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27.MAY.2014



Identified Priority 1 Concerns

- Uncontrolled heavy storage loading on cantilevered slab at Building 2
- Uncontrolled heavy storage loading at Building 1 and Building 2



Uncontrolled heavy storage loading were found on cantilevered slabs at Building 2. The apparent live load is believed to be 5.0 kPa. Loading plan needs to be implemented.





Uncontrolled Heavy storage loading was found on Building 1 and 2. The loading must be reduced to 3.0 kPa (4 bags of 50 kg or 6 bags of 35 kg). Loading plan needs to be implemented.



50 kg per bag



35 kg per bag

Identified Priority 2 Concerns

- Cracks appeared underside beam on 4th floor at Phase 1 of Building 1
- Inconsistencies between the drawings of Building 1 and the actual as-built conditions
 - No fireproofing material applied for structural steel elements in Phase 1 of Building 1 (if required).
 - Overall Stability System.
 - Water Ingress.



Cracks appeared underside beam on 1st, 2nd and 3rd floor. We require that these items be investigated in a Detail Engineering Assessment.

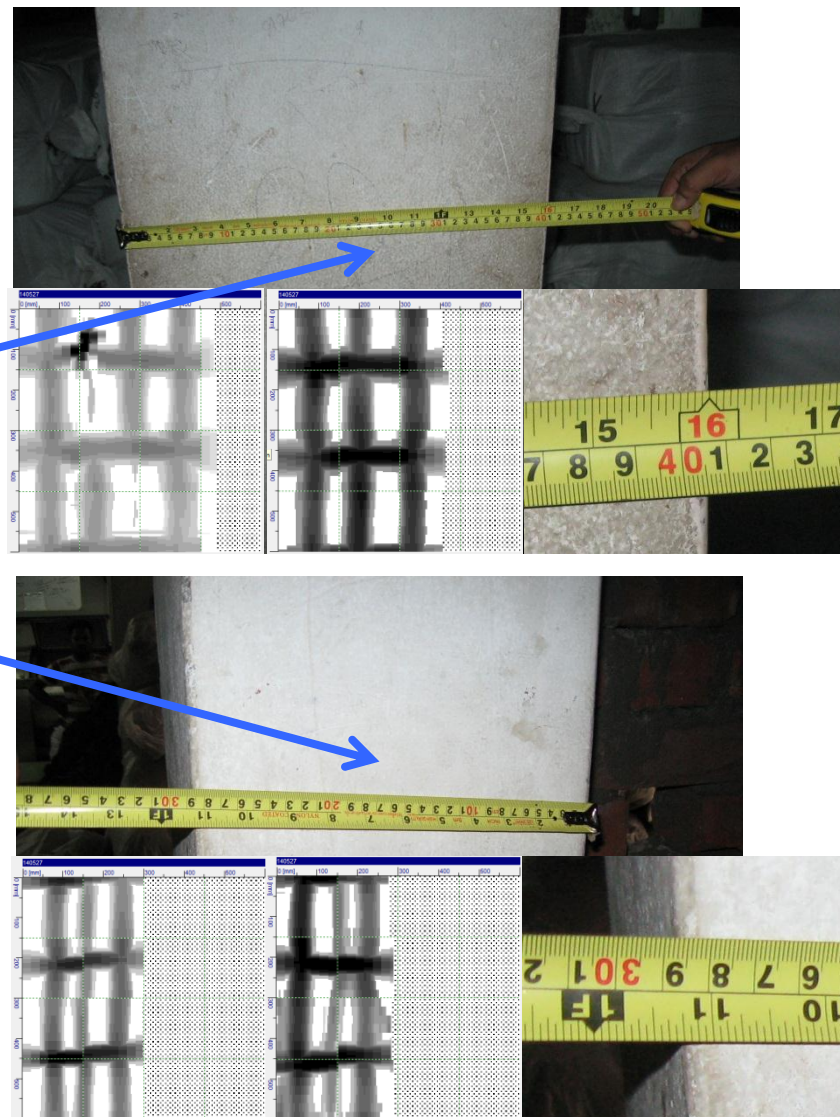


Column schedule :					
Symbol	Nos of same Column	SIZE & REINFORCEMENT			
		UP TO G.BEAM	GROUND TO 3RD FL.	4TH TO 5TH FL.	STIRRUP
C1	04	13" 13" 6-16mm ϕ	10" 10" 6-16mm ϕ	12" 10" 6-16mm ϕ	10mm ϕ @7"c/c.
C2	14	13" 13" 4-20mm ϕ 2-16mm ϕ	10" 10" 4-20mm ϕ 2-16mm ϕ	10" 10" 6-16mm ϕ	10mm ϕ @7"c/c.
C3	14	15" 13" 4-20mm ϕ 2-16mm ϕ	12" 10" 4-20mm ϕ 2-16mm ϕ	12" 10" 6-16mm ϕ	10mm ϕ @7"c/c.
C4	16	18" 13" 8-20mm ϕ 2-16mm ϕ	15" 10" 8-20mm ϕ 2-16mm ϕ	15" 10" 6-20mm ϕ 4-16mm ϕ	10mm ϕ @7"c/c.
C5	08	21" 13" 10-20mm ϕ	18" 10" 10-20mm ϕ	18" 10" 6-20mm ϕ 4-16mm ϕ	10mm ϕ @7"c/c.

The actual conditions of column details of Building 1 do not match the details specified in the drawing.

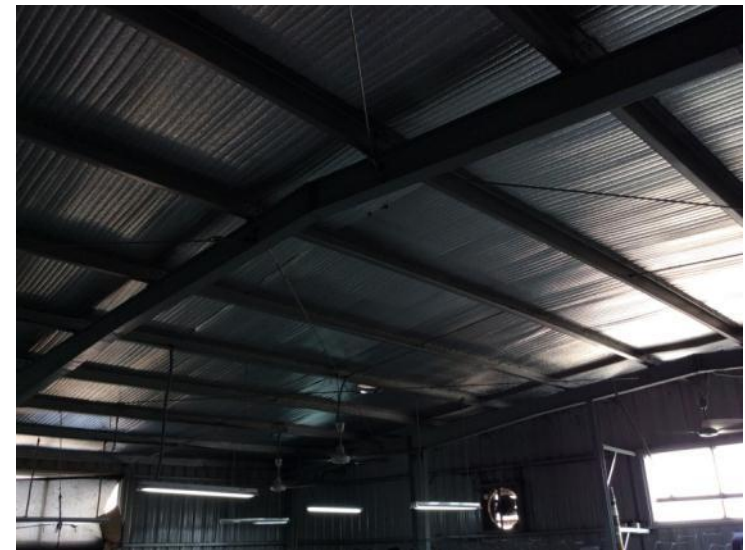
	C4		C5	
	Drawing	In Situ	Drawing	In Situ
Size	15"x 10"	10" x 10"	18" x 10"	18" x 15"
Vert. rebar	8-20mm ϕ 2-16mm ϕ	8-20mm ϕ	10-20mm ϕ	10-20mm ϕ
Stirrups	10mm ϕ @7"	10mm ϕ @8"	10mm ϕ @7"	10mm ϕ @8"

Remark: Assumed rebar size in situ are the same size as shown in the drawing.





No fireproofing material applied for structural steel elements at Phase 1 of Building 1. It is unclear whether it is required by BNBC.



Overall Stability System



Concerns on the stability system for lateral loading. Façade brickwork walls lack of moment capacity in the connections between columns and beams.

We require that these items be investigated in a Detail Engineering Assessment.



Water Ingress



There are water ponding on the roof slab after the rain and distress due to water ingress noted on slabs, beams and walls.



Identified Priority 3 Concerns

- Reinforcement left exposed at roof level



Reinforcement is left exposed at roof level.



Priority Actions

Problems Observed Summary

- ITEM 1: (Priority 1) Uncontrolled heavy storage loading on cantilevered slab at Building 2.**
- ITEM 2: (Priority 1) Uncontrolled heavy storage loading at Building 1 and Building 2.**
- ITEM 3: (Priority 2) Cracks appeared underside beam on 4th floor at Phase 2 of Building 1.**
- ITEM 4: (Priority 2) Inconsistencies between the drawings of Building 1 and the actual as-built conditions.**
- ITEM 5: (Priority 2) Overall stability system.**
- ITEM 6: (Priority 2) Distress due to water ingress.**
- ITEM 7: (Priority 2) No fireproofing material applied for structural steel elements at Phase 1 of Building 1 (if required).**
- ITEM 8: (Priority 3) Reinforcement left exposed at roof level.**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Uncontrolled heavy storage loading on cantilevered slab at Building 2.	Remove heavy storage loading in the area identified above. Factory Engineer to review design and loads in the area identified above. Factory Engineer to state the maximum weight that is allowed per square meter. Suggest that state the value on notice boards in this area.	Immediate - Now
2	Uncontrolled heavy storage loading on cantilevered slab at Building 2.	Adopt some sort of signage/staff guidance to ensure that the maximum weight of storage is not exceeded. (Loading Plans).	6-weeks
3	Uncontrolled heavy storage loading on cantilevered slab at Building 2.	Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future. Implement Loading Plan.	6-months
4	Uncontrolled heavy storage loading at Building 1 and Building 2.	Reduce stacking height to ensure total load does not exceed 3 kPa. Factory Engineer to review design and loads in area identified above. Factory Engineer to state the maximum weight that is allowed per square meter. Suggest that state the value on notice boards in this area.	Immediate - Now
5	Uncontrolled heavy storage loading at Building 1 and Building 2.	Adopt some sort of signage/staff guidance to ensure that the maximum weight of storage is not exceeded. (Loading Plans).	6-weeks
6	Uncontrolled heavy storage loading at Building 1 and Building 2.	Maintain standards of quality control to ensure that storage procedures are correctly followed so that overloading problems do not arise in the future. Implement Loading Plan.	6-months
7	Cracks appeared underside beam on 4th floor at Phase 2 of Building 1.	The Factory Engineer to investigate the cause of cracks by appropriate methods. The distress found is to be suitably rectified and then repaired.	6-weeks
8	Cracks appeared underside beam on 4th floor at Phase 2 of Building 1.	Create loading plans for each floor level. Maintain standards of quality control to ensure that loading plan is correctly followed so that problems do not arise in the future. Maintain and enforce the loading plans.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
9	Inconsistencies between the drawings of Building 1 and the actual as-built conditions.	Factory Engineer to survey the actual conditions and revise the drawings. Factory Engineer to review design, loads and columns stresses to confirm suitability for loads applied. Produce and actively manage a loading plan for all floor plates within this area giving consideration to floor capacity and column capacity.	6-weeks
10	Inconsistencies between the drawings of Building 1 and the actual as-built conditions.	Continue to implement load plan	6-months
11	Overall stability system.	Request that the Detail Engineering Assessment of the overall building to be carried out and in particular, stability and foundation aspects should be investigated in detail.	6-weeks
12	Distress due to water ingress.	Factory Engineer to inspect water damaged structures and repair with a suitable method.	6-weeks
13	Distress due to water ingress.	Waterproofing on the roof slab is recommended. Moreover the slab drainage system should be investigated. Maintain standard of quality control.	6-months
14	No fireproofing material applied for structural steel elements at Phase 1 of Building 1 (if required).	Fireproofing material for structural steel element is recommended as suggested in BNBC Codes.	6-weeks
15	No fireproofing material applied for structural steel elements at Phase 1 of Building 1 (if required).	Maintain standard of quality control.	6-months
16	Reinforcement left exposed at roof level.	For both durability and serviceability, rust proof paint or any appropriate methods is recommended.	6-months