

Tropical Knitex Ltd (Extension)

Chandra, Kaliakoir, Gazipur- 1751

(24.036181, 90.255914)

24-Sep-2023



Building information

Building-1: eight storied (G+7) reinforced concrete (RC) building with a portion of three storied (G+2).

Building-12: five storied (G+4) reinforced concrete (RC) building.

Building 19: single storied RCC structure along with an underground water reservoir tank.

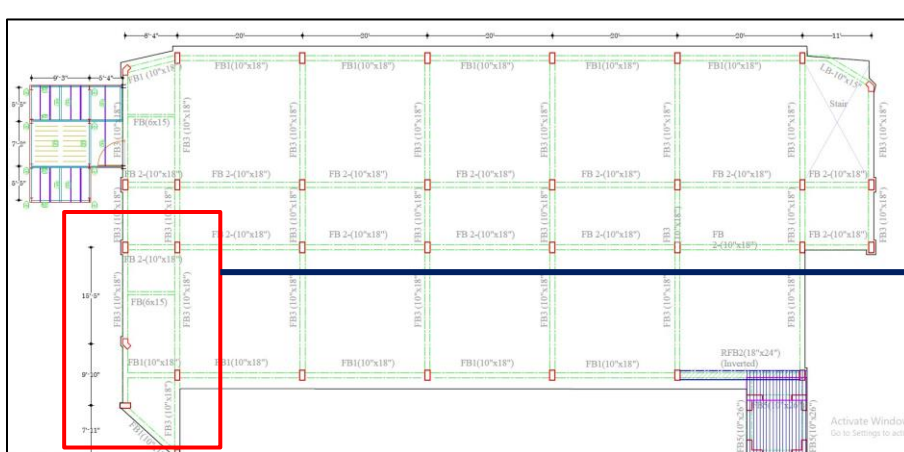
Building-21: This structure is a two storied (G+1) reinforced concrete (RC) building.

Connecting Bridge at Building 7 & 12: two storied Steel connecting Bridge Between Building 7 and building 12.

Connecting Bridge at Building 11 & 12: single storied Steel connecting Bridge Between Building 11 and building 12.

Observations

Mismatch in structural drawings

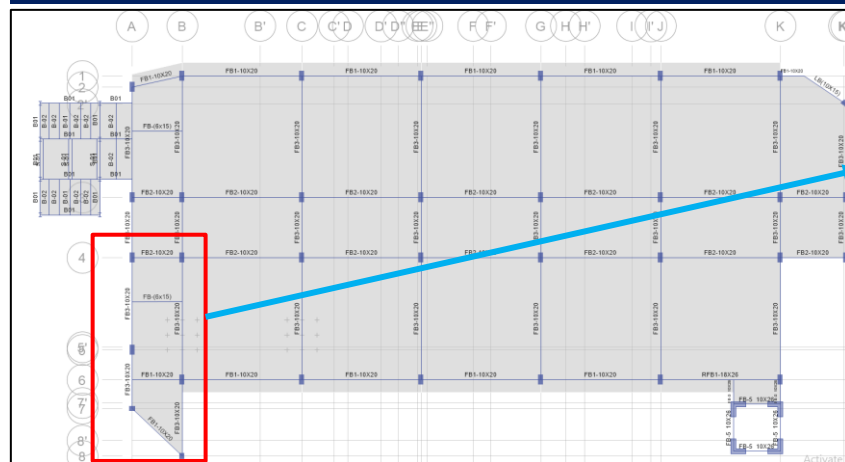


Beam layout plan

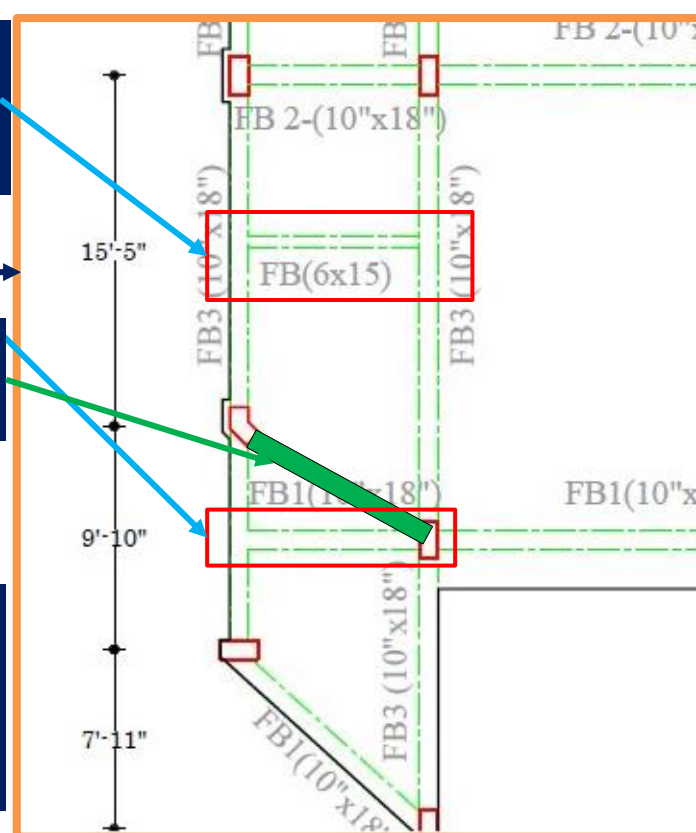
The Beam was not found at site

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Beam assignment in FEA model do not match with site condition



Beam Assignment in FEA model



Beam layout plan

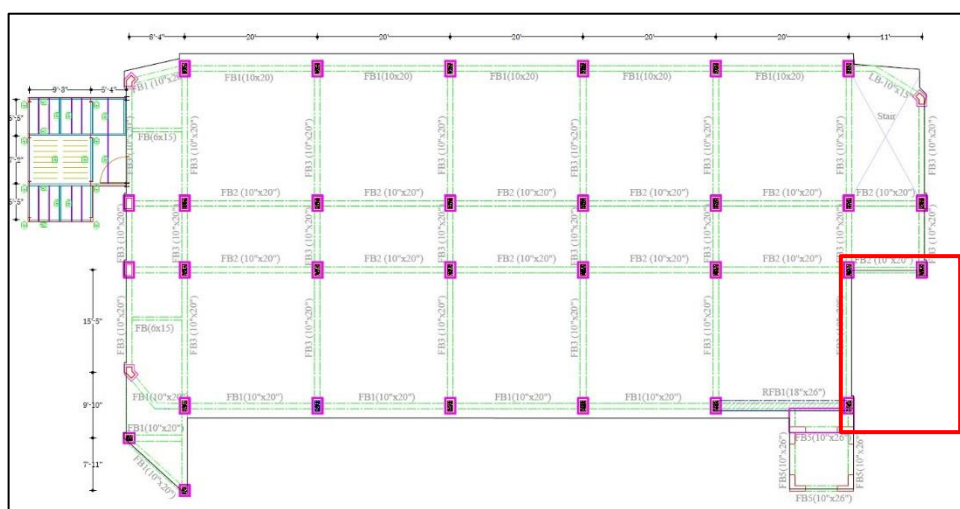
Mismatch found between as-built drawing and actual site condition. Beam was not found at red marked location. Besides, beam was found at green marked location. Also, in FEA model the same mis-match observed.



Beam layout mismatch



Beam not found at site



4th floor Beam layout plan



Additional panel with beam-slab and column was found at 4th floor which has not been shown in as-built drawing.



Stair top beam column framing

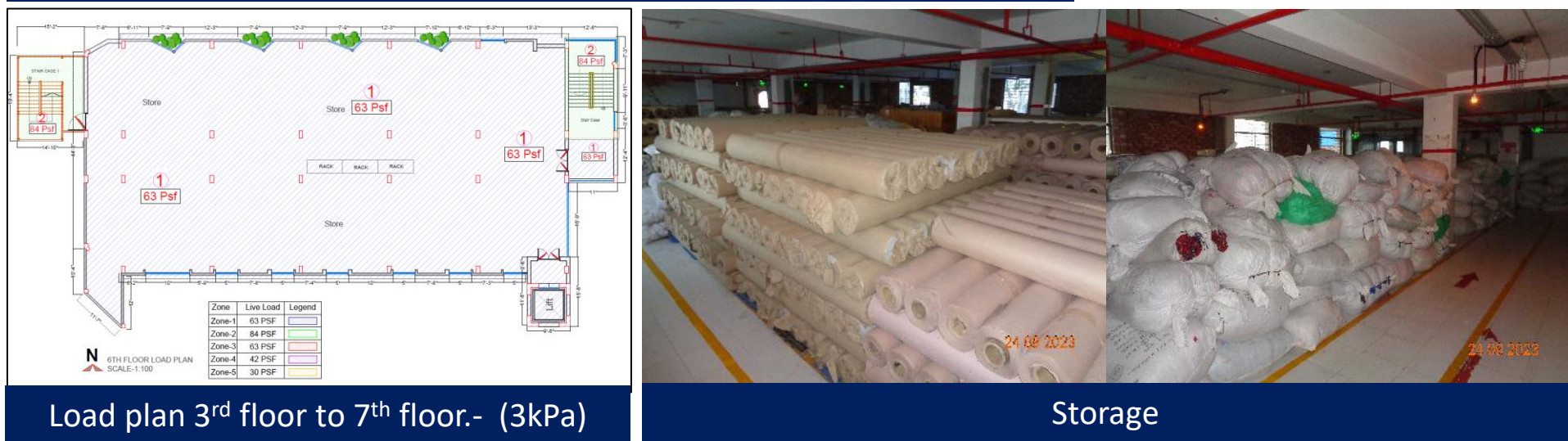
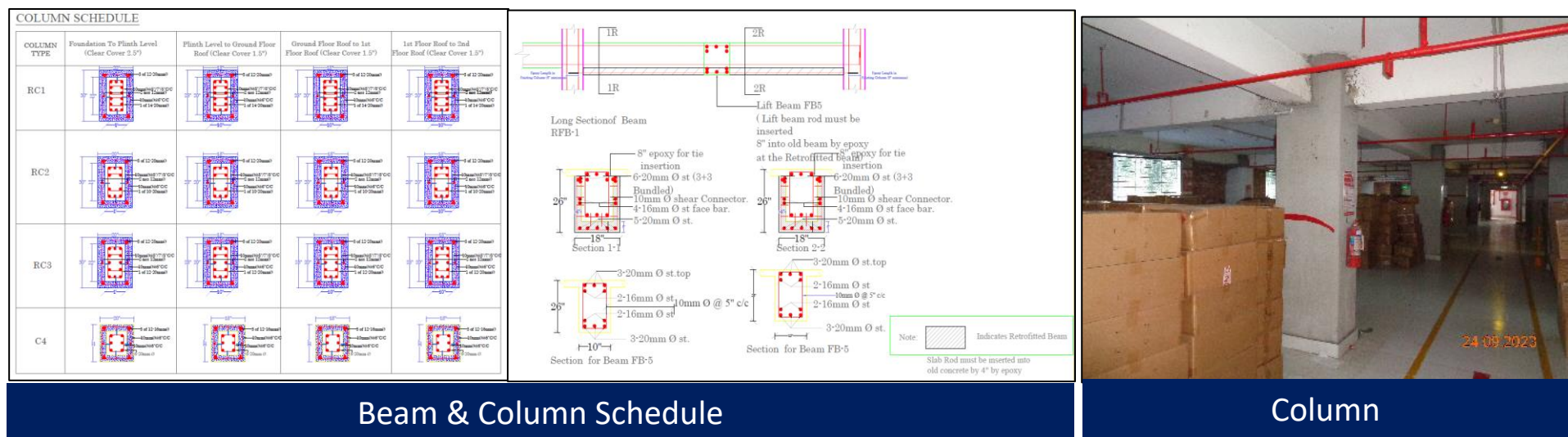


Roof top Beam Layout plan

Stair roof top details of the roof top has not been provided in as-built drawing.

Factory Engineer is required to survey the whole structure and update as-built drawing. Revise the Detail Engineering Assessment based on actual site condition.

Load plan does not comply with BNBC requirement



Factory performed the details engineering assessment (DEA) for the structure and completed the retrofiting works. The live load has been considered 3 kPa for the storage area instead of 6 kPa as per BNBC-2006. Factory is required to submit the DEA to RSC for the further review.

**Lateral stability needs to be verified for the both
steel stairs**



Light weight non-engineered roof shed over the steel stair-1.



The poor connection found in steel stair-1

Building Engineer is required to verify the lateral stability of the stair-1 including the connection adequacy.



The stair-2 is supported by pipe column. The roof is supported by steel truss. There is no lateral load resisting system. Building Engineer is required to verify the lateral stability of the stair-2.

Exposed re-bar at roof and corrosion in steel stair

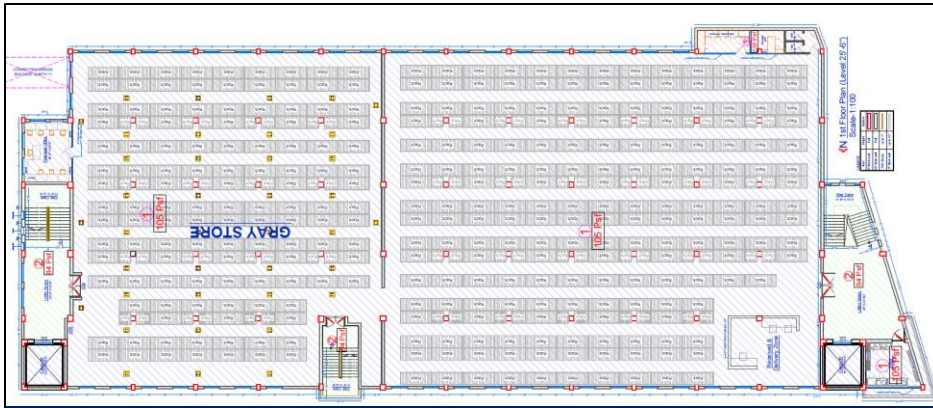


Exposed re-bar head of column at roof susceptible to corrosion and potential to damage of the structural members. Factory is required to take necessary measures to protect the re-bar from corrosion.



Appearance of corrosion was found in the steel stair. Factory is required to repair the corrosion and apply rust proofing on the corroded areas to protect the steel members from corrosion.

Design report need to be prepared



Floor Loading has been considered 5kPa for the 1st floor



Electric duct in RC Column at Ground floor



Storage at 1st floor

The live load of the storage area has been considered 5kPa. As per BNBC, minimum loading 6kPa is required for the the storage live load. Also, electrical duct was found in columns of the ground floor.

Factory engineer is required to prepare full set of design documents for the structure 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 prepare the design documents including architectural drawing and design report based on FEA model in compliance with section 1.9.1 (part-6, BNBC).

Design report need to be reviewed by RSC



The structure is being used for Surveillance room, RMS Room & office. The building engineer is required to check the structural members against lateral loading considering the in-situ material strength, and the design report to be revised with all the information indicated in section 1.9 of the BNBC and submitted to RSC for review.

Problems Observed

Building-1 :

Item 01: Mismatch in structural drawings.

Item 02: Load plan does not comply with BNBC requirement.

Item 03: Lateral stability needs to be verified for the both steel stairs.

Item 04: Exposed re-bar at roof and corrosion in steel stair.

Building-12:

Item 05: Design report need to be prepared.

Building-21 :

Item 06: Design report need to be reviewed by RSC.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Mismatch in structural drawings. (Building-01)	Building engineer is required to produce full set of as-built drawing reflecting the as constructed condition in compliance with BNBC.	6-weeks
02	Mismatch in structural drawings. (Building-01)	Building engineer to update the Detail Engineering Assessment (DEA).	6-weeks
03	Mismatch in structural drawings. (Building-01)	Implement the recommendations of DEA.	6-months
04	Load plan does not comply with BNBC requirement. (Building-01)	The factory is required to clean the vegetation, identify the leakage/source of moisture and seal the sources & repair the damp areas accordingly.	6-weeks
05	Load plan does not comply with BNBC requirement. (Building-01)	Factory is required to repair the dampness and stop the source of the dampness.	6-weeks
06	Load plan does not comply with BNBC requirement. (Building-01)	Implement the recommendations of DEA report	6-months
07	Load plan does not comply with BNBC requirement. (Building-01)	Implement the floor load management plan.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
08	Lateral stability needs to be verified for the both steel stairs. (Building-01)	Building engineer is required to check the adequacy of the stair for gravity and lateral forces.	6-weeks
09	Lateral stability needs to be verified for the both steel stairs. (Building-01)	Building engineer to update the design document including design report that in compliance with section 1.9.1.1 as per BNBC	6-weeks
10	Lateral stability needs to be verified for the both steel stairs. (Building-01)	Carry out remedial works where required.	6-months
11	Exposed re-bar at roof and corrosion in steel stair (Building-01)	Factory is required to take necessary actions to protect the re-bar from corrosion.	6-weeks
12	Exposed re-bar at roof and corrosion in steel stair (Building-01)	Factory is required to take necessary actions to protect the steel members from corrosion.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
13	Design report needs to be revised. (Building-12)	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	Design report needs to be revised. (Building-12)	Produce and actively manage the floor loading plan as per BNBC.	6-weeks
15	Design report needs to be revised. (Building-12)	Implement the recommendations of design report.	6-months
16	Design report need to be reviewed by RSC. (Building-21)	Submit the design documents to reviewed by RSC.	6-weeks
17	Design report need to be reviewed by RSC. (Building-21)	Produce and actively manage the floor loading plan as per BNBC.	6-weeks
18	Design report need to be reviewed by RSC. (Building-21)	Implement the recommendations of design report.	6-months