

Bangla Poshak Ltd.

Sikder Complex, Chaidana, National University, Gazipur, Bangladesh
(23.961573, 90.380068)

29 March 2014



Observations

Highly stressed columns

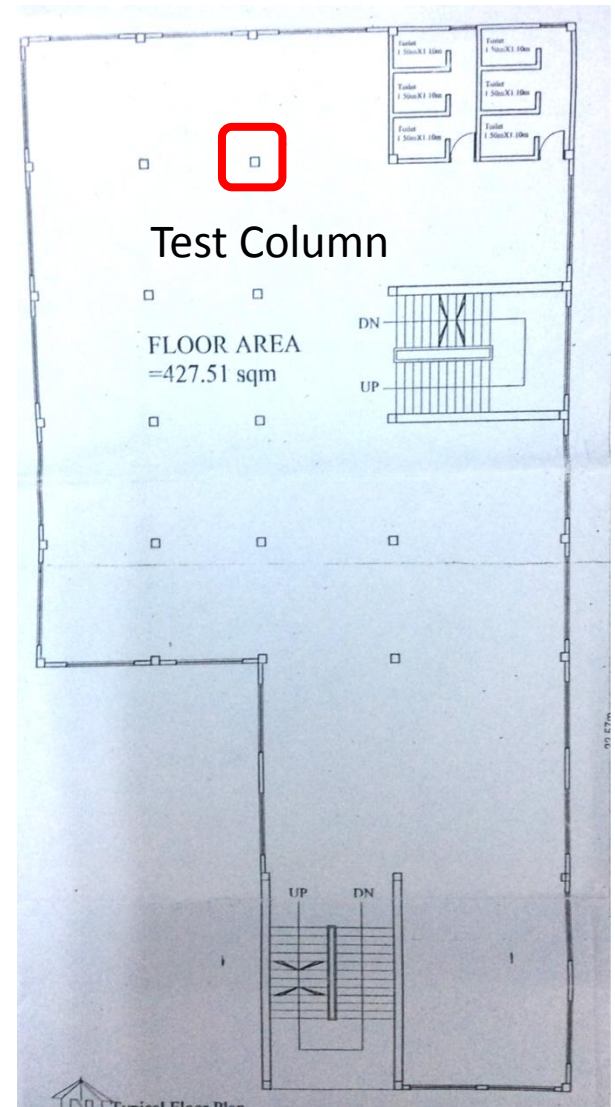


**Tested column at
ground level- Brick
aggregate observed.**

**Preliminary calculations indicate that the working
stresses in some columns are at a high level.**

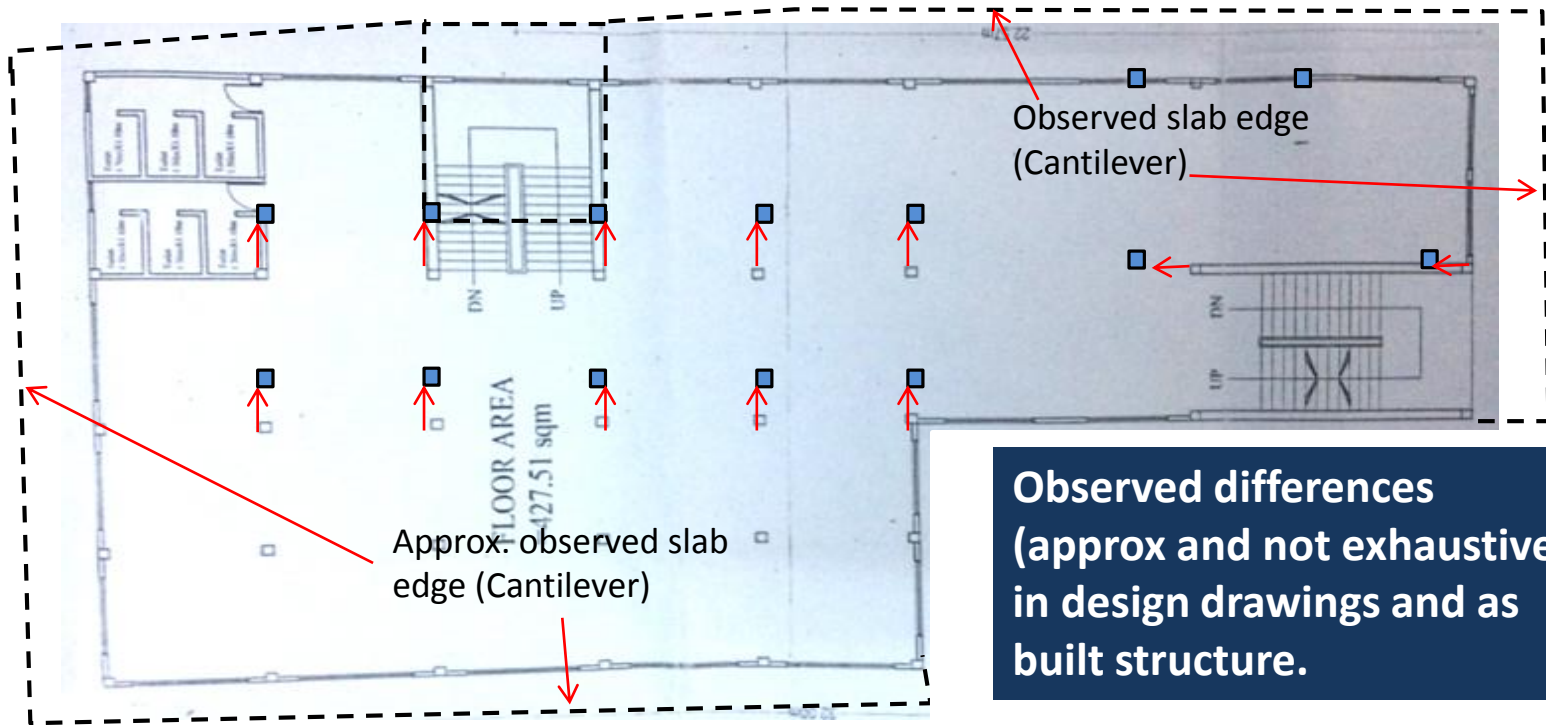
**Building Engineer to check that columns have been
designed to accommodate applied loads including
edge cantilevers and areas of heavy loading.**

Brick aggregate observed.



Typical Column Layout

Differences between as-built structure and design drawings provided

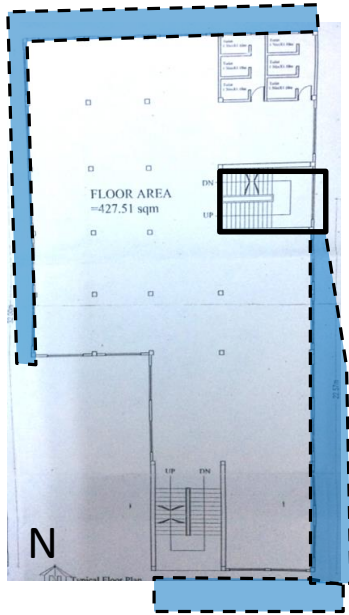


Design drawings are not consistent with the as-built structure

Differences in column locations and sizes, edge cantilevers, core locations and reinforcement arrangement observed.

Accurate set of as-built documentation required

Undocumented cantilever slabs



Cantilever slabs at all levels.



Typical Edge cantilever supporting brick facade.

Cantilever at south facade.

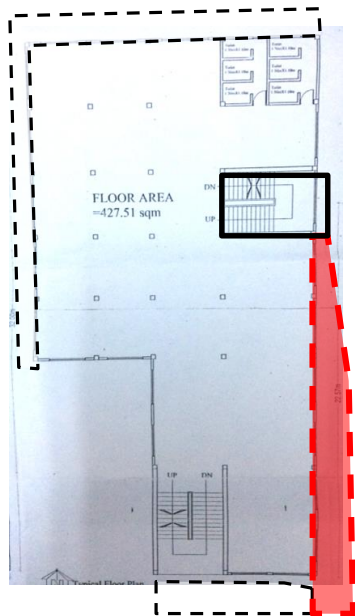


West stair cantilever.

Undocumented cantilever slabs and stair observed beyond column lines in a number of locations at all levels of the building.

Brick masonry facade weight supported at the tip of cantilevers.

Undocumented cantilever slabs



West slab cantilever.

On west facade it is unclear at ground level whether the edge is a cantilever or whether supported off an additional line of columns. Design review required.



Undocumented cantilever slabs

Localised areas of high loading

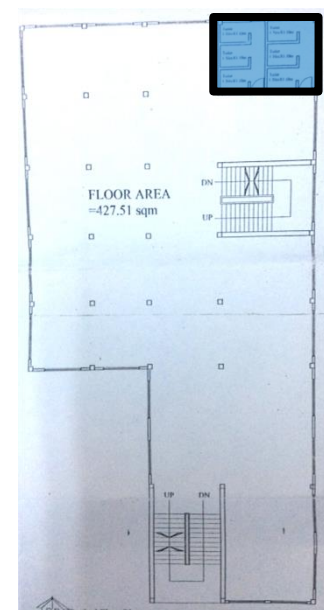


**Increased floor build-up in toilet block areas
(~300mm general to ~450mm in cubicles).**

**Partition walls around block and between
additional cubicles**

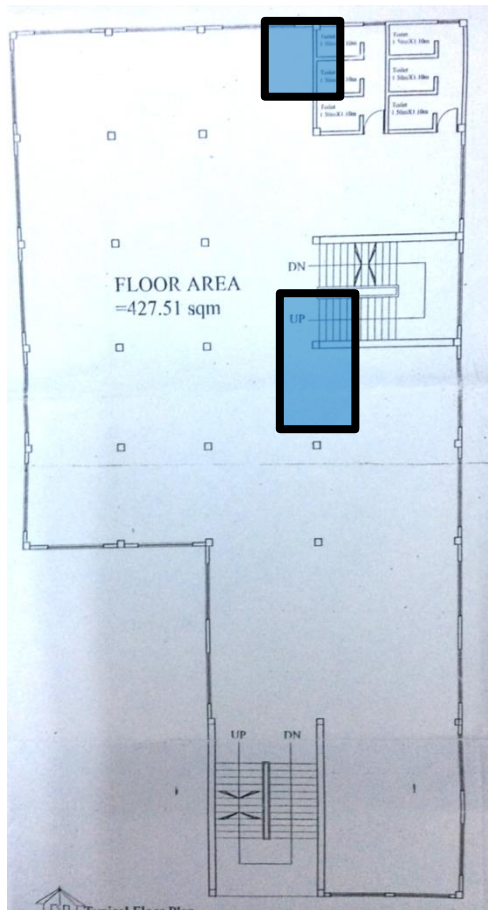


**Typical floor build up in
toilet areas and
additional step up in
cubicle.**



**Typical toilet block location.
Arrangement not as shown
on drawings.**

Water tank storage at roof level



Water Tank Locations



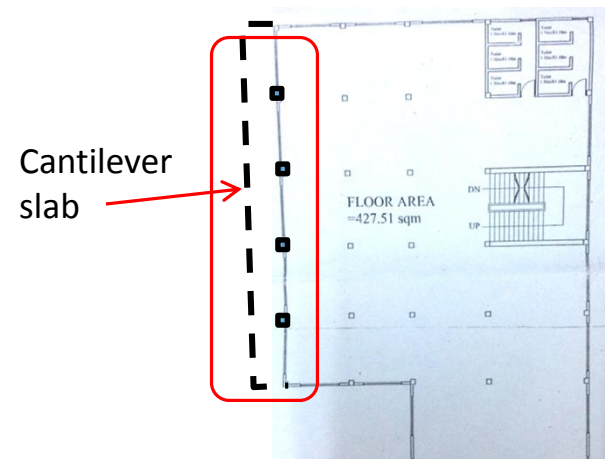
Tank storage

Cracking above slab at columns.



Cracking in a number of areas, including area outlined below, in tiles above flat slab junction with columns – area of high slab stresses.

Design check of slabs required for bending moments and punching shear forces.



Cracks observed – 3rd Floor

Cracking over slabs around columns

Unrestrained parapets at roof level



**Single brick masonry
parapets unrestrained at
roof level around
perimeter of the building.**

**Wall is not tied into
columns.**



Unrestrained roof parapets

Priority Actions

Problems Observed

ITEM 1: Highly stressed columns

ITEM 2: Cracking above slabs around columns.

ITEM 3: Building documentation does not match as built structure and undocumented cantilever slabs.

ITEM 4: Localised areas of high loading in all buildings.

ITEM 5: Unrestrained parapet at roof level

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Highly stressed columns	Building Engineer to review design, loads and columns stresses including any additional loading as documented in the observations chapter.	6-weeks
2	Highly stressed columns	Verify in situ concrete strength either by 75mm/100mm diameter cores from a minimum 4 columns or existing cylinder strength data. Building Engineer to identify columns where cores can be taken without overstressing the columns.	6-weeks
3	Highly stressed columns	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-months
4	Cracking above slabs around columns	Building Engineer to check the punching shear capacity at columns for additional applied loads generated by as built geometry.	6-weeks
5	Cracking above slabs around columns	Building engineer to submit calculations showing adequacy of floor structure taking into account the factory design imposed loading and the as built structure.	6-weeks
6	Cracking above slabs around columns	Prepare controlled loading plans for all floors designating where storage can be placed and can not be placed	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Building documentation does not match as built structure and undocumented cantilever slabs	Building engineer to check, collect information and produce accurate and complete as-built documentation	6-weeks
8	Building documentation does not match as built structure and undocumented cantilever slabs	Building engineer to submit calculations and structural perform an engineering assessment on the as built structure and confirm that the structural elements can withstand the applied loading.	6-weeks
9	Building documentation does not match as built structure and undocumented cantilever slabs	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor and column capacity	6-months
10	Localised areas of high loading in all buildings	Extent of build-up loading in toilet and wash areas to be surveyed and weight of water tanks on roof to be assessed. Building Engineer to assess the capacity of floor & roof slabs to provide evidence that the structure is designed to carry these loads	6-weeks
11	Localised areas of high loading in all buildings	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. Loading plans to be put on each factory floor	6-months
12	Unrestrained parapet at roof level	Building engineer to assess stability and condition of the roof parapets	6-weeks
13	Unrestrained parapet at roof level	Repairs and strengthening to be carried out as required by engineering assessment	6-months