IRIS FABRICS LIMITED (Extension Building)

Zirani Bazar, Kashimpur, Gazipur
(23.999028, 90.251593)

20 September 2021

RSC RMG SUSTAINABILITY COUNCIL

Buildings Information

1. Printing and Dying Building(G+M+5) (reinforced concrete structure)

Observations

Column and foundation stressed above normal design limit

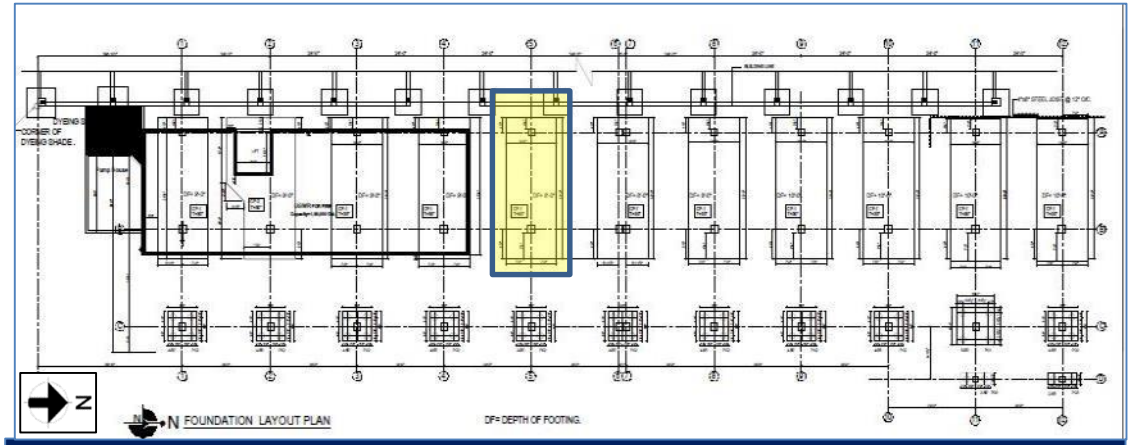
Observation: Printing and Dying Building

Table-1: Allowable Bearing Capacity for shallow Foundation

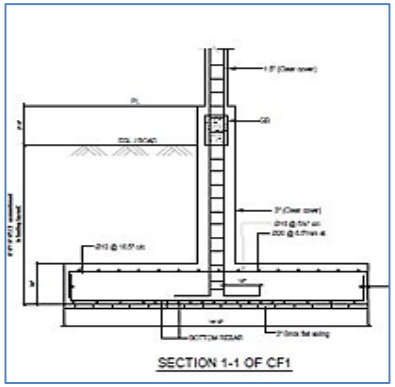
Borehole No	Depth (m)	Cohesion, Ton/m²	Allowable Bearing Capacity, Ton/m²	
			Strip footing	Isolated column footing
BH-1	1.5	1.5	3.20	3.60
BH-2	1.5	2.0	4.26	4.80
BH-3	1.5	2.0	4.26	4.80
BH-4	1.5	3.5	7.46	8.40
BH-5	1.5	4.0	8.53	9.60
BH-6	1.5	4.0	8.53	9.60
BH-7	1.5	5.5	11.73	13.20
BH-8	1.5	4.0	8.53	9.60
BH-1	2.5	2.0	4.53	5.06
BH-2	2.5	3.0	6.80	7.60
BH-3	2.5	4.0	9.06	10.13
BH-4	2.5	5.5	12.46	13.93
BH-5	2.5	6.0	13.60	15.20
BH-6	2.5	8.0	18.13	20.26
BH-7	2.5	11.5	26.06	29.13
BH-8	2.5	5.0	11.33	12.66
BH-1	4.0	9.5	23.11	26.60
BH-2	4.0	10.0	24.33	28.00
BH-3	4.0	9.5	23.11	26.60
BH-4	4.0	6.0	14.60	16.80
BH-5	4.0	8.5	20.68	23.80
BH-6	4.0	9.0	21.90	25.20
BH-7	4.0	10.0	24.33	28.00
BH-8	4.0	6.0	14.60	16.80

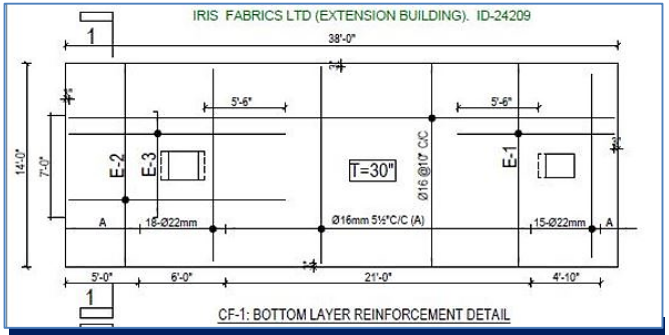
Notes: 1. The above values are net ones
2. Skempton's Relation was used for cohesive soil
3. B/L = 0 & B = 1.5m (assumed) for strip footing
B/L = 1 & B = 2.5m (assumed) for isolated column footing
4. F.S. = 3
5. Depth has been measured from EGL of Boreholes

Site: M/S. IRIS Fabrics Ltd.



Foundation layout



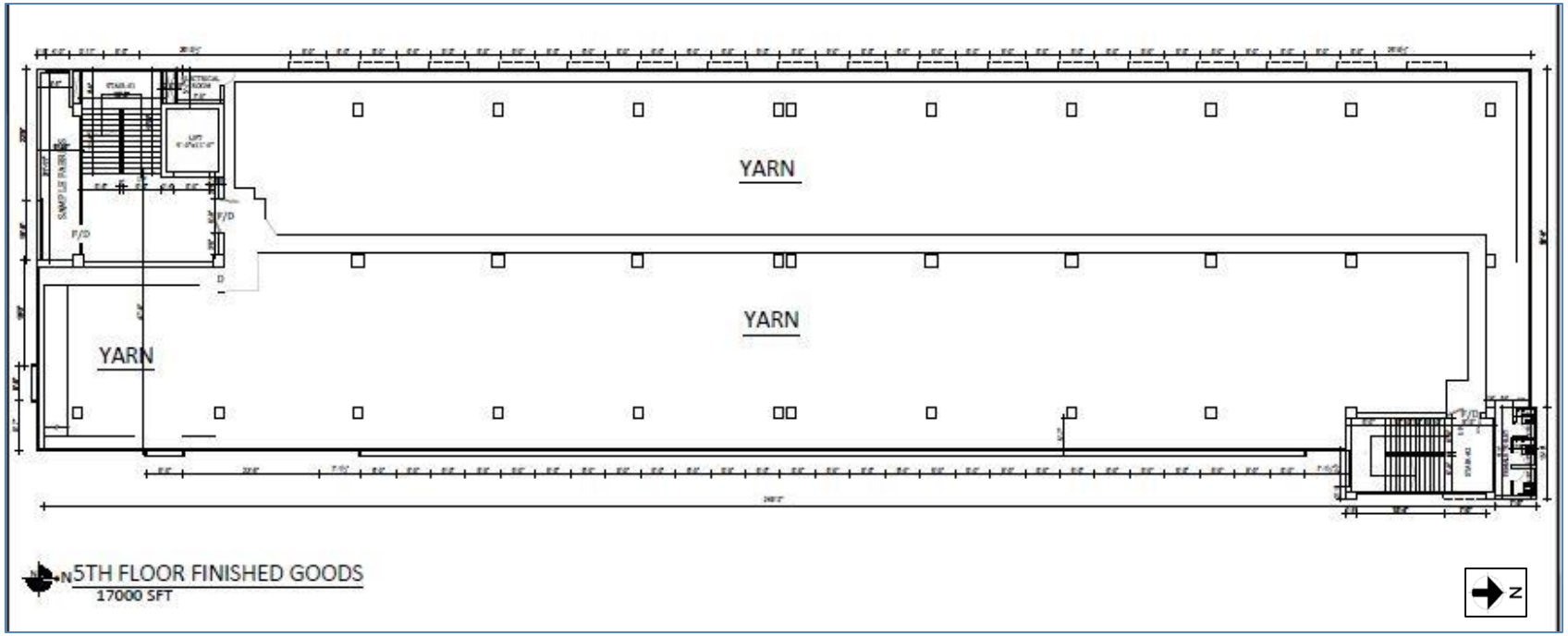


Details of Combined footing

Cursory calculation indicates that footing (under the overhead water tank) appears to be stressed above normal design limits considering the live load provided in design report (4kPa) & equivalent concrete strength (26.22MPa). Also, considered the recommended allowable average soil bearing capacity 14.22 ton/m2 (FoS- 3.0) at 2.5 m depth based on 8 bore logs data in geotechnical report and footing sizes in drawing. Factory engineer is required to review the adequacy of footings and comply with BNBC.

Water tank

Observation: Printing and Dying Building



Columns appears to be stressed above normal design limits considering the considering the live load as per BNBC (minimum storage live load 6kPa) and equivalent concrete strength (26.22MPa). Factory engineer is required to review the adequacy of column and comply with BNBC.

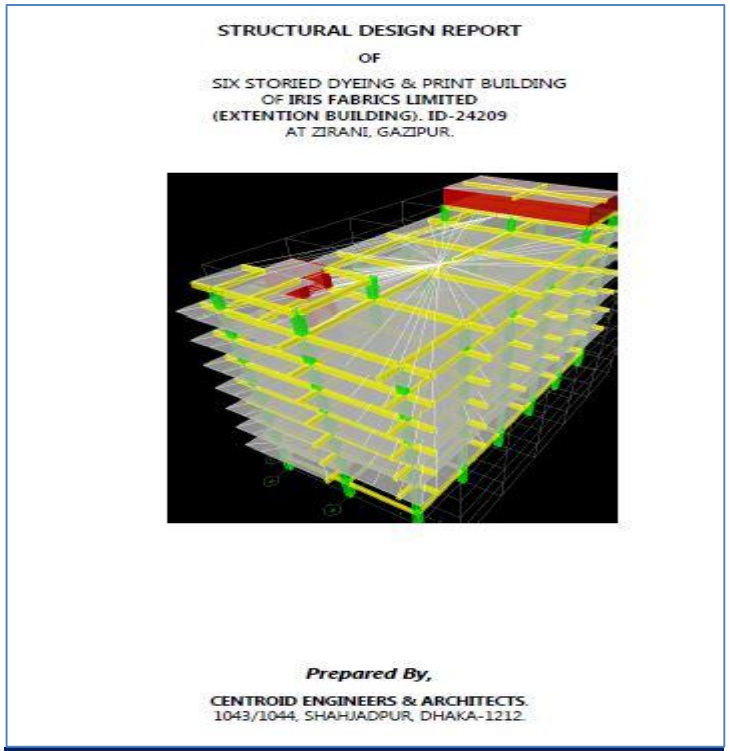
Storage

Observation: Printing and Dying Building

Design report not fully comply with BNBC

Observation: Printing and Dying Building

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 of part-6, BNBC.


STRUCTURAL DESIGN REPORT

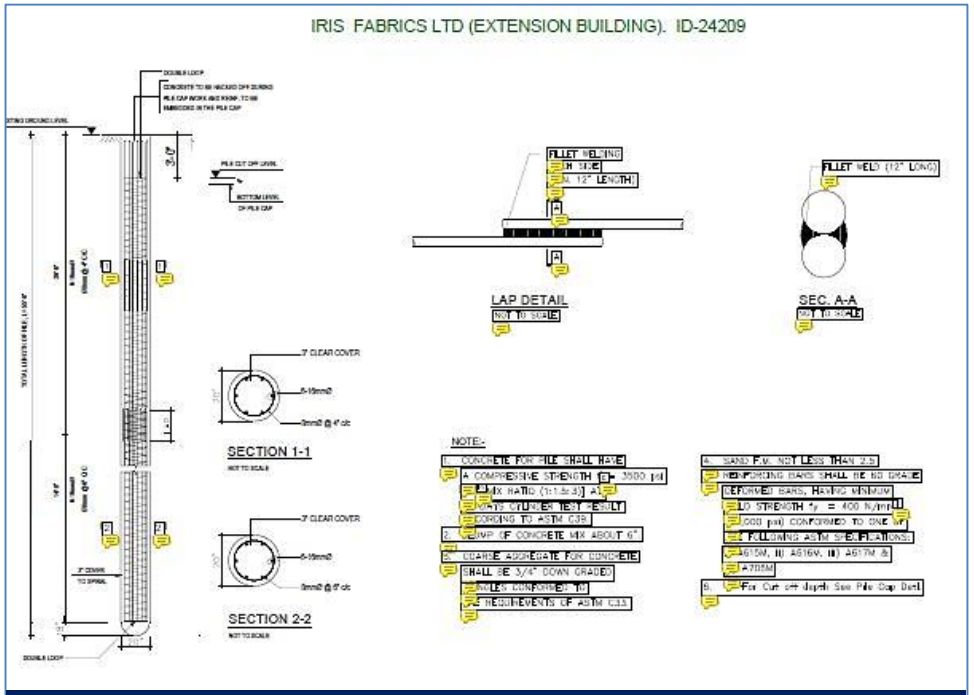
OF

SIX STORIED DYEING & PRINT BUILDING
OF IRIS FABRICS LIMITED
(EXTENTION BUILDING). ID-24209
AT ZIRANI, GAZIPUR.

Prepared By,

CENTROID ENGINEERS & ARCHITECTS.
1043/1044, SHAHJADPUR, DHAKA-1212.

Design report

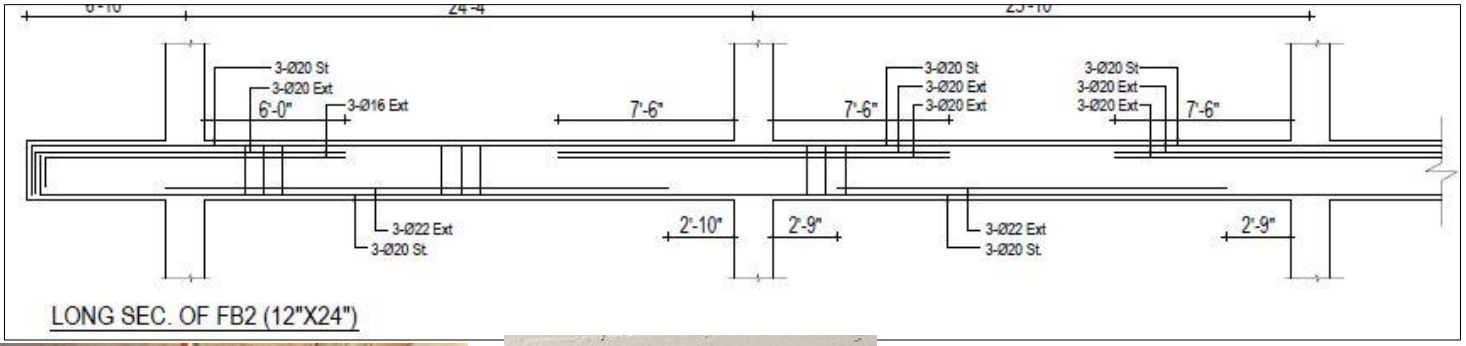


Pile details

A Design Report was provided for Printing and Dying Building. Information of pile was provided in the drawings. But detail calculation was not found in the design report regarding the pile capacity. Moreover, serviceability checks were not provided in the design report.

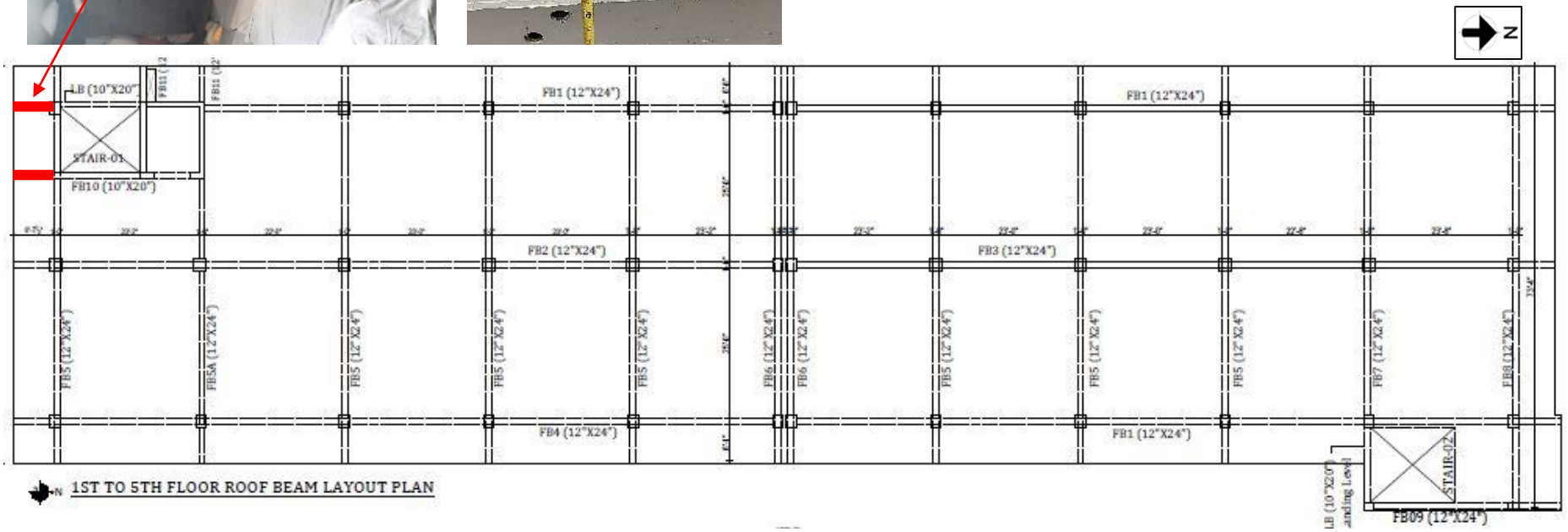
Observation: Printing and Dying Building

Inconsistencies in as-built drawing



LONG SEC. OF FB2 (12"X24")

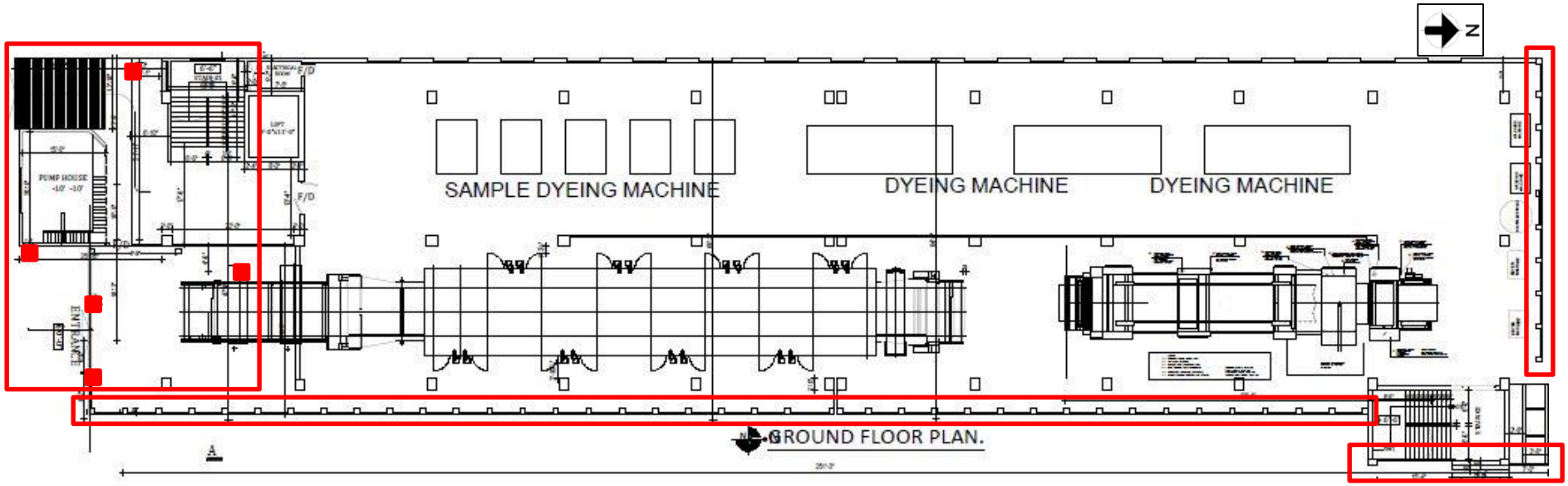
Typical beam size was found 12” X 22” instead of 12” X 24”. Also cantilever beam was found all side of the building which was not match with the provided structural drawing.



1ST TO 5TH FLOOR ROOF BEAM LAYOUT PLAN

Observation: Printing and Dying Building

In the architectural drawing, few RC columns in ground floor was shown but no structural information was found for that RC columns and foundation system. Also, pump room was structurally connected with the mezzanine floor slab, which was not shown in drawing.



Observation: Printing and Dying Building

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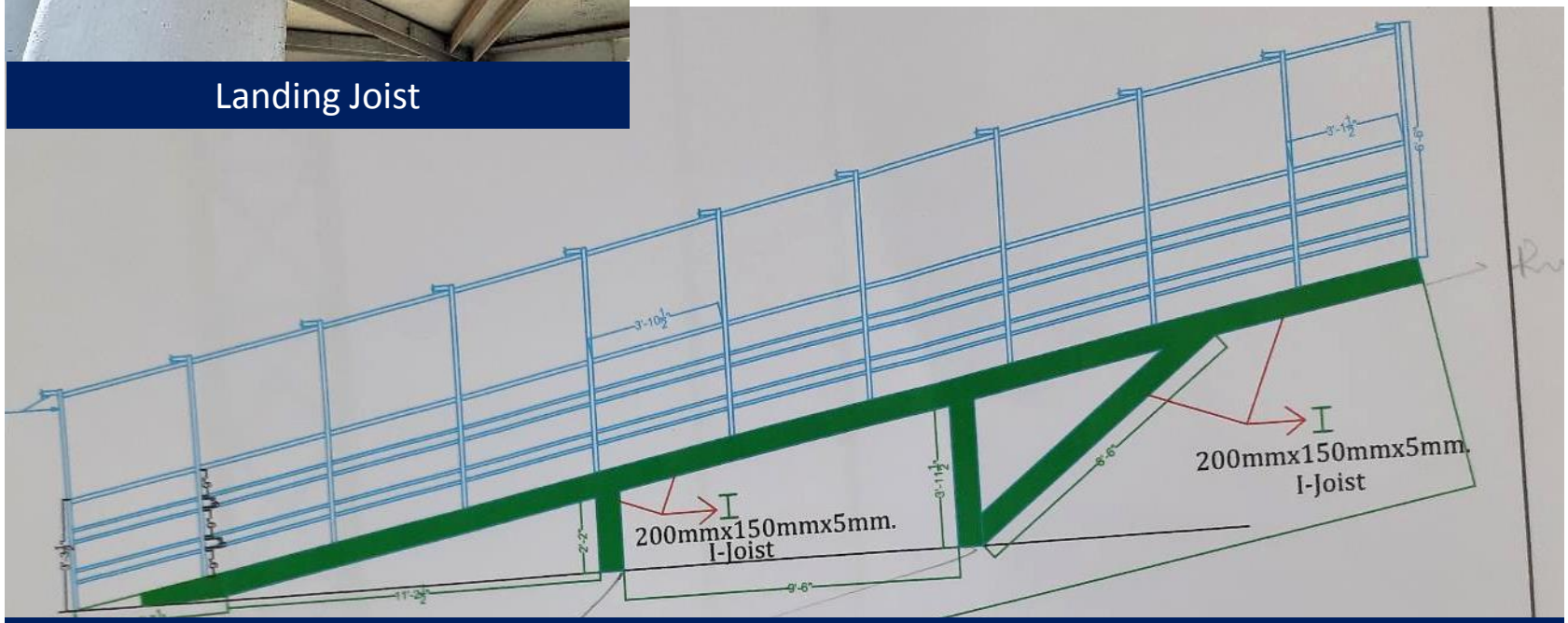
Mismatch in drawing

Observation: Rooftop connecting bridge

Landing Joist

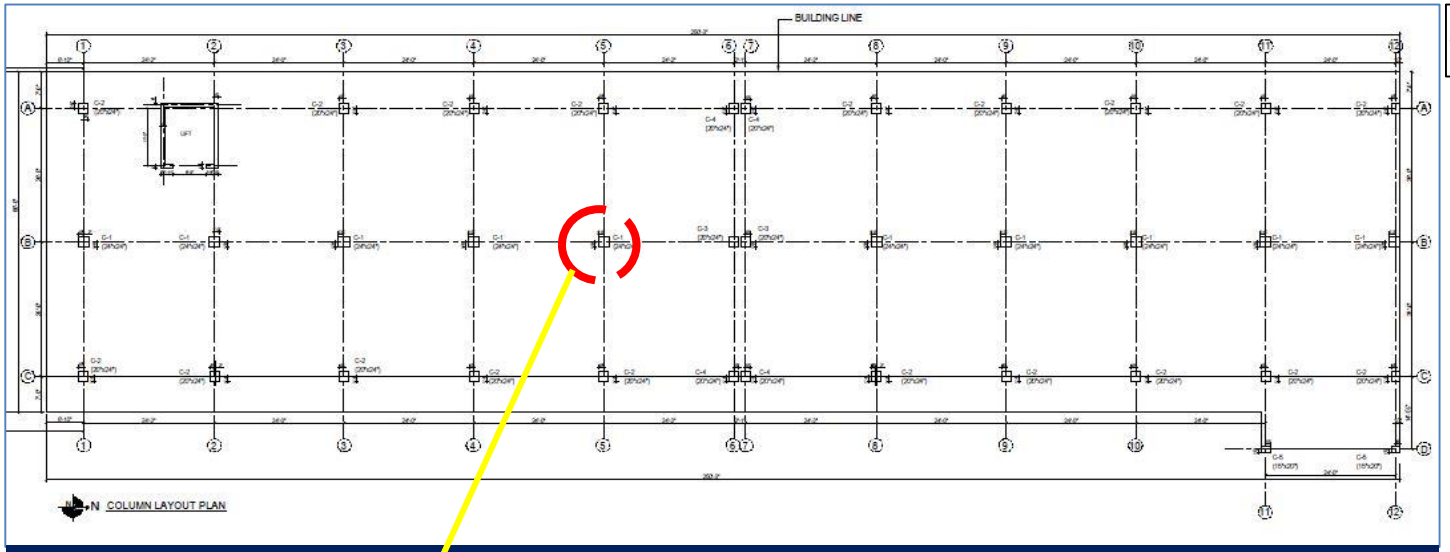
The flange width of steel joist was found 130 mm instead of 150 mm. Also, no connection details have been found in the drawings.



Provided drawings of rooftop connecting bridge

Observation: Rooftop connecting bridge

Test Carried out



Column Layout

Marked column was tested for aggregate type and stone aggregate was found.

Tests carried out : Printing and Dying Building

Problems Observed

01: Column and foundation stressed above normal design limit.

02: Design report not fully comply with BNBC.

03: Inconsistency in as-built drawings.

04: Mismatch in drawing (Rooftop connecting bridge).

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Column and foundation stressed above normal design limit	Building engineer is required to review the design, loads and stress of column & foundation.	6-weeks
02	Column and foundation stressed above normal design limit	Produce and actively manage a loading plan for all floor plates within the factory Building considering floor, column, foundation capacity and comply with BNBC.	6-weeks
03	Column and foundation stressed above normal design limit	Carryout remedial works where necessary.	6-months
04	Column and foundation stressed above normal design limit	Implement floor loading plan.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
05	Design report not fully comply with BNBC	Building Engineer to prepare design report as per BNBC (part-6; Article 1.9.1) by reviewing design, loads and capacity of structural members.	6-weeks
06	Design report not fully comply with BNBC	Implement the recommendation of design report.	6-months
07	Inconsistencies in as-built drawing	The factory engineer is required to survey the structure and update the as-built drawings.	6-weeks
08	Mismatch in drawing (Rooftop connecting bridge)	The building engineer to survey the structure and update the as-built drawings with connection details.	6-weeks