



Next Export Zone Ltd.

105/4, Adaboi, Peara Bagan, Joydebpur, Gazipur, Bangladesh
(23.970740, 90.425149)

24th Feb 2020





Building Information

1. Main Building (partially six storied: G+4+Partial shed at roof)
2. Boiler room (single storied)
3. Generator & Sub-station room (single storied)
4. Medical & Childcare shed (single storied)



Observations



Undocumented water tanks and non-engineered supporting structure on the roof

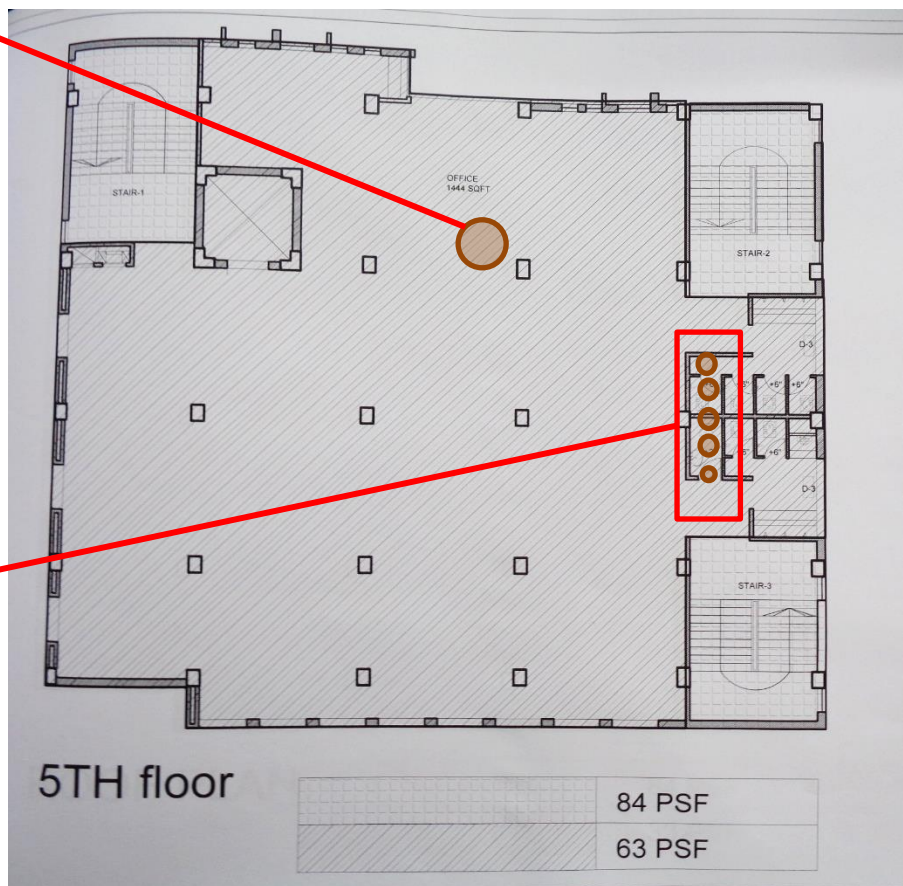


Undocumented 5000 Ltr water tank



Undocumented 4 nos 1000 Ltr and 1 no 750 Ltr water Tank

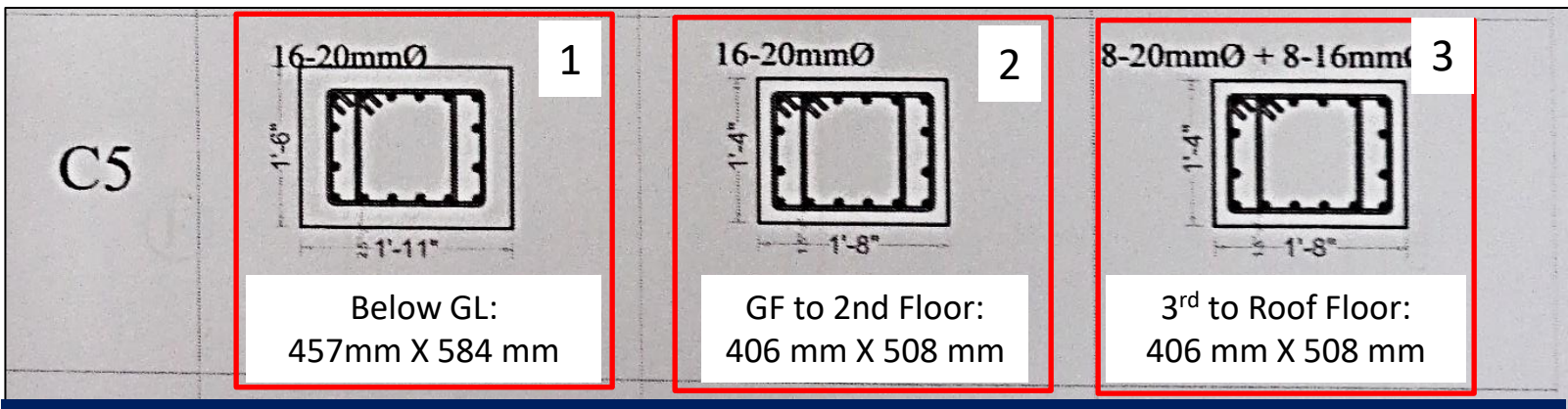
Undocumented water tanks were found on existing roof. Also a non-engineered supporting structure was found at roof level. Factory engineer is required to survey and update the as-built condition.



5TH floor
Floor loading plan



Mismatches in the design report and software analysis file



Column size has been shown in drawing: 1- 457mm X 584mm; 2 & 3 – 406mm X 508 mm

General Data

Property Name: 1 CS_BGJ

Material: 2861 psi

Notional Size Data: Modify/Show Notional Size...

Display Color: Red Change...

Notes: Modify/Show Notes...

Shape

Section Shape: Concrete Rectangular

Section Property Source

Source: User Defined

Property Modifiers: Modify/Show Modifiers... Currently Default

Section Dimensions

Depth: 457.2 mm

Width: 685.8 mm

Reinforcement: Modify/Show Rebar...

General Data

Property Name: 2 CSI

Material: 2861 psi

Notional Size Data: Modify/Show Notional Size...

Display Color: Green Change...

Notes: Modify/Show Notes...

Shape

Section Shape: Concrete Rectangular

Section Property Source

Source: User Defined

Property Modifiers: Modify/Show Modifiers... Currently Default

Section Dimensions

Depth: 406.4 mm

Width: 609.6 mm

Reinforcement: Modify/Show Rebar...

General Data

Property Name: 3 CS 3-cj

Material: 2861 psi

Notional Size Data: Modify/Show Notional Size...

Display Color: Magenta Change...

Notes: Modify/Show Notes...

Shape

Section Shape: Concrete Rectangular

Section Property Source

Source: User Defined

Property Modifiers: Modify/Show Modifiers... Currently Default

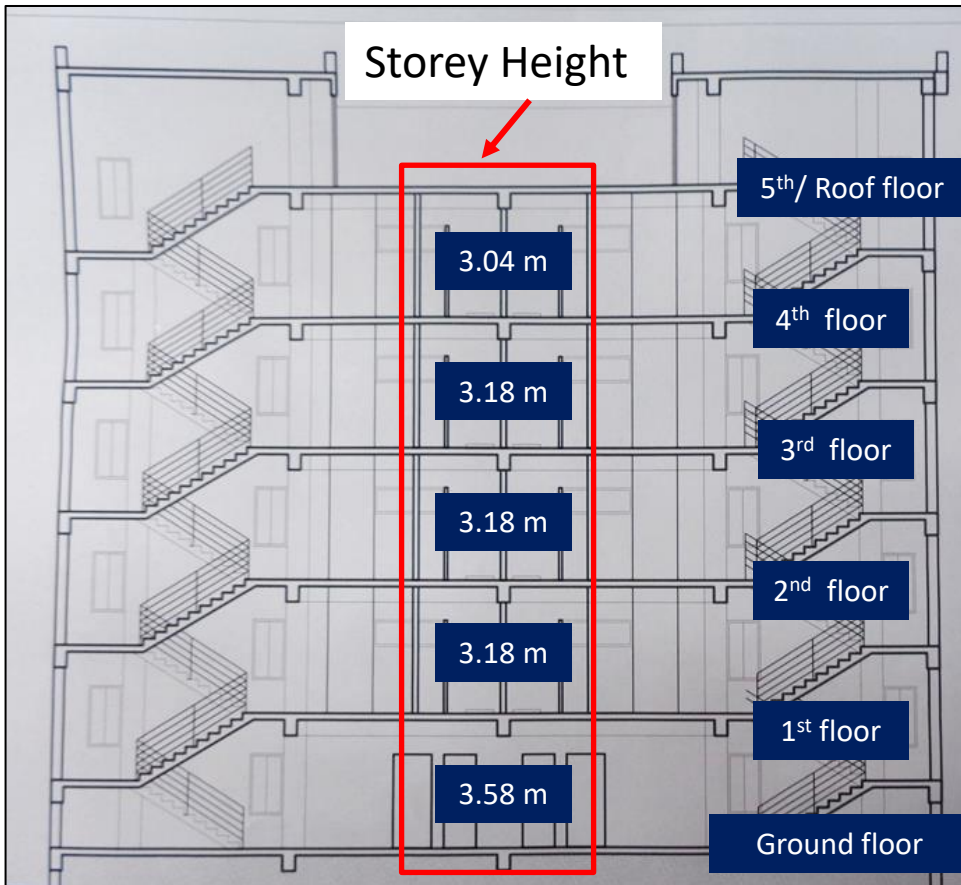
Section Dimensions

Depth: 406.4 mm

Width: 609.6 mm

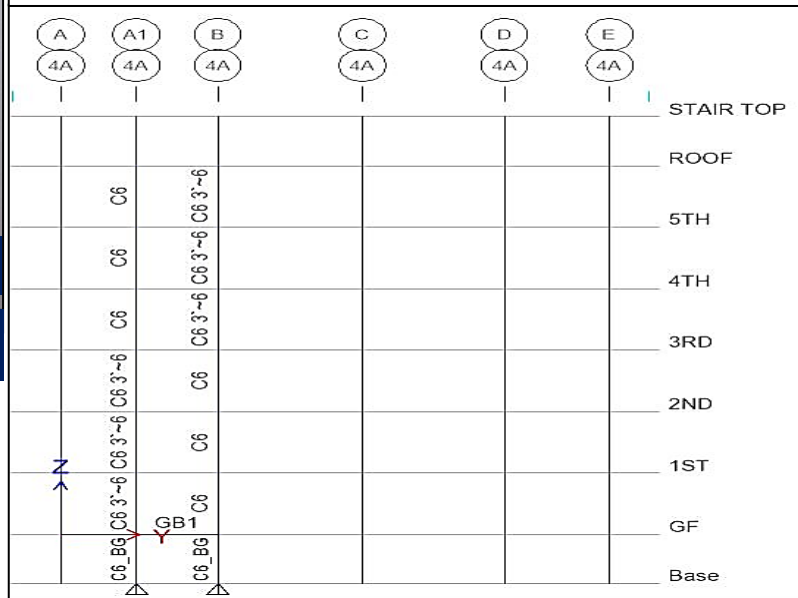
Reinforcement: Modify/Show Rebar...

C5 Column Size found in FEA model:
1- 457 mm X 685 mm; 2 & 3- 406 mm X 609 mm.
The column sizes in the FEA model are greater than sizes shown in the provided drawings.
The factory engineer to verify the actual sizes of columns and re-check the capacity accordingly.



Sectional elevation of 5 storey building

Story	Height m	Elevation m
STAIR TOP	2.4384	20.7264
ROOF	3.048	18.288
5TH	3.048	15.24
4TH	3.048	12.192
3RD	3.048	9.144
2ND	3.048	6.096
1ST	3.048	3.048
GF	2.4384	0
Base		-2.4384



Storey Height of 6 storied building in E-tabs

Storey height and number of the storey found mismatch in between FEA model and as-built drawing. Also, in the as-built drawings, the structure has been shown as 5 storied RC structure where 6 storied in the FEA model.



	A	A1	B	C	D	E
STAIR TOP						
ROOF						
5TH		0.076	0.146			
4TH		0.084	0.219			
3RD		0.120	0.293			
2ND		0.177	0.332			
1ST		0.217	1.721			
GF		0.254	0.375			
Base	0.228		0.403			

Over stressed column in the FEA model

- 11. CONCLUSION & RECOMMENDATIONS:**
- According to BNBC Loading Condition (63 Psf)-
- All the foundations have adequate Factor of Safety against bearing capacity.
 - All the foundations are adequate in thickness for punching.
 - All the grade beams have adequate flexural capacity.
 - All the RCC columns are adequate considering all probable load combinations of BNBC 2006.
 - All the provided Slab reinforcement are adequate.
 - Floor Beams are also adequate.
 - The building also satisfies the drift requirements as per BNBC 2006.
 - Factory should maintain the load plan.

Conclusion in design report

One of the column was found overstressed in the FEA model. But in DEA report, all the column has been said adequate.

Prepared design report required to be revised and submitted to Accord for further review



Non-engineered shed at roof



Light weight roof supported on angle columns.

Non-engineered shed was found at roof level. Light weight roof structure supported on box columns made by two 38 mm X 38 mm angles. The connections were non-engineered. On the other hand, no structural documentation was available onsite for the shed.



38 mm X 38 mm box

Observations: Main Building



Lack of as-built documents



Generator & Sub-station room



Boiler room

No documents were available for Boiler room, Generator & Sub-station room, Medical & Childcare shed.

Building engineer is required to prepare “as constructed” drawings that includes connection details which reflect the actual site dimensions with complete structural information.



Medical & Childcare shed



Non-engineered connection in the Medical & Childcare shed



Non-engineered connections

Light weight roof structure supported on 37 mm X 37 mm angle. The connections appeared to be non-engineered. Building engineer to check the capacity of the lightweight roof structure against lateral loading.



Medical & Childcare shed

Observations: Medical & Childcare shed



Priority Actions



Problems Observed

Main Building:

Item-01: Undocumented water tanks and apparently non-engineered supporting structure on the roof.

Item-02: Mismatches in the design report and software analysis file.

Item-03: Non-engineered shed at roof.

Ancillary Structures:

Item-04: Lack of as-built documents.

Item-05: Non-engineered connection in the Medical & Childcare shed.



Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Undocumented water tanks and apparently non-engineered supporting structure on the roof. (Main Building)	Building Engineer is required to relocate the existing water tanks as per accepted load plan. Also, survey the supporting structure and take necessary remedial actions.	6-weeks
02	Mismatches in the design report and software analysis file. (Main Building)	The building engineer to update the engineering assessment (structural design) report including the software analysis file and submit to Accord for further review.	6-weeks
03	Mismatches in the design report and software analysis file. (Main Building)	Update and active manage the floor loading plans based on the column and floor capacity of the building.	6-weeks
04	Mismatches in the design report and software analysis file. (Main Building)	Complete remedial works arising from engineering assessment.	6-months



Item No.	Observation	Recommended Action Plan	Recommended Timeline
05	Mismatches in the design report and software analysis file. (Main Building)	Continue to implement load plan.	6-months
06	Non-engineered shed at roof (Main Building).	Remove or demolish the temporary shed. Otherwise, replace the existing shed with an engineered structure.	6-weeks
07	Lack of as-built documents (Ancillary Structures).	The building engineer to survey the structure and produce as-built drawings with complete structural information.	6-weeks
08	Non-engineered connection on Medical & Childcare shed.	Building engineer to check the connections and capacity of the lightweight roof structure against lateral loading.	6-weeks
09	Non-engineered connection on Medical & Childcare shed.	Carry out remedial works resulting from engineering assessment.	6-months