

JL Fashions Limited (relocated)

Baniarchala, Mahna, Vhabanipur, Gazipur Sadar

(24.163342, 90.419976)

12th & 18th August 2021

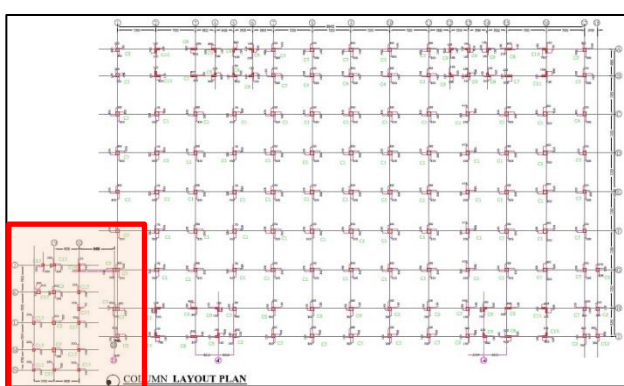


Buildings Information

1. Main Building (G+5)
2. Facility Building (G+5)
3. Utility Building (B+G+1)
4. Boiler Shed (Single Storied)
5. Security Building (Single Storied)

Observations

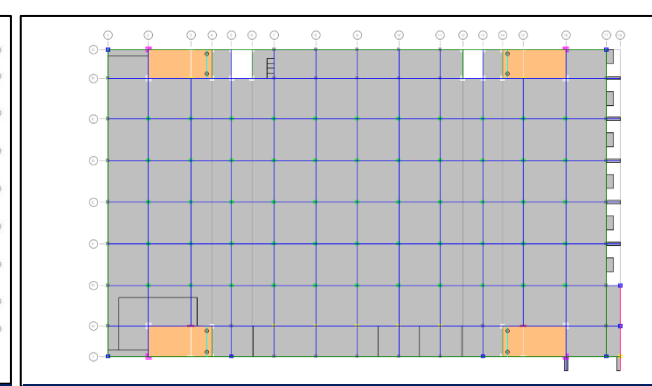
Design report needs to be revised



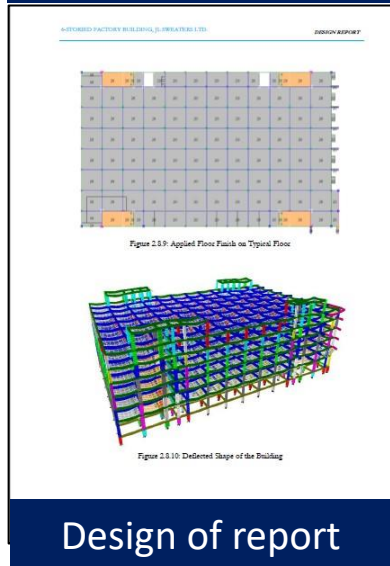
Column Layout Plan- marked portion toilet block



Foundation layout plan- marked portion toilet block



Toilet block has not been assigned in FEA model

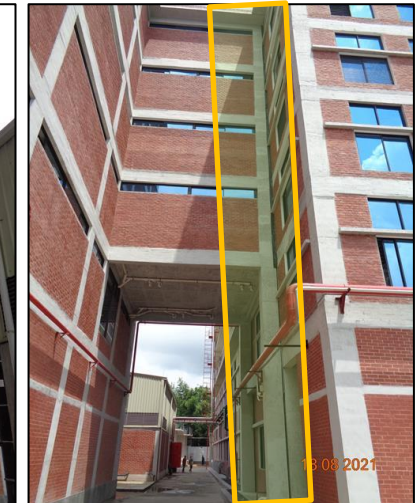


The toilet block is connected at foundation with the Main Building. And there is an expansion gap between the structures. The assessment of the toilet block has not been included in design report. Factory engineer is required to assess the toilet block including the foundation adequacy.

Design of report



Toilet Block



Expansion gap

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 software-based analysis model, design report & documents following BNBC requirements.

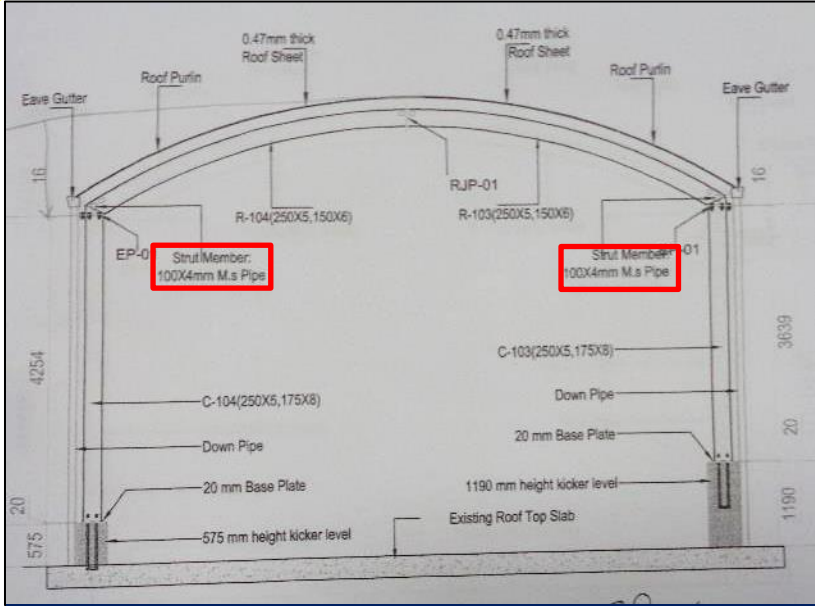
Discrepancies in as-built drawing

6 **Observations: Main Building (Roof shed)**



Compression strut was found missing at site condition

Compression strut was not found at site condition as per as built drawing. Factory engineer is required to revise the Engineering Assessment (EA) for the shed which compliance with section 1.9.1 (part-6, BNBC-2006).



Compression strut has been shown in as-built drawing at all the panel.

7 Observations: Main Building (Roof shed)

**Significant gap in connection at several
location**

Observation: Main Building (Roof shed)



Significant gap in connection of rafter & column was found at roof shed (AHU). Factory engineer is required to survey the whole structure & identify the locations of the connection gaps. Factory engineer is also required to assess the reason of connection gap & provide proper remediation. Factory is required to follow recommendation of remediation suggested by the engineer.

Corrosion in steel section



Corrosion in steel column

Corrosion was found in the steel members. Factory is required to apply rust proofing on the corroded areas to protect the steel members from corrosion.

Water ponding on roof

Observation: Main Building (Roof shed)



Water ponding was found at roof at toilet zone area. The water drainage system was found but 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: Main Building (Roof shed)

Design report needs to be revised

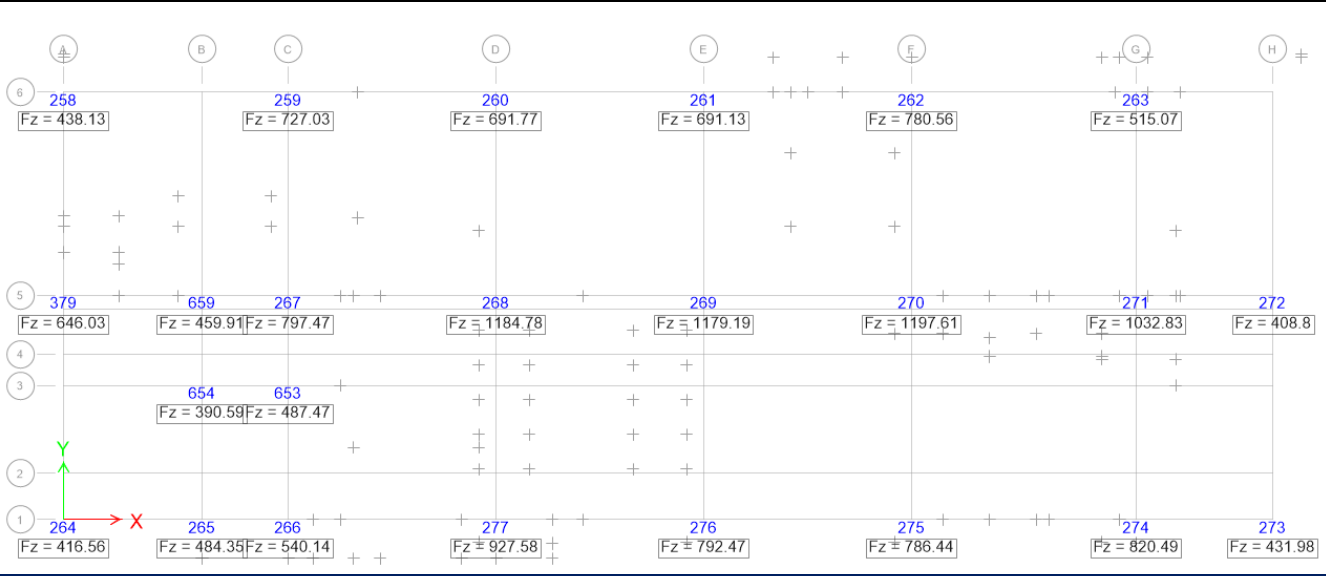
FOOTING SCHEDULE

FOOTING TYPE	FOOTING SIZE	H=T+D		A	BOTTOM LAYER REINFORC	
		T	D		LONG DIR. STEEL	
		F-1	3450 x 3450		575	150
F-2	3600 x 3600	575	150	400	16 mm Ø @ 87 c/c	1
F-3	3750 x 3750	600	150	425	20mm Ø @ 125 c/c	20
F-4	4500 X 4500	750	150	525	20 mm Ø @ 100 c/c	20
F-5	4650 X 4650	775	175	550	20 mm Ø @ 87 c/c	20
F-6	4950 X 4950	825	175	575	20 mm Ø @ 87 c/c	20
F-7	5400 X 5400	925	175	650	25 mm Ø @ 137 c/c	25
F-8	6000 X 6000	1050	175	725	25 mm Ø @ 137 c/c	25

Footing schedule in drawing

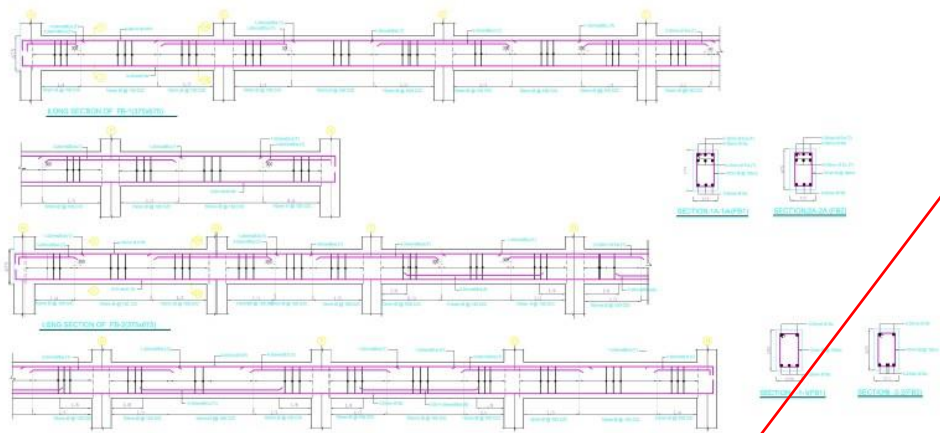
Grid ID	Footing ID	Footing Size			Load (kip)	Factor of Safety		Column			Two Way Check		One Way Check		Reinforce ment		
		Length (ft)	Width (ft)	Thickness d (in)		ID	Length (in)	Width (in)	Capacity	Allowable $40bd\sqrt{f'c}$	Capacity	Allowable					
5-A	F2	12	12	26	470	2.83	Ok	C3	20	24	647.70	1004.12	Ok	182.13	376.55	Ok	Ok
5-C	F5	15.5	15.5	35	795	2.80	Ok	C4	24	24	1108.26	1661.47	Ok	304.75	654.73	Ok	Ok
5-D	F4	15	15	33	756	2.75	Ok	C4	24	24	1054.29	1513.43	Ok	292.95	597.41	Ok	Ok
5-E	F4	15	15	33	756	2.75	Ok	C4	24	24	1054.29	1513.43	Ok	292.95	597.41	Ok	Ok
5-F	F5	15.5	15.5	35	852	2.61	Ok	C4	24	24	1187.72	1661.47	Ok	326.6	654.73	Ok	Ok
5-G	F3	12.5	12.5	27	562	2.57	Ok	C3	20	24	778.30	1064.47	Ok	220.68	407.32	Ok	Ok
4-A	F4	15	15	33	705	2.95	Ok	C3	20	24	990.86	1460.33	Ok	285.33	597.41	Ok	Ok
4-D	F8	20	20	47	1292	2.86	Ok	C5A	27	27	1812.21	2798.35	Ok	496.48	1134.47	Ok	Ok
4-E	F8	20	20	47	1292	2.86	Ok	C5A	27	27	1812.21	2798.35	Ok	496.48	1134.47	Ok	Ok
4-F	F8	20	20	47	1306	2.83	Ok	C6	27	27	1831.85	2798.35	Ok	501.86	1134.47	Ok	Ok
4-G	F7	18	18	41	1128	2.66	Ok	C4A	24	24	1590.07	2144.22	Ok	445.19	890.68	Ok	Ok
4-H	F1	11.5	11.5	26	446	2.74	Ok	C1	24	15	616.88	951.83	Ok	155.29	360.86	Ok	Ok
1-A	F1	11.5	11.5	26	454	2.69	Ok	C1	24	15	627.95	951.83	Ok	158.08	360.86	Ok	Ok
1-D	F7	18	18	41	1014	2.96	Ok	C4A	24	24	1429.37	2144.22	Ok	400.2	890.68	Ok	Ok
1-E	F6	16.5	16.5	37	865	2.91	Ok	C4A	24	24	1213.49	1815.95	Ok	338.57	736.80	Ok	Ok
1-F	F6	16.5	16.5	37	865	2.91	Ok	C4	24	24	1213.49	1815.95	Ok	338.57	736.80	Ok	Ok
1-G	F6	16.5	16.5	37	897	2.81	Ok	C4	24	24	1258.39	1815.95	Ok	351.1	736.80	Ok	Ok
1-H	F1	11.5	11.5	26	470	2.60	Ok	C1	24	15	650.08	951.83	Ok	163.65	360.86	Ok	Ok

Foundation adequacy check table in report



Base reaction from FEA model (E-tabs)

In foundation adequacy table the size of the footing has been considered larger size than the size provided in footing schedule of the as built drawing. Also, the base reaction from FEA model does not match with the load in foundation adequacy table.



NOTE
 MATERIAL PROPERTIES
 1) $f_y = 60000$ psi
 2) $f'_c = 3500$ psi (1:1.5:3)
 Stone chips & Properly Clean & Wash

FLOOR BEAM DETAILS
 (All Dimensions are in mm)

APPROVAL	DESIGN	PROJECT NAME	ARCHITECT	ENGINEER	DATE	REVISIONS	SN	DATE	REVISION	DWG TITLE	FACTORY BLDG - HOOPING SYS	CONSULTANT'S SCALE	SHEET NO.

NOTE
 MATERIAL PROPERTIES
 1) $f_y = 60000$ psi
 2) $f'_c = 3500$ psi (1:1.5:3)
 Stone chips & Properly Clean & Wash

Material Property Data

General Data

Material Name: CON3500

Material Type: Concrete

Directional Symmetry Type: Isotropic

Material Display Color: Change...

Material Property Design Data

Material Name and Type

Material Name: CON3500

Material Type: Concrete, Isotropic

Design Properties for Concrete Materials

Specified Concrete Compressive Strength, f'_c : lb/in²

Lightweight Concrete

Shear Strength Reduction Factor:

OK Cancel

Time Dependent Properties...

OK Cancel

In drawing the concrete design strength for beam has been shown 3500 psi but in the FEA model, 4000 psi has been assigned.

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$f'_c = 4000$ psi has been assigned in FEA model for beam

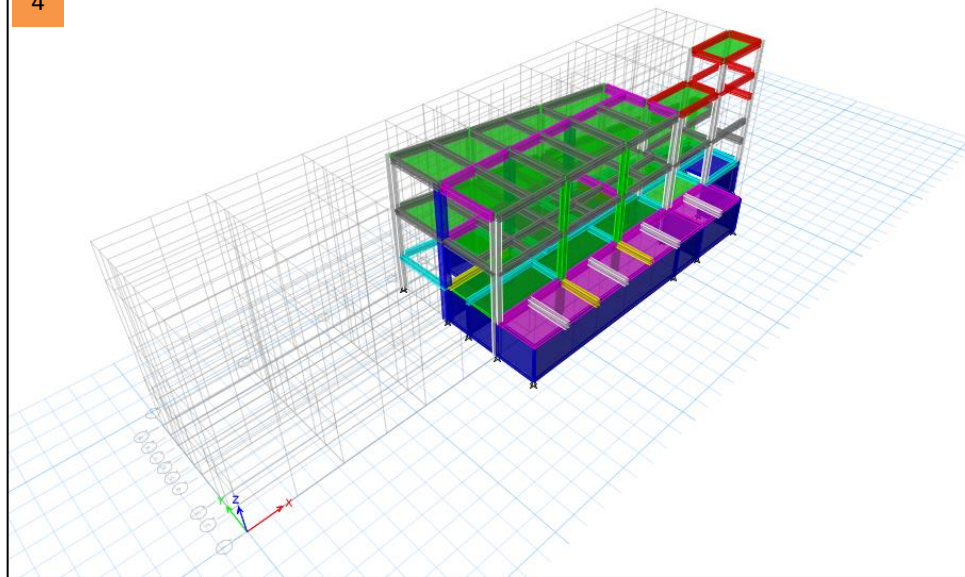
Water ponding on roof



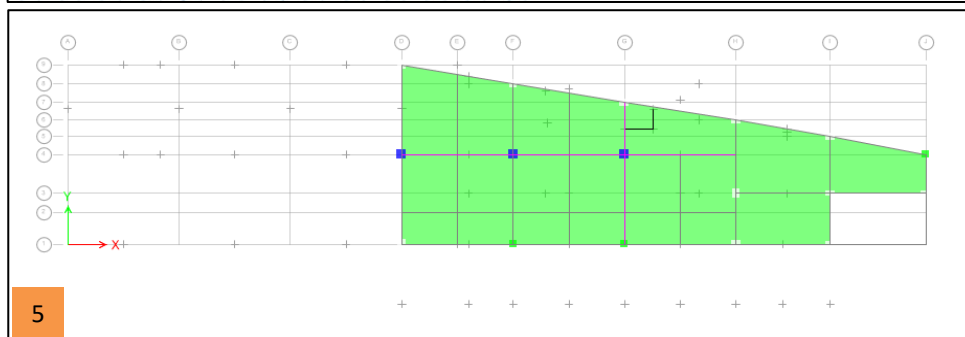
Water ponding was found at roof. The water drainage system was found but adequate sloping was not found. The factory engineer is required to develop proper drainage system with adequate sloping on the mentioned area. `

Design report needs to be revised

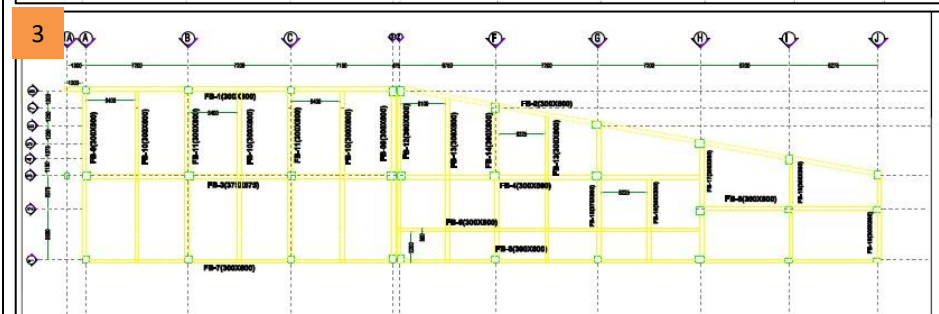
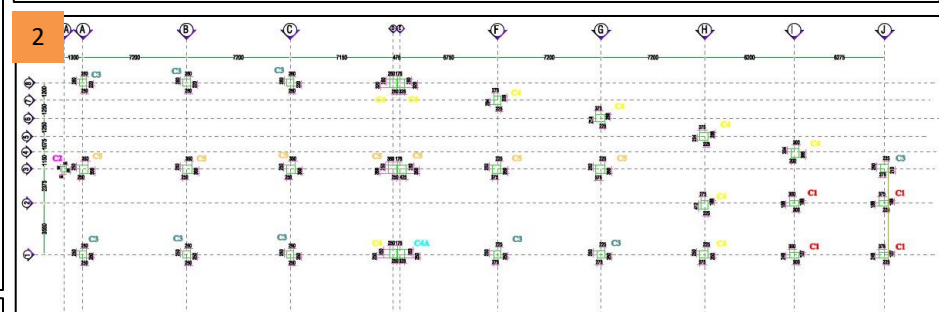
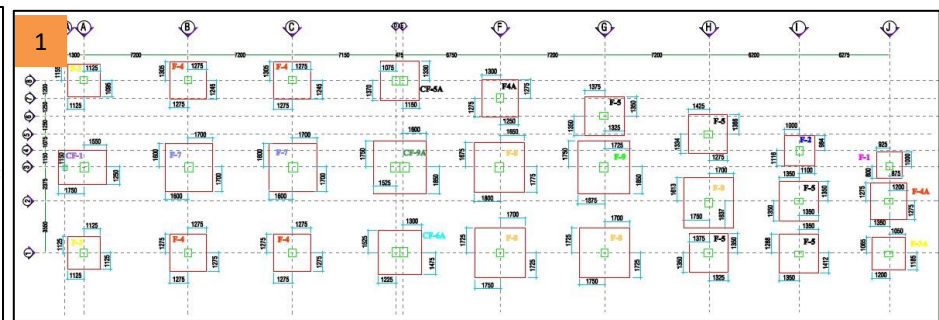
4



5



4. 3D view, 5. Plan view of the structure in FEA model. In FEA model whole structure has not been assigned as per drawing & site condition.



1. Footing layout, 2. Column Layout, 3. Beam Layout

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Water ponding on 1st floor (open to sky) & roof



Water ponding on roof top slab



Water ponding on 1st Floor Open to Sky Area

Water ponding was found on roof top and 1st floor open to sky area. The water drainage system was found but adequate sloping was not found. The factory engineer is required to develop proper drainage system with adequate sloping on the mentioned area.

Observation: Utility Building

Undocumented plastic water tank on roof



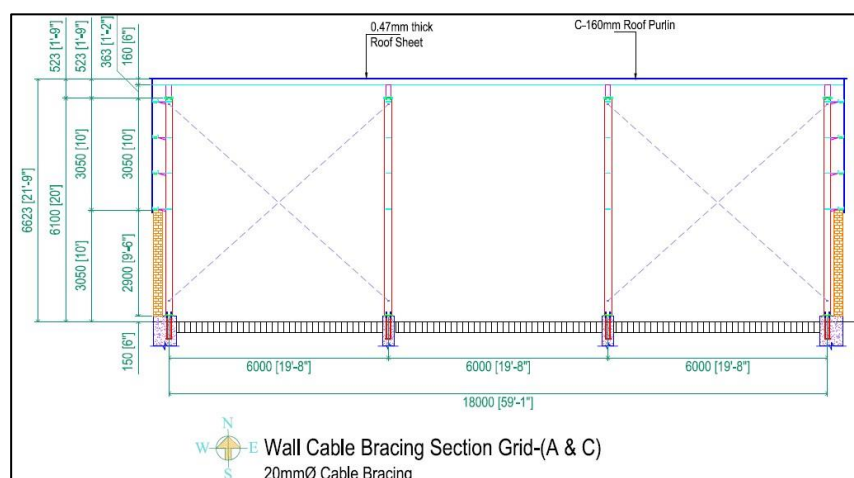
2 nos. Plastic Water Tank on roof top slab
(Capacity- 2000 & 1000 Liter)



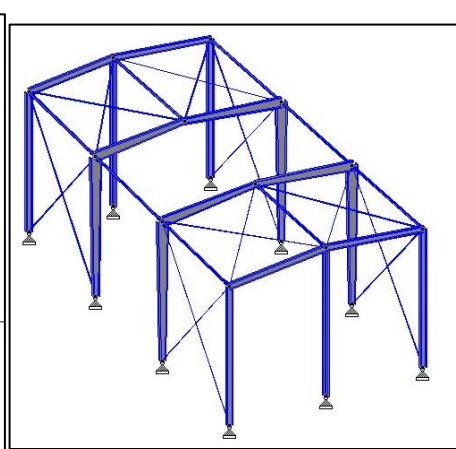
Plastic Water Tank with 57" Build Up
(Capacity- 2000 Liter)

3 nos. undocumented plastic water tank found on roof top where 1 nos. 2000 liters plastic water tank rest on 57 inch build up. The factory engineer is required to check the adequacy of slab considering these undocumented water tanks whether it is satisfactory or not. Also, update the as-built drawing and load plan.

Design report needs to be revised



Wall Bracing Layout plan



Design report has been provided that prepared based on a software-based analysis, but the analysis model was not provided by the factory. The factory engineer is required to submit the Design report along with the software analysis model



Wall bracing was not found at site condition

The assessment of the structure has been conducted considering wall bracing, but during inspection wall bracing was not found at factory site. Factory engineer is required to revise the design documents as per actual site condition

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. Prepare the software-based analysis model based on actual site condition and revise design documents following BNBC requirements.

Software and Computer Program

STAAD Pro V8i has been utilized for the analysis and design of the structure.

As per design report, Staad pro has been used to analyse the structure.

Problems Observed

Main Building:

Item 01: Design report needs to be revised.

Item 02: Discrepancies in as-built drawing.

Item 03: Significant gap in connection at several location.

Item 04: Corrosion in steel section.

Item 05: Water ponding on roof.

Facility Building:

Item 06: Design report needs to be revised.

Item 07: Water ponding on roof.

Utility Building:

Item 08: Design report needs to be revised.

Item 09: Water ponding on 1st floor (open to sky) & roof.

Item 10: Undocumented plastic water tank on roof

Boiler Shed:

Item 11: Design report need to be revised.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Design report needs to be revised (Main Building)	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
02	Design report needs to be revised (Main Building)	Implement the recommendations of design report.	6-months
03	Discrepancies in as-built drawing (Main Building: Roof Shed)	Building engineer to revise the Engineering Assessment (EA) 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 2006.	6-weeks
04	Discrepancies in as-built drawing (Main Building: Roof Shed)	Implement remediation works deemed necessary from EA.	6-months
05	Significant gap in connection at several location (Main Building: Roof Shed)	Identify the locations and carryout suitable repair works where necessary.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
06	Corrosion in steel section (Main Building)	Factory is required to take necessary actions to protect the steel members from corrosion.	6-weeks
07	Water ponding on roof (Main Building)	The factory engineer to develop proper drainage system with adequate sloping to resist water ponding on roof.	6-months
08	Design report needs to be revised (Facility Building)	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
09	Design report needs to be revised (Facility Building)	Implement the recommendations of design report.	6-months
10	Water ponding on roof (Facility Building)	The factory engineer to develop proper drainage system with adequate sloping to resist water ponding on roof.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
11	Design report needs to be revised (Utility Building)	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
12	Design report needs to be revised (Utility Building)	Implement the recommendations of design report.	6-months
13	Water ponding on 1st floor (open to sky) & roof (Utility Building)	The factory engineer to develop proper drainage system with adequate sloping to resist water ponding on roof.	6-months
14	Undocumented plastic water tank on roof (Utility Building)	Building Engineer is required to check the adequacy of the slab.	6-weeks
15	Undocumented plastic water tank on roof (Utility Building)	Update as built drawing and load plan.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
16	Undocumented plastic water tank on roof (Utility Building)	Implement remediation works if necessary.	6-months
17	Design report needs to be revised (Boiler Shed)	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
18	Design report needs to be revised (Boiler Shed)	Implement the recommendations of design report.	6-months