

Fatullah Apparels

B-68/1 Wapda Road (Samad Member Dyeing Road), Jalkuri, Narayanganj.

(23.668396, 90.487978)

31st May & 25th August 2021



Building Information

Building-1 (Knitting Building): (G+1)

Building-2 (Security and Safety Building): (G+1)

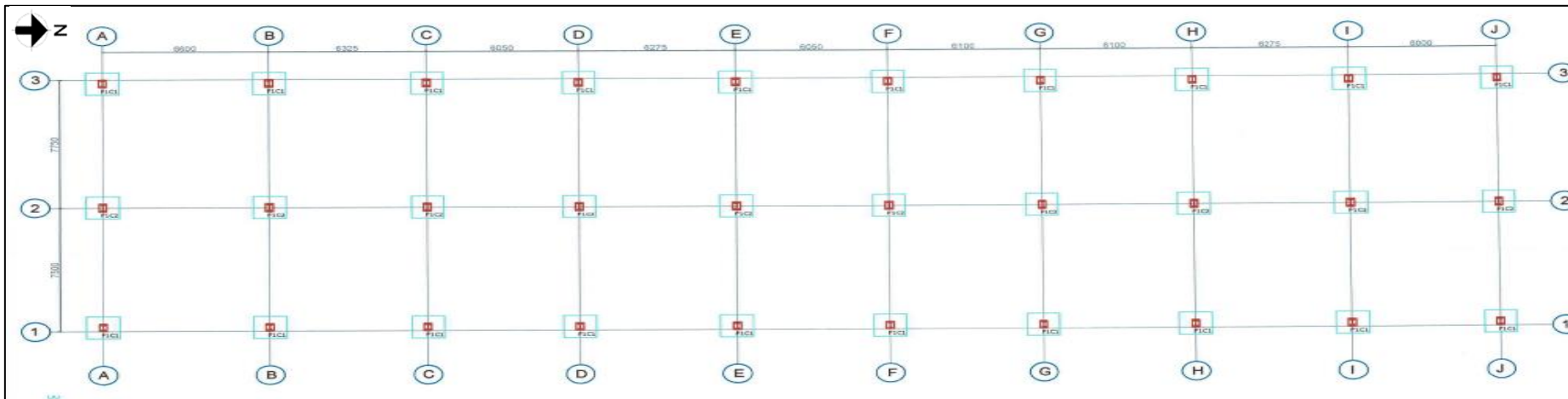
Building-3 (Factory Building): (partially three storied- G+2)

Building-4 (Utility Building): (G+2)

Building-5 (Office Building):(G+1)

Observations

Stress in foundation exceeds normal design limit



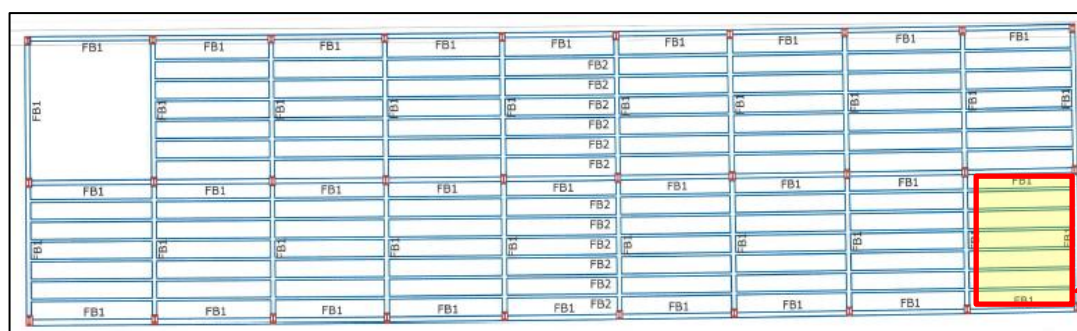
Foundation layout

SCHEDULE OF FOOTING						
TYPE	LENGTH L (mm)	BREADTH B (mm)	DEPTH OF FOOTING =h	THICKNESS t (mm)	THICKNESS t1 (mm)	THICKNESS h1 (mm)
F1	1350	1300	2400	450	375	375

Footing schedule

Cursory calculation indicates that the stress in some foundations exceeds normal design limit. Considering 2 kPa live load on typical floor & 1 kPa live load on roof top. The footings were found stressed in excess of normal design limit against the soil bearing capacity available from Geotechnical investigation report. Building engineer is required to carryout foundation adequacy check to justify the load carrying capacity.

Lack of information in as built drawings



At site, no sub-beam & deck slab was found

At the marked location



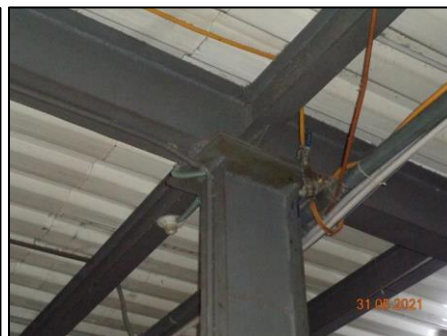
Details of the Rafter & purlin has not been provided



Thickness of the deck slab has not been provided.



Drawing of RC stair was not available

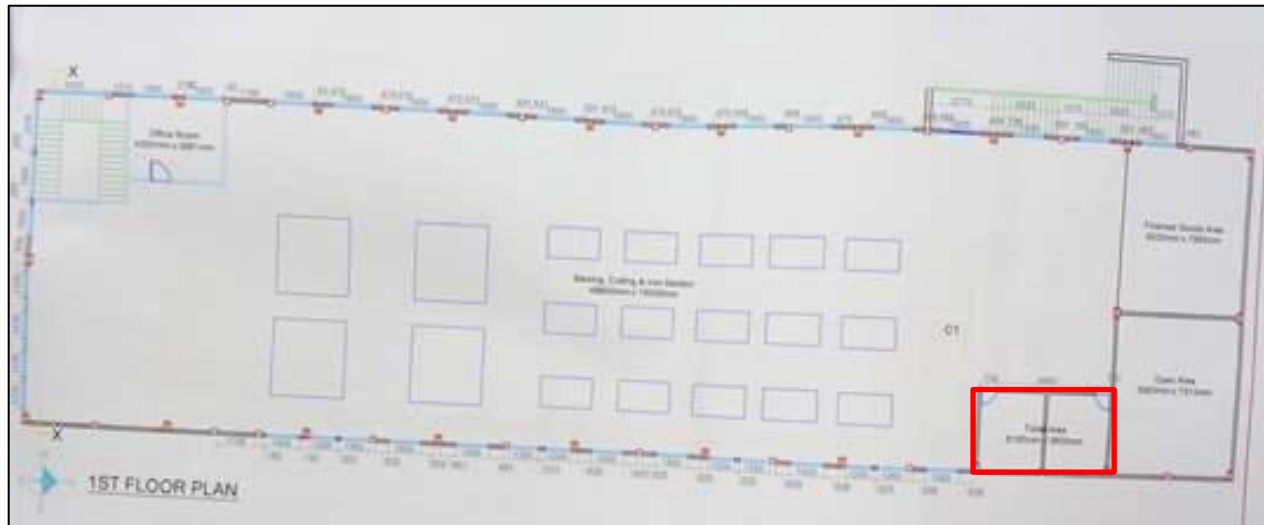


Connection Details are not available in as-built drawing

The factory engineer is required to survey the structures and prepare as-built drawings complying with section 1.9.1.2 of BNBC.

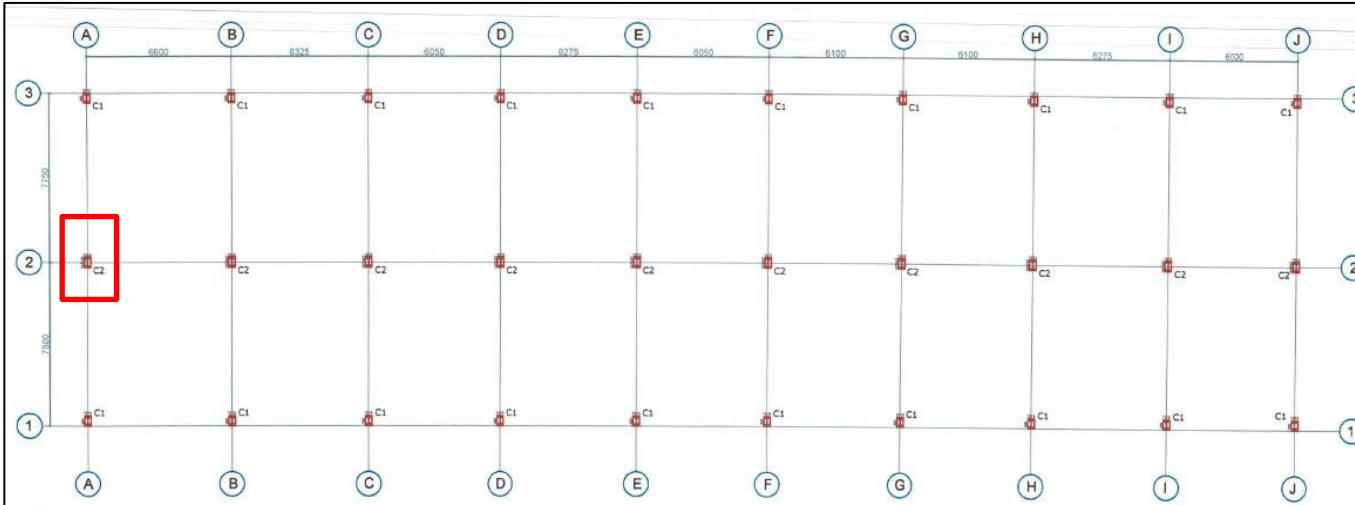


Build-up found at toile block area.



Toilet build-up information has not been provided

Toilet build-up was found at 1st floor which has not been shown in drawing. The build-up was found 100mm to 250mm. Also, the arrangement of toilet zone wall & number of toilet do not match with as-built drawing.



SCHEDULE OF COLUMN

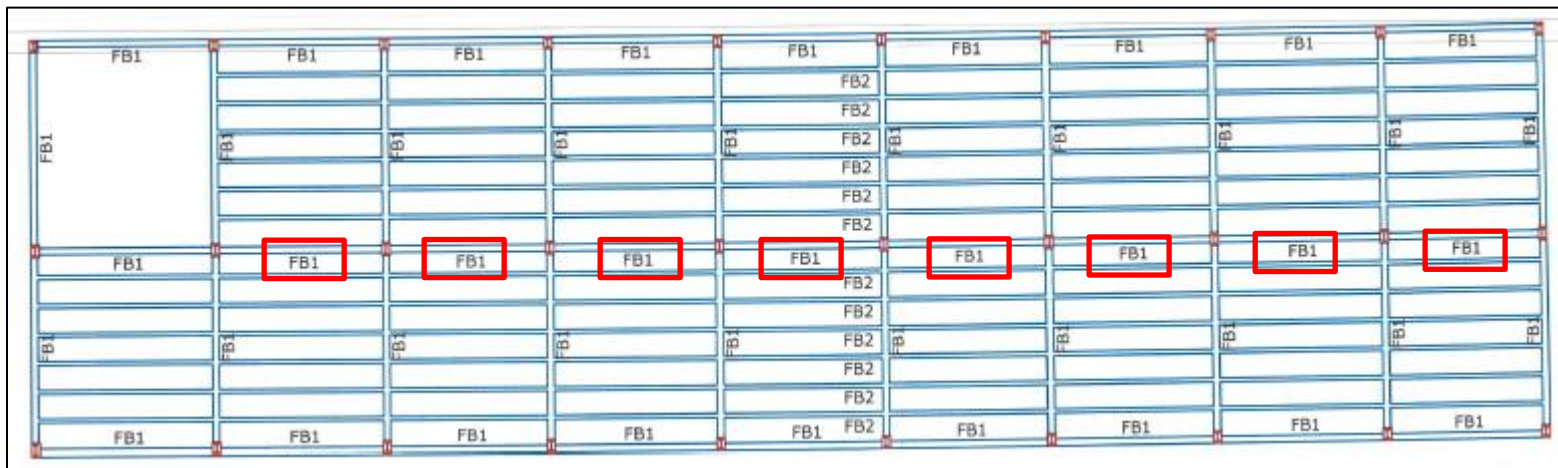
COLUMN NO	REINFORCEMENT DETAILS
C1	 (300x150x6x5)
C2	 (325x150x10x8)

The steel column (C2) at marked grid at 1st floor was found W:300XF:150(6) instead of W:325XF:150(10)

In Steel column schedule;
C2 column has been
shown
W:325(8)XF:150(10)



At site the web was measured 300mm, Flange 150mm & flange thickness 6mm



The size of steel beam FB1 at marked locations was found W:180XF:100(6) instead of W:325XF:150(10)



At site the web was measured 180 mm and Flange 100mm

STEEL BEAM DETAILS (mm)

FB1	 (325x150x10X8)
FB2	 (200x100x6x5)

In Steel Beam schedule; FB1 beam has been shown W:325(8)XF:150(10)

The factory engineer is required to survey the structures and prepare as-built drawings complying with section 1.9.1.2 of BNBC.

Observations: Building-1

Corrosion in steel member

Observations: Building-1



Corrosion in steel column

Corrosion in steel member was observed in various locations. The building engineer to investigate the reason of corrosion and suggest proper remedial measure accordingly.

Water dampness in brick wall



Dampness found in brick wall.

Dampness found in several locations of the structure. Building engineer is required to take necessary measures to prevent source of dampness.

Connection gap at several location.



Gap observed in Rafter- Column connection

Significant gaps observed at column-rafter joint at several location. Factory engineer is required to carry out suitable remedial works.

Cracks found in external RC stair

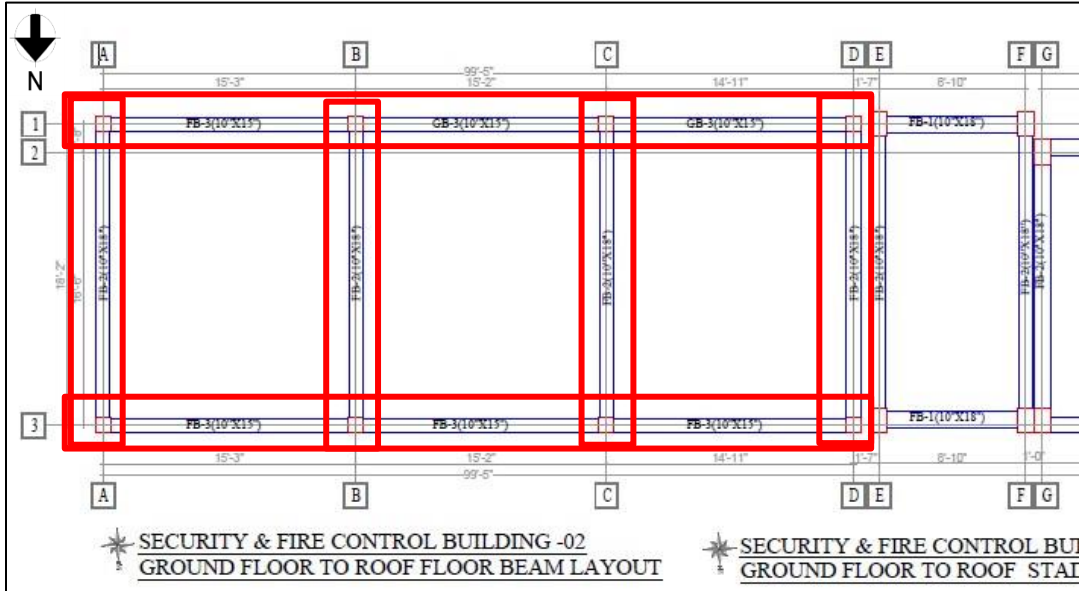


Crack found in external RC stair

Crack was found in several locations of RC stair. Factory engineer is required to investigate the cause of crack and repair the crack as per recommendation from investigation report.



Discrepancies in as-built drawing



Beam Layout has been shown in drawing

In as built drawing floor beam has been shown. But actual site condition, the building was found flat slab. Factory engineer is required to survey the whole structure and update the as-built drawing.

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. Factory engineer is required to update the drawing and prepare a design report following BNBC requirements.



At site, no beam was found

Exposed re-bar at roof



Exposed rebar of Column

Exposed reinforcement was found on roof top columns. Factory engineer is required to take necessary measures to prevent the corrosion in exposed rebar.

Water ponding at roof

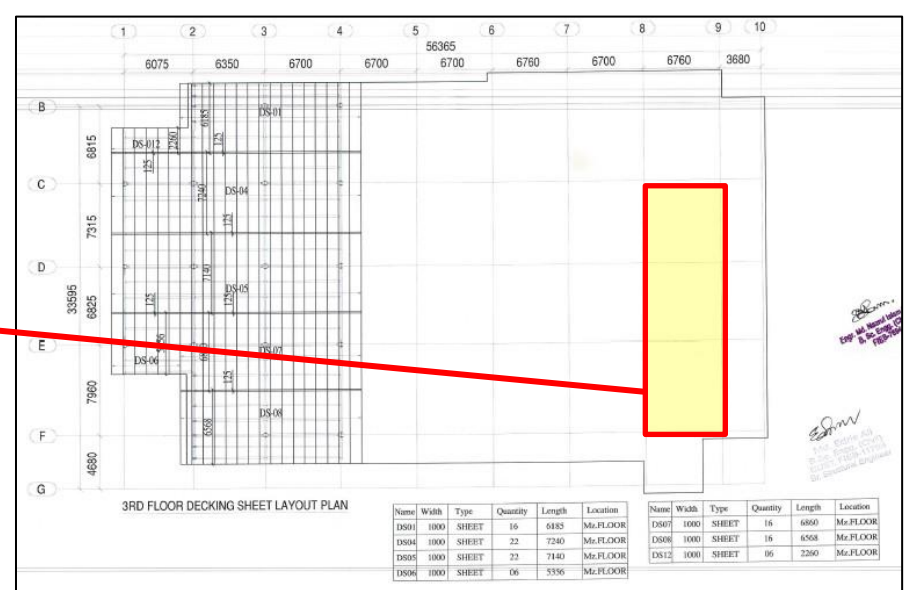


Water ponding at roof

Water ponding was found at roof area. The water drainage system and adequate sloping was not found. The factory engineer is required to develop proper drainage system with adequate sloping on the mentioned area.

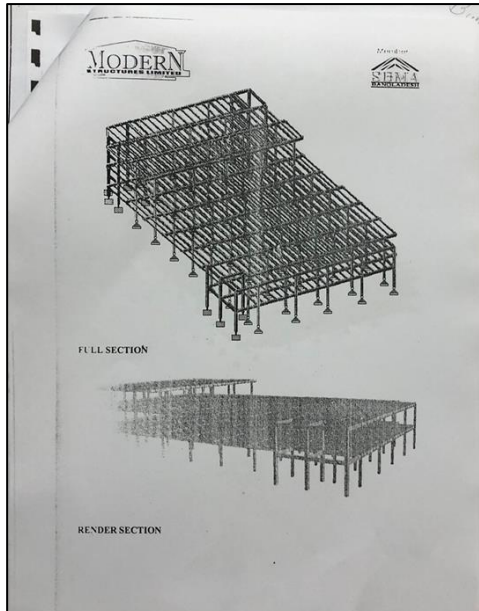
Observation: Building-2

Design report needs to be revised.



Undocumented partial storey at roof

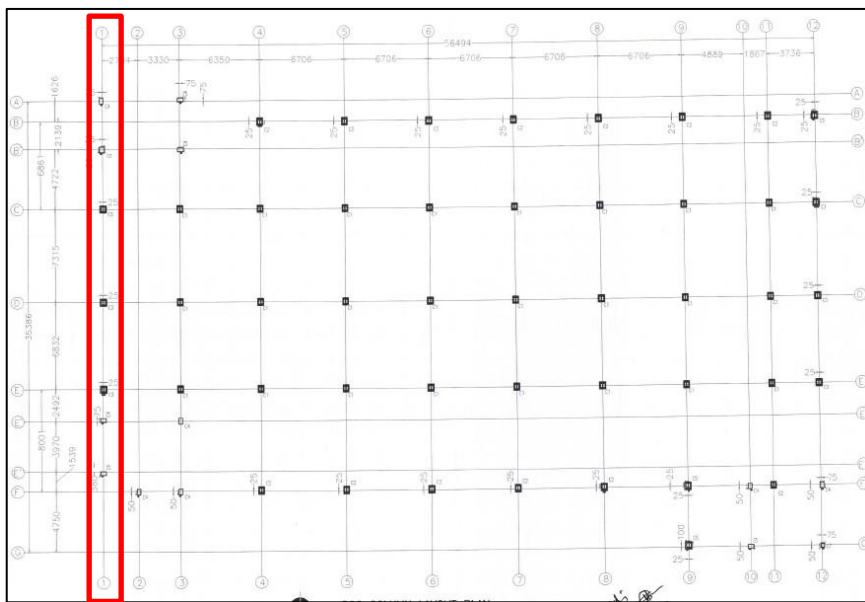
At roof a partial storey having 3X1 panel (marked location) has been constructed. But in as-built drawing & design report which has not been considered.



Design report- isometric view of structure

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. Revise the provided design report and load plan based on the observation.

Lack of information in as built drawings



Column Layout Plan. The details of the structural members along the grid-1 has not been provided in as-built drawing.



The details of the bracing was not found in as-built structural drawing.



Undocumented water tank was found at roof top.

Factory engineer is required to survey the whole structure and update the as-built drawings.

Water dampness due to water ponding at roof



Water ponding at roof due to lack of proper drainage system & inadequate slope



Due to the water ponding at roof, dampness and corrosion found in deck slab & steel sections

Due to water ponding at rooftop, dampness was found at beam, column and roof top slab. Building engineer is required to take necessary measures to prevent water ponding by providing proper drainage system Also, investigate the extent of corrosion in beams & columns due to the presence of moisture.

Connection gap at several location.



Gap observed in Beam- Column connection

Significant gaps observed at column-rafter & beam joint at several location. Factory engineer is required to carry out suitable remedial works.

Corrosion in steel member

Observations: Building-3



Corrosion in steel column

Corrosion in steel member was observed in various locations. The building engineer to investigate the reason of corrosion and suggest proper remedial measure accordingly.

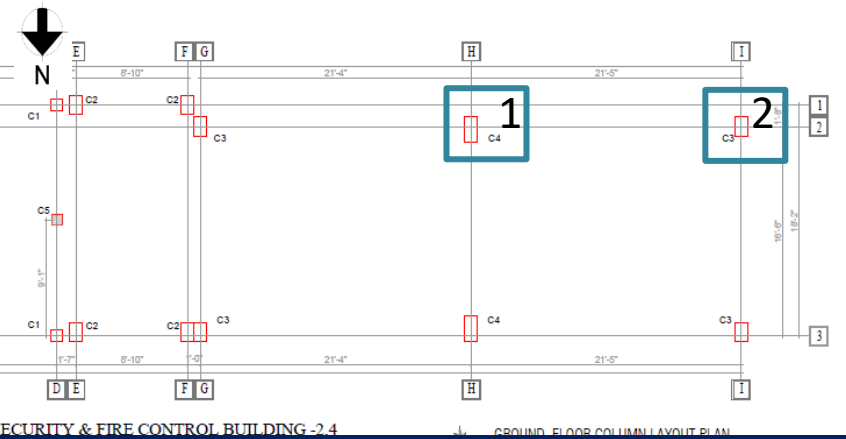
Exposed re-bar at roof



Exposed rebar of Column

Exposed reinforcement was found on roof top columns. Factory engineer is required to take necessary measures to prevent the corrosion in exposed rebar.

Discrepancies in as-built drawing



SECURITY & FIRE CONTROL BUILDING -2.4 GROUND FLOOR COLUMN LAYOUT PLAN

Ferro-scan location of Column:- 1. C4 & 2. C3

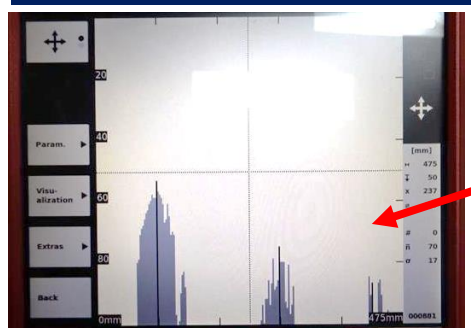
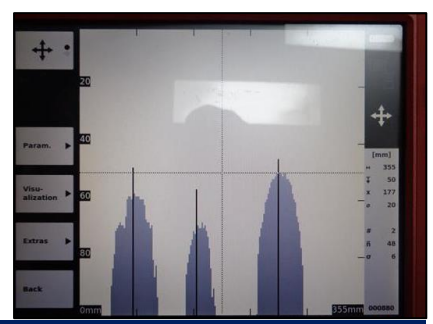
COLUMN SCHEDULE :

COLUMN TYPE	BELOW GROUND FLOOR	ABOVE P.L TO ROOF	TIE
C1	 4-16mmØ Covering = 3"	 4-16mmØ Covering = 1.5"	10 mm Ø @ 6" C/C
C2	 8-16mmØ Covering = 3"	 8-16mmØ Covering = 1.5"	10 mm Ø @ 6" C/C
C3	 14-20mmØ Covering = 3"	 10-20mmØ Covering = 1.5"	10 mm Ø @ 8" C/C
C4	 18-20mmØ Covering = 3"	 14-20mmØ Covering = 1.5"	10 mm Ø @ 6" C/C

Column schedule shows total 14 numbers of re-bar for C4 column and 10 numbers of re-bar for C3 column.



From the ferro scan 10 nos re-bar was found for C4 column instead of 14 nos



From the ferro-scan only 3 number of re-bar at long face of C3 column found was found instead of 4 numbers re-bar.

Factory engineer is required to survey the whole structure and update the as-built drawing.

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Cracks in brick wall



Crack in brick wall

Crack was found in brick wall at 2nd floor in joint of column & brick wall.
Factory engineer is required to investigate the cause of crack and repair the crack as per recommendation from investigation report.

Exposed re-bar at roof



Exposed rebar of Column

Exposed reinforcement was found on roof top columns. Factory engineer is required to take necessary measures to prevent the corrosion in exposed rebar.

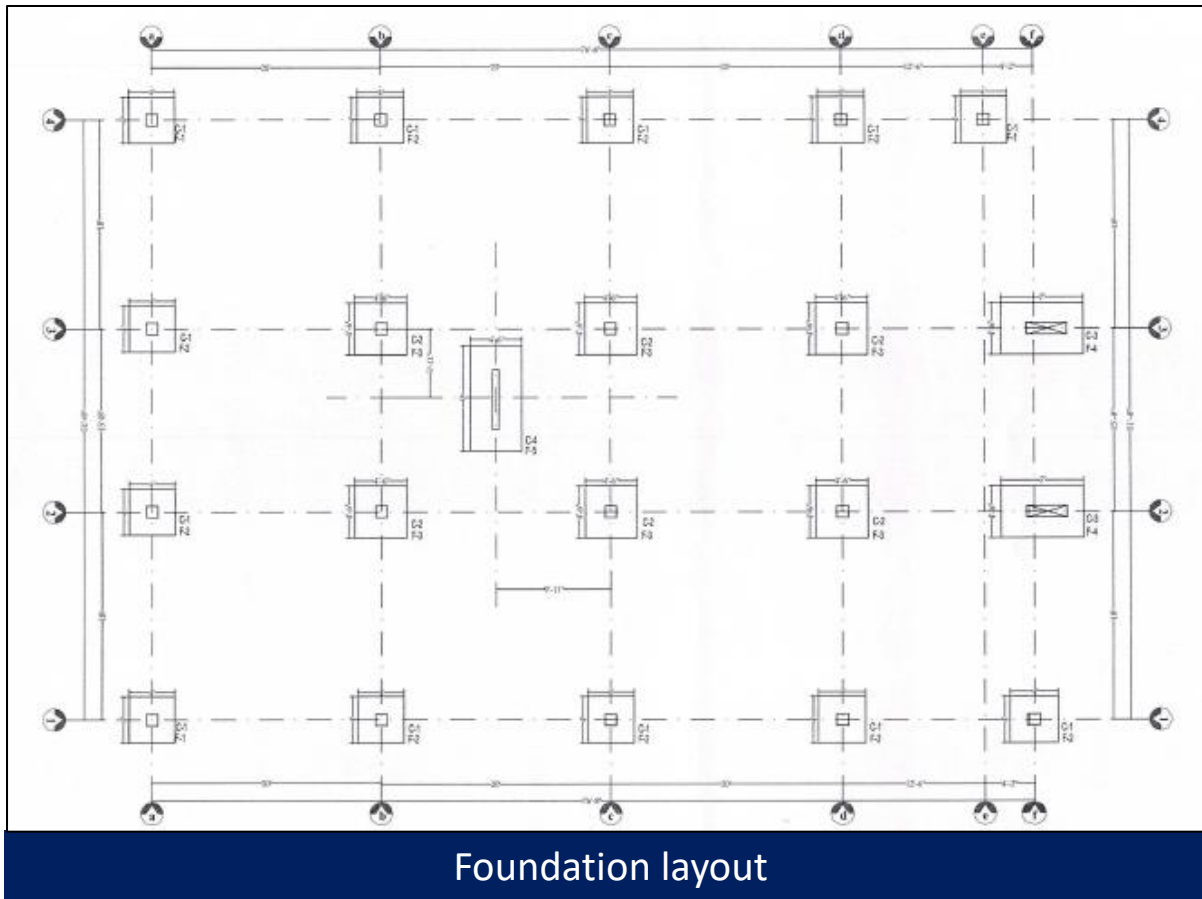
Water ponding at roof



Water ponding at roof

Water ponding was found at roof area. The water drainage system and adequate sloping was not found. The factory engineer is required to develop proper drainage system with adequate sloping on the mentioned area.

Stress in foundation exceeds normal design limit



FOOTING SCHEDULE

S.L	TYPE OF FOOTING	L	B	D	H	S	ASB	ASL
01	F-1	4'-0"	4'-0"	13"	5'-0"	3"	16mm Ø @ 6" c/c.	16mm Ø @ 6" c/c.
02	F-2	4'-0"	4'-0"	15"	5'-0"	3"	16mm Ø @ 6" c/c.	16mm Ø @ 6" c/c.
03	F-3	4'-6"	4'-6"	15"	5'-0"	3"	16mm Ø @ 6" c/c.	16mm Ø @ 6" c/c.
04	F-4	4'-6"	7'-0"	18"	5'-0"	3"	16mm Ø @ 6" c/c.	16mm Ø @ 6" c/c.
04	F-5	4'-6"	9'-0"	18"	5'-0"	3"	16mm Ø @ 6" c/c.	16mm Ø @ 6" c/c.

Footing schedule

Cursory calculation indicates that the stress in some foundations exceeds normal design limit. Considering 2 kPa live load on typical floor & 1.5 kPa live load on roof top. The footings were found stressed in excess of normal design limit against the soil bearing capacity available from Geotechnical investigation report. Building engineer is required to carryout foundation adequacy check to justify the load carrying capacity.

Water ponding at roof



Water ponding at roof



Dampness in Beam-Column & slab due to water ponding

Water ponding was found at roof area. The water drainage system and adequate sloping was not found. And there is no water proofing layer on this area. The factory engineer is required to develop proper drainage system with adequate sloping on the mentioned area.

Observation: Building-5

Problems Observed

Building-1

- Item 1: Stress in foundation exceeds normal design limit.
- Item 2: Lack of information in as built drawings.
- Item 3: Corrosion in steel member.
- Item 4: Water dampness in brick wall.
- Item 5: Connection gap at several location.
- Item 6: Cracks found in external RC stair.

Building-2

- Item 7: Discrepancies in as-built drawing.
- Item 8: Exposed re-bar at roof.
- Item 9: Water ponding at roof.

Building-3

- Item 10: Design report needs to be revised.
- Item 11: Lack of information in as built drawings.
- Item 12: Water dampness due to water ponding at roof.
- Item 13: Connection gap at several location.
- Item 14: Corrosion in steel member.
- Item 15: Exposed re-bar at roof.

Problems Observed

Building-4

Item 16: Discrepancies in as-built drawing.

Item 17: Cracks in brick wall.

Item 18: Exposed re-bar at roof.

Item 19: Water ponding at roof.

Building-5

Item 20: Stress in foundation exceeds normal design limit.

Item 21: Water ponding at roof.

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Stress in foundation exceeds normal design limit (Building-1)	Factory Engineer to review design, loads and foundation stresses.	6-weeks
02	Stress in foundation exceeds normal design limit (Building-1)	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
03	Stress in foundation exceeds normal design limit (Building-1)	Implement any remediation work if required.	6-months
04	Lack of information in as built drawings. (Building-1)	The building engineer to survey the structure and update the as-built drawings accordingly.	6-weeks
05	Corrosion in steel member (Building-1)	The building engineer to investigate the reason & extent of corrosion and suggest proper remedial measure accordingly.	6-weeks
06	Corrosion in steel member (Building-1)	Take necessary measures to prevent further corrosion and repair the corroded steel members as per engineer's suggestion.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
07	Water dampness in brick wall (Building-1)	Factory management is required to take necessary measures to proof the leakage in water supply line.	6-weeks
08	Water dampness in brick wall (Building-1)	Factory engineer is required to investigate the damp beam & column to verify if any damaged occurred due to the presence of the moisture.	6-weeks
09	Water dampness in brick wall (Building-1)	Improve the roof drainage system.	6-months
10	Connection gap at several location (Building-1).	Identify the locations and carryout suitable repair works where necessary.	6-weeks
11	Cracks found in external RC stair (Building-1)	Factory engineer is required to investigate the cause of crack and repair the crack as per recommendation from investigation report.	6-weeks
12	Discrepancy in as-built drawing. (Building -2)	Building Engineer to survey the structure and prepare accurate as-built (architectural and structural) drawings.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
13	Discrepancy in as-built drawing. (Building -2)	Building engineer to update the design document including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.	6-weeks
14	Exposed re-bar at roof (Building-2)	All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete.	6-weeks
15	Water ponding at roof (Building-2)	The factory engineer to develop proper drainage system with adequate sloping to resist water ponding on roof.	6-months
16	Design report needs to be revised. (Building-3)	Building engineer to update the design document including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.	6-weeks
17	Design report needs to be revised. (Building-3)	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
18	Design report needs to be revised. (Building-3)	Implement the recommendations of design report.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
19	Lack of information in as built drawings. (Building-3)	The building engineer to survey the structure and update the as-built drawings accordingly.	6-weeks
20	Water dampness due to water ponding at roof (Building-3).	Factory management is required to take necessary measures to proof the leakage in water supply line.	6-weeks
21	Water dampness due to water ponding at roof (Building-3).	Factory engineer is required to investigate the damp beam & column to verify if any damaged occurred due to the presence of the moisture.	6-weeks
22	Water dampness due to water ponding at roof (Building-3).	Improve the roof drainage system.	6-months
23	Connection gap at several location (Building-3).	Identify the locations and carryout suitable repair works where necessary.	6-weeks
24	Corrosion in steel member (Building-3)	The building engineer to investigate the reason & extent of corrosion and suggest proper remedial measure accordingly.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
25	Corrosion in steel member (Building-3)	Take necessary measures to prevent further corrosion and repair the corroded steel members as per engineer's suggestion.	6-months
26	Exposed re-bar at roof. (Building-3)	All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete.	6-weeks
27	Discrepancy in as-built drawing. (Building -4)	Building Engineer to survey the structure and prepare accurate as-built (architectural and structural) drawings.	6-weeks
28	Discrepancy in as-built drawing. (Building -4)	Building engineer to update the design document including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.	6-weeks
29	Cracks in brick wall (Building-4)	Factory engineer is required to investigate the cause of crack and repair the crack as per recommendation from investigation report.	6-weeks
30	Exposed re-bar at roof (Building-4)	All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
31	Water ponding at roof (Building-4)	The factory engineer to develop proper drainage system with adequate sloping to resist water ponding on roof.	6-months
32	Stress in foundation exceeds normal design limit (Building-5)	Factory Engineer to review design, loads and foundation stresses.	6-weeks
33	Stress in foundation exceeds normal design limit (Building-5)	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and foundation capacity.	6-weeks
34	Stress in foundation exceeds normal design limit (Building-5)	Implement any remediation work if required.	6-months
35	Water ponding at roof (Building-5)	The factory engineer to develop proper drainage system with adequate sloping to resist water ponding on roof.	6-months