

KDS IDR Ltd.

CDA Plot # 15 (P)+16, Mohora I/A, Chandgaon, Chittagong
(22.398815N, 91.865572E)
Survey Date: 11th March 2015



Observations

Office Building - Pipe chased into column at 3rd floor level



A pipe has been chased into a column at 3rd floor in the office building

Factory Building - Storage Loads



Storage loading requires management

- Storage on the 6th floor appeared to be unmanaged.
- Cursory calculations suggest that the loading from the boxes is in the region of 3.6kPa.
- Loading plans are not available for this level, but for other floors the typical load allowance is 2kN/m² (42psf).
- The loading plans appear to show the typical load allowance for the factory to be 2kN/m² (42psf). Whilst this would appear adequate for most areas of the factory based on the loading observed during the survey, it is not particularly generous and careful management will be required at all times to ensure that it is not exceeded.

Factory Building - Steel roof over dining hall requires review



Roof beams appear slender



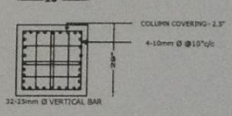
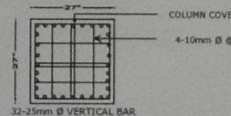
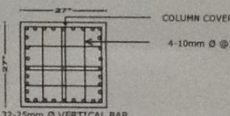
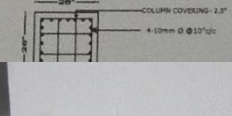
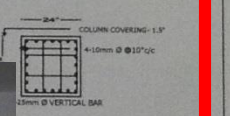
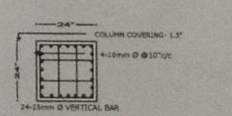
Rafter/post and post/column connection details could not be determined during survey.

Design of steel roof requires review

- The steel roof beams appear very slender.
- The connection detail between the rafter to the steel post and from steel post to the concrete column could not be determined during the survey. This should be checked to ensure that the roof is tied down against wind uplift loads.

Factory and office buildings - Inconsistencies between structural design information and as-built structure

SHEDULE OF COLUMN SIZE AND REINFORCEMENT

Column	Upto GB		Gr. Floor & 1st Floor		2nd Floor to 8th floor	
	Reinforcement	Column Size	Reinforcement	Column Size	Reinforcement	Column Size
C1	32 nos 25 mm Dia 4-10 mm Dia@10" c/c		32 nos 25 mm Dia 4-10 mm Dia@10" c/c		32 nos 25 mm Dia 4-10 mm Dia@10" c/c	
C2	24 nos 25 mm Dia 4-10 mm Dia@10" c/c		24 nos 25 mm Dia 4-10 mm Dia@10" c/c		24 nos 25 mm Dia 4-10 mm Dia@10" c/c	

Column Schedule

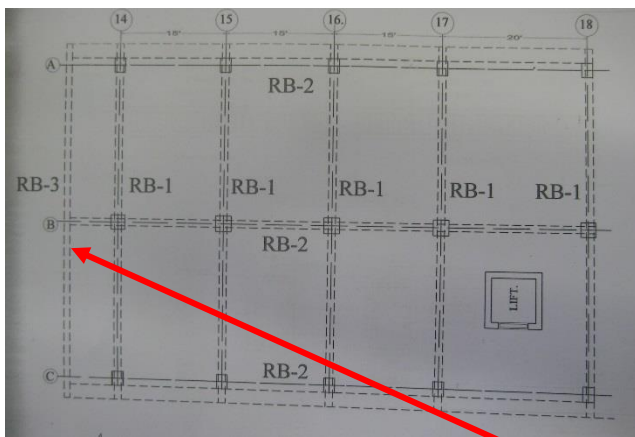


Internal column measured at 5th floor

Factory Building

As-built columns above 2nd floor not consistent with drawings

- Internal columns noted on drawings as 27" (685mm) square, but those above 2nd floor measure as 25" square with finishes - say 24" (610mm) without finishes. (Ground and 1st floor columns match the drawings)
- Number of bars in internal columns at all levels appeared to be less than shown on the drawings (based on Ferrosan and bars projecting from the columns at roof level)

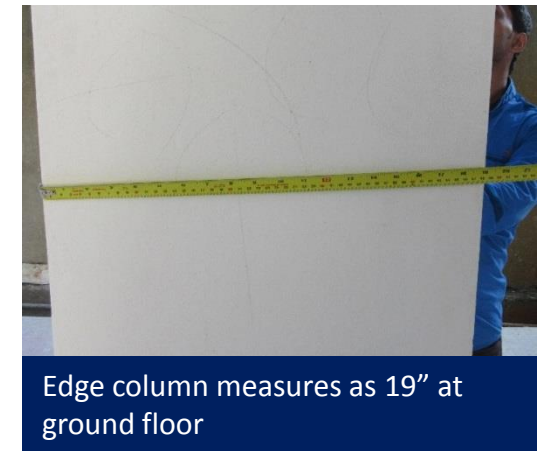


Office Building

Column	Upto GB		Gr. Floor & 1st Floor		2nd Floor to 8th floor	
	Reinforcement	Column Size	Reinforcement	Column Size	Reinforcement	Column Size
C1	24 nos 25 mm Dia 4-10 mm Dia@10" c/c		24 nos 25 mm Dia 4-10 mm Dia@10" c/c		24 nos 25 mm Dia 4-10 mm Dia@10" c/c	
C2	24 nos 25 mm Dia 4-10 mm Dia@10" c/c		24 nos 25 mm Dia 4-10 mm Dia@10" c/c		24 nos 25 mm Dia 4-10 mm Dia@10" c/c	
C3	20 nos 20 mm Dia 4-10 mm Dia@10" c/c		20 nos 20 mm Dia 4-10 mm Dia@10" c/c		20 nos 20 mm Dia 4-10 mm Dia@10" c/c	



- Beams beyond column line are not present.
- Expansion joint is located 650mm off wall of factory. Drawing shows joint on line of wall.
- This section of the slab appears to cantilever from the factory. As there is a stair void on the other side of the wall, it will have no backspan.



As-built columns not consistent with drawings

- Edge columns noted on drawings as 24" x 22" (610mm x 560mm) but those measured on site at are 25" x 19" with finishes - say 24" x 18" (610mm x 455mm) without finishes (at all levels of the building)
- Beams shown on drawing adjacent to expansion joint are not present on upper floors.
- Expansion joint on upper floors is not built in position shown on the drawings.
- Expansion joint is not visible at mezzanine floor.
- Expansion joint has been rendered over and has cracked.

Priority Actions

Problems Observed

- Item 1:** Office Building - Pipe chased into column at 3rd floor level
- Item 2:** Factory Building - Storage Loads
- Item 3:** Factory Building - Steel roof over dining hall requires review
- Item 4:** Factory and Office Buildings - Inconsistencies between structural design information and as-built structure

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Office Building - Pipe chased into column at 3rd floor level	Pipe to be removed.	6-weeks
2	Office Building - Pipe chased into column at 3rd floor level	Building Engineer to ascertain whether reinforcement has been damaged. If damaged, Building Engineer to assess impact on strength of column.	6-weeks
3	Office Building - Pipe chased into column at 3rd floor level	Carry out any strengthening works as required.	6-weeks
4	Office Building - Pipe chased into column at 3rd floor level	Column to be repaired with concrete repair material of same design strength as column concrete.	6-weeks
5	Factory Building - Storage Loads	Boxes on 6th floor to be redistributed to reduce load to within design load allowances.	6-weeks
6	Factory Building - Storage Loads	Ongoing management of loading throughout factory.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Factory Building - Steel roof over dining hall requires review	Building Engineer to review design of roof to determine adequacy to withstand Code vertical and horizontal loads.	6-weeks
8	Factory Building - Steel roof over dining hall requires review	Carry out any strengthening or remedial works arising from review.	6-months
9	Factory and Office Buildings - Inconsistencies between structural design information and as-built structure	Building Engineer to check structure of Factory and Office buildings for as-built column sizes and reinforcement.	6-weeks
10	Factory and Office Buildings - Inconsistencies between structural design information and as-built structure	Building Engineer to check structure adjacent to expansion joint between Factory and Office buildings for as-built arrangement, considering missing beams and slab cantilevering from Factory building.	6-weeks
11	Factory and Office Buildings - Inconsistencies between structural design information and as-built structure	Accurate set of as-built drawings to be produced.	6-months