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Identified Priority 1 Concerns

- **Localised overloading to slab & insufficient control measures in place to prevent overloading.**

1st Priority 1 Concern

Localised overloading to slab & insufficient control measures in place to prevent overloading.

Mass of 1 roll – 20kg
If rolls are stacked 6' high (1.83m so 9 rolls high)
Dimensions 1500mm long, 200mmØ
[(20 x 9.81)/(1.5 x 0.2)] x 9 = 5.89kPa

NOTE: the designer has stated the floor is designed for 80psf (4.0 kPa).
If rolls were stored 6' high the slab would be overloaded.

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Identified Priority 2 Concerns

- High stresses to internal columns, factor of safety between 1.5 & 1.86.
- Structural drawings do not match column reinforcement discovered during Ferro-scanning.
- Lateral stability system requires further assessment.
- No waterproofing membrane to roof.

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2nd Priority 2 Concern

High stresses to internal columns, factor of safety between 1.5 & 1.86 based on current loading.

We were advised that the design loadings for the floors were 80psf (4.0kPa). If all floors are loaded to 80psf the columns would be further overstressed.

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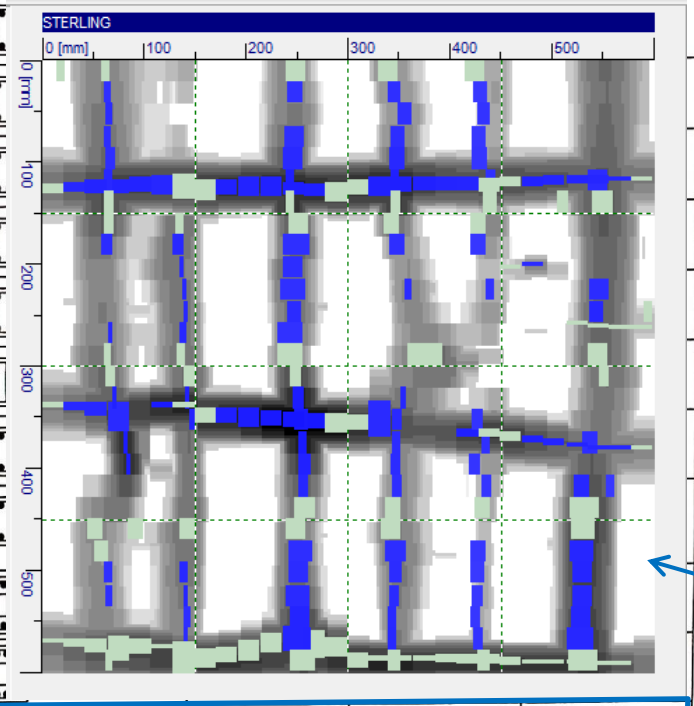
2nd Priority 2 Concern

COLUMN SCHEDULE

Column Type	Colum Size		Foundarion to 2nd Floor	2nd Floor to 4th Floor	4th Floor to 6th Floor	6th Floor to Roof
	Below G.B.	Above G.B.				
C-1	14" x 22"	12" x 20"				
C-2	14" x 32"	12" x 30"				
C-3	14" x 32"	12" x 30"				
C-4	14" x 32"	12" x 30"				
C-5	17" x 32"	15" x 30"				
C-6	14" x 32"	12" x 30"				
C-7	14" x 32"	12" x 30"				
C-7A	14" x 37"	12" x 35"				
C-8	26" x 26"	24" x 24"				
C-9	26" x 26"	24" x 24"				
C-10	26" x 26"	24" x 24"	8-32Ø + 10-25Ø	18-25Ø	12-25Ø	8-25Ø
C-11	26" x 26"	24" x 24"	10-32Ø + 12-25Ø	22-25Ø	16-25Ø	10-25Ø
C-12	26" x 26"	24" x 24"	12-32Ø + 12-25Ø	24-25Ø	16-25Ø	10-25Ø
C-13	26" DIA	24" DIA	10-20Ø			

*** ALL COLUMN TIES 10Ø @ 5" ~ 9" ~ 5" C/C.



Structural drawings do not match rebar discovered during Ferroscanning.

Based on the construction drawings provided we would have expected to see 24 bars in the **C12** column scanned.

While the drawings are dated 2005 it is possible that they may be as built drawings since construction started in 2004.

From the Ferroscan 6 bars were discovered on one face and 5 bars on the adjacent face. Therefore a total of 18 bars in the column.

The discovered results are a closer match with **C10**, which is the same size with fewer bars.

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Overall Stability System

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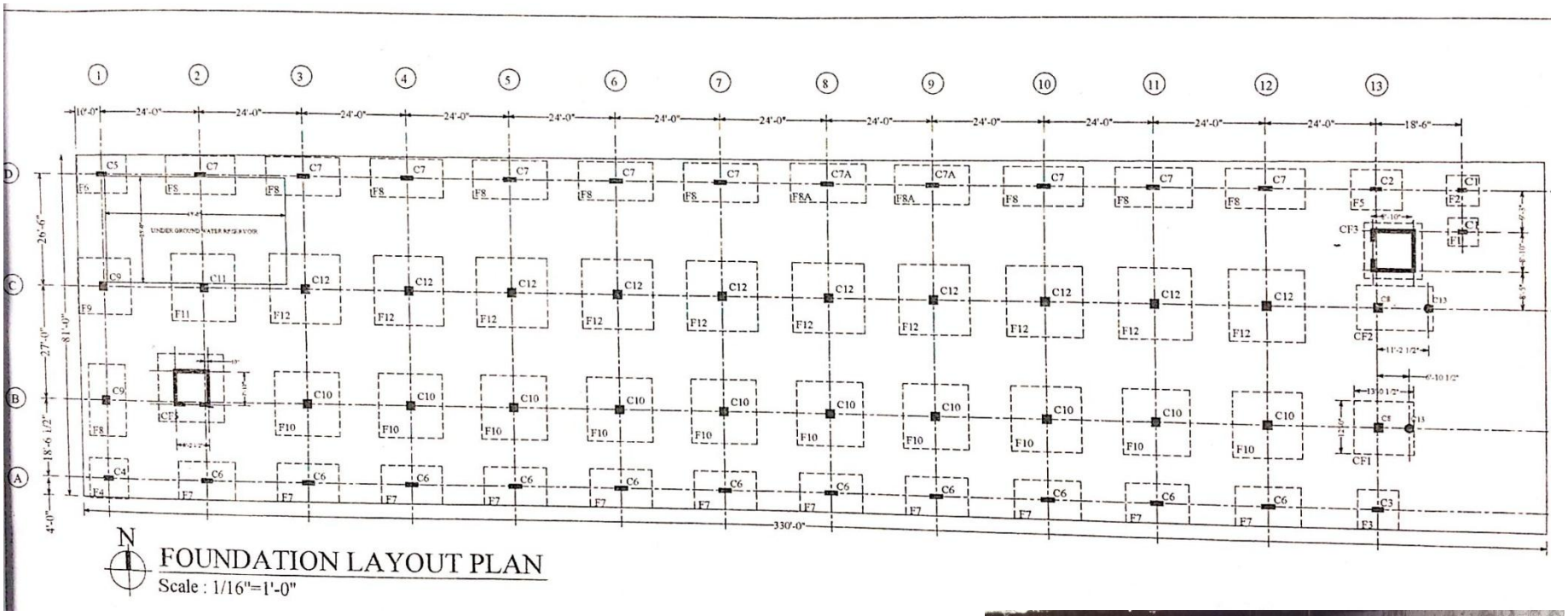

The building featured two reinforced concrete cores at the ends of the building. These were observed during the surveys and appear to be constructed as the design drawings show. These would appear to provide some lateral stability for the building. However the adequacy of the lateral stability system needs to be further assessed.

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Water Ingress at Roof Level

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No waterproofing membrane was visible on the roof of the building. This means that any cracks in the surface finishes on the roof will allow water to seep into the concrete slab beneath the finishes, and cause corrosion of the reinforcing steel.

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Priority Actions

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Problems Observed Summary

ITEM 1: (Priority 1) Localised overloading to slab & insufficient control measures in place to prevent overloading.

ITEM 2: (Priority 2) High stresses to internal columns, factor of safety between 1.5 & 1.86.

ITEM 3: (Priority 2) Structural drawings do not match column reinforcement discovered during Ferro-canning.

ITEM 4: (Priority 2) Lateral stability system requires further assessment.

ITEM 5: (Priority 3) No waterproofing membrane to roof.

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Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Priority 1 - Localised overloading to slab & insufficient control measures in place to prevent overloading.	Do not load the slab above 3.0kPa (60psf) in storage areas.	Immediate – Now
2	Priority 1 - Localised overloading to slab & insufficient control measures in place to prevent overloading.	Carry out a Detailed Engineering Assessment on the building to establish the existing floor design capacity to safely carry the existing load each floor (taking into account the column strengths detailed in item 2).	6-weeks
3	Priority 1 - Localised overloading to slab & insufficient control measures in place to prevent overloading.	Produce accurate loading plans for each level based on the Engineering Assessment. Ensure that these plans are displayed and actively managed.	6-months
4	Priority 2 - High stresses to internal columns, factor of safety between 1.5 & 1.86.	Carry out an Detailed Engineering Assessment on the columns, taking 100mm core samples where necessary to establish the strength.	6-weeks
5	Priority 2 - High stresses to internal columns, factor of safety between 1.5 & 1.86.	Carry out any recommendations highlighted in the Engineering Assessment.	6-months
6	Priority 2 - Structural drawings do not match column reinforcement discovered during Ferro-scanning.	Establish if drawings are original design or post dated as built drawings. Survey all columns as part of the Detailed Engineering Assessment to ascertain the existing design strength of the columns.	6-weeks
7	Priority 2 - Structural drawings do not match column reinforcement discovered during Ferro-scanning.	If drawings are as built remove any information that can not be verified by basic survey methods.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
8	Priority 2 - Lateral stability system requires further assessment.	Carry out a Detailed Engineering Assessment on the building to verify that the building is stable under its lateral loading.	6-weeks
9	Priority 2 - Lateral stability system requires further assessment.	Carry out all recommendations of the Engineering Assessment.	6-months
10	Priority 3 - No waterproofing membrane to roof.	Cover the concrete roof with a suitable waterproofing membrane, e.g. waterproof screed.	6-months