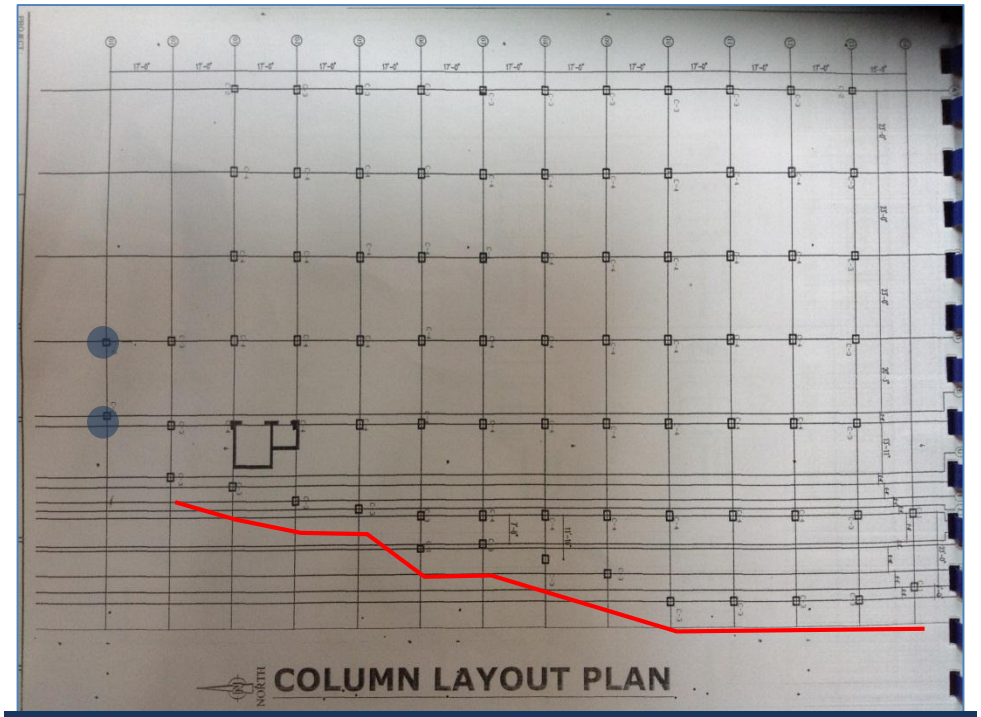
Steel structure at roof level not shown on structural drawings.

Building Engineer to survey as-built structure and update drawings including verification of steel structure at roof level and mezzanine level.

Structural Drawings

While they are shown on the structural drawing, there are no secondary beams at soffit of 6th floor slab.

Building Engineer to survey as-built structure and update drawings.



The columns at the front of the retail units are not shown on any drawings and there are no details of the foundations to these columns. Approximate line of these columns is shown in red. Columns highlighted in blue are circular and not rectangular as shown on the drawings.

Structural Drawings

Columns in the ground floor entrance area are susceptible to impact from delivery vehicles

The columns to the north of the building are susceptible to impact loading from vehicles. Building Engineer to review.

Unprotected columns at north end

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Priority Actions

Problems Observed

ITEM 1: Columns at the building corners and columns which support the concrete water tanks appear to be stressed in excess of normal design limits

ITEM 2: Management of storage loads

ITEM 3: No vertical bracing of the steel roof support frame over the dining area was evident and the stability of the lean-to structure at roof level should be reviewed.

ITEM 4: Inconsistencies between structural drawings and the as-constructed arrangement of the factory

ITEM 5: Columns in the ground floor entrance area are susceptible to impact from delivery vehicles

Item No.	Observation	Recommended Action Plan	Priority
1	Columns at the building corners and columns which support the concrete water tanks appear to be stressed in excess of normal design limits	Factory Engineer to review design, loads and columns stresses in area identified above.	**6-weeks**
2	Columns at the building corners and columns which support the concrete water tanks appear to be stressed in excess of normal design limits	Verify insitu concrete strengths (using min. 4 no. 100mm dia. Cores) and existing reinforcement for all columns.	**6-weeks**
3	Columns at the building corners and columns which support the concrete water tanks appear to be stressed in excess of normal design limits	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	**6-weeks**
4	Columns at the building corners and columns which support the concrete water tanks appear to be stressed in excess of normal design limits	Continue to implement load management plan	**6-months**

Item No.	Observation	Recommended Action Plan	Priority
5	Management of storage loads	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	**6-weeks**
6	Management of storage loads	Continue to implement load management plan	**6-months**
7	No vertical bracing of the steel roof support frame over the dining area was evident and the stability of the lean-to structure at roof level should be reviewed.	Steel roof to Dining Area and lean to structure at roof level, design should be checked by the Building Engineer to confirm that it includes an appropriate lateral stability system and, if required, the steel frame should be upgraded to support code vertical and wind loads.	**6-weeks**
8	Inconsistencies between structural drawings and the as-constructed arrangement of the factory	Building Engineer to survey as constructed building. Updated drawings to be prepared showing the correct as constructed layout.	**6-weeks**
9	Inconsistencies between structural drawings and the as-constructed arrangement of the factory	Prepare/update calculations showing the structural adequacy of the building structure taking into account the factory design imposed loading and the as built structure.	**6-months**
10	Inconsistencies between structural drawings and the as-constructed arrangement of the factory	Prepare controlled loading plans for all floors designating where storage can be placed and can not be placed	**6-months**
11	Columns in the ground floor entrance area are susceptible to impact from delivery vehicles	Building Engineer to review column design and potential for vehicle impact to columns adjacent to material delivery area. If appropriate impact protection to be provided.	**6-months**