

Universal Jeans-3

Plot # 69, Sector # 7, Export Processing Zone, Chattogram -4223
(22.300516, 91.776743)
17th February 2021



Buildings Information

1. Main Building (G+7)
2. Fire Control Room and Pump House (G+1)
3. Guard Room (single storied)
4. CMS room (single storied)
5. Childcare Shed (single storied)

Observations

Information missing in the design report

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.

The building is classified as **intermediate moment resisting frame**. General 3D view of the building has been presented in **Figure 2.1**.

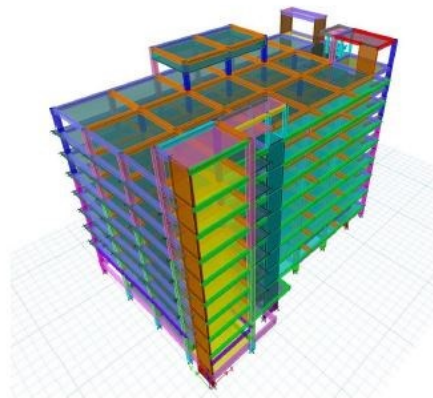


Figure 2.1.2: 3D View of Analytical Model

2.2 CODES AND PRACTICES

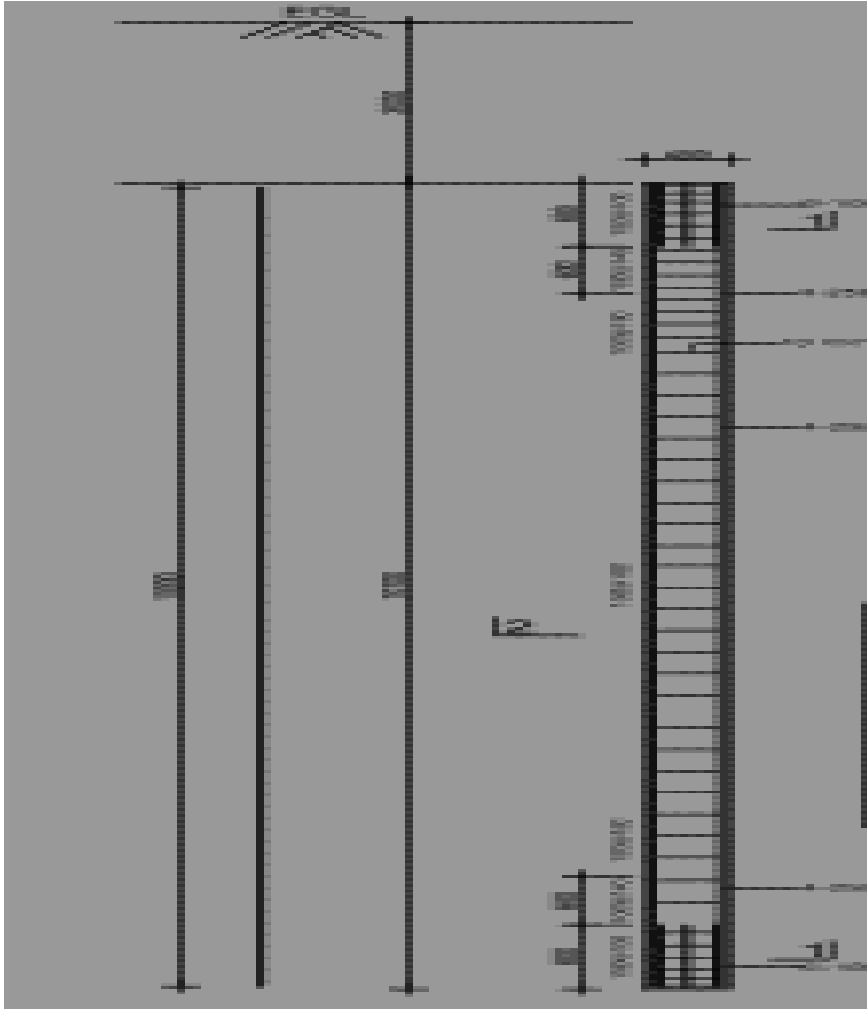
For the present project, relevant sections of Bangladesh National Building Code (BNBC, 2006) have been used for analysis. For the reinforced concrete design check, American Concrete Institute (ACI 318-08) code has been consulted as and when became necessary to complement the BNBC.

Design report



Main Building

A Design Report was provided for the Main Building at the time of inspection which is prepared based on software analysis. But no software analysis (FEA) model was provided to review the Design report. Moreover, serviceability checks as per BNBC were not provided in the design report.



PILE CAPACITY=120 TON

PUSH PILE MACHINE CAPACITY =320 ton

APPLIED LOAD = 250 ton to 300 ton

Information of pre-cast pile was provided in the drawings. But detail calculation was not found regarding the pile capacity. Building engineer is required to provide the detail capacity calculation for the pre-cast pile.

3.3 CHECKING ADEQUACY OF SLAB

Following figures represent the condition of slabs according to BNBC live loading.

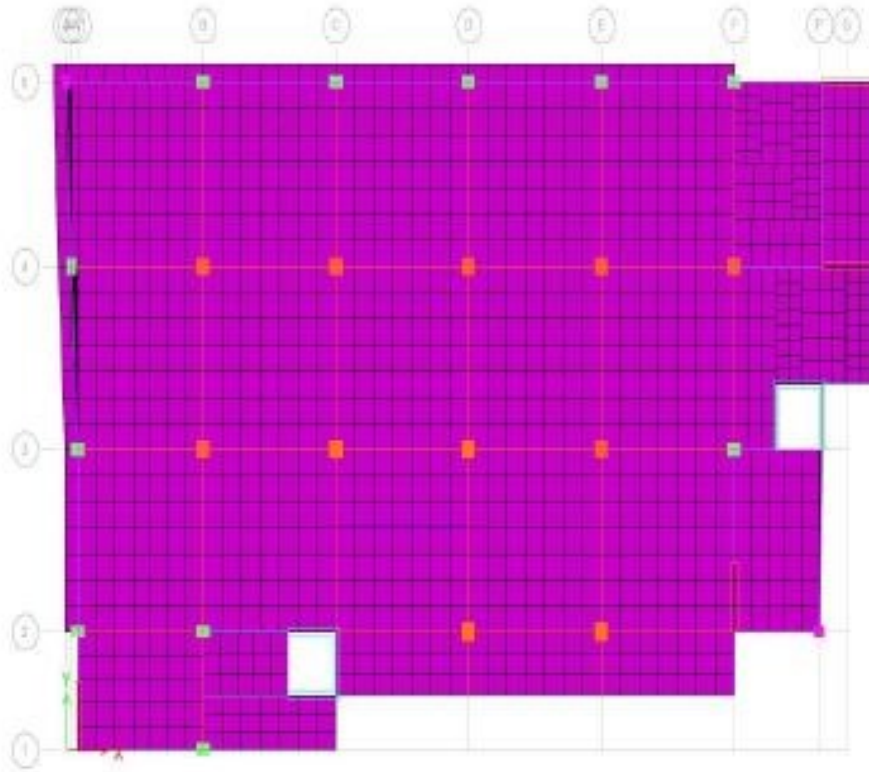
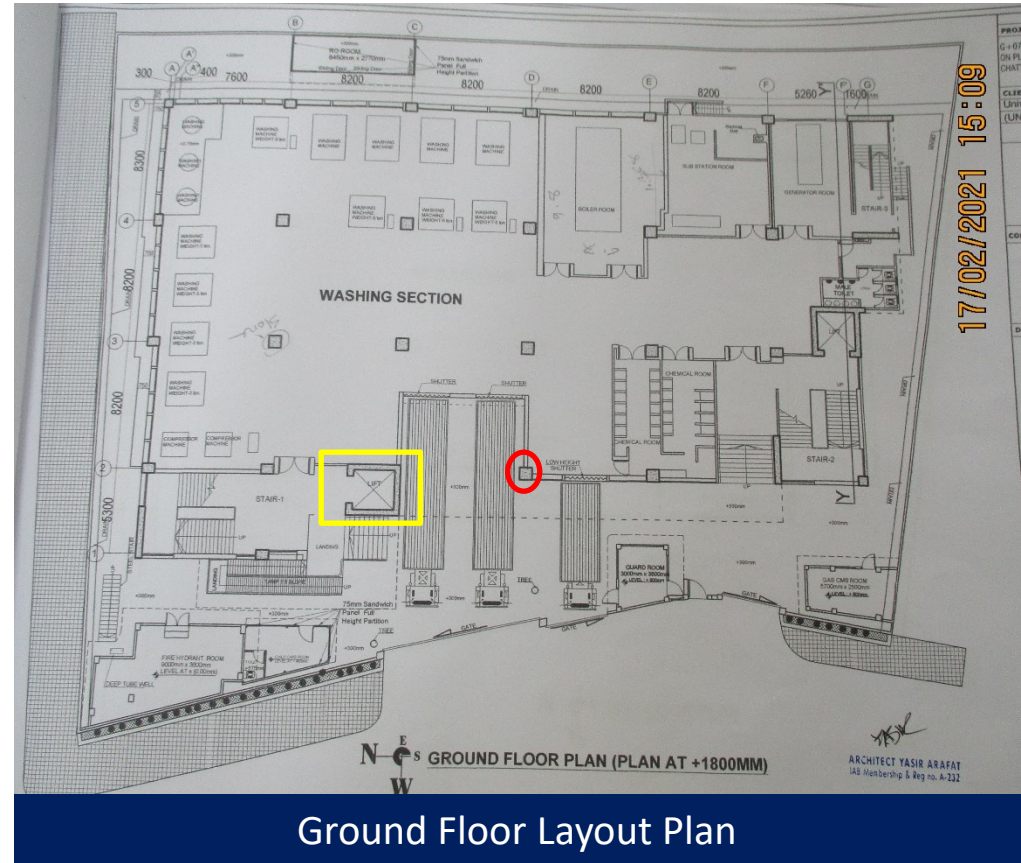
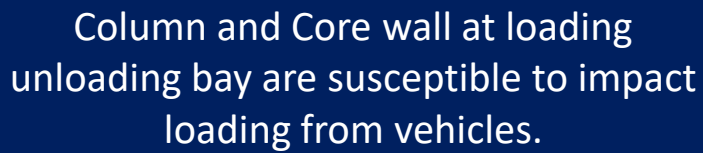


Figure: First Floor Slab Check

Slab adequacy check not provided in the design report. Building engineer is required to provide slab adequacy check for 6 kPa live load.

Columns susceptible to impact loading



Incomplete design report

4 EVALUATION OF STRUCTURAL MEMBERS FOR BNBC LIVE LOAD (2 STORIED FIRE HYDRANT BUILDING)

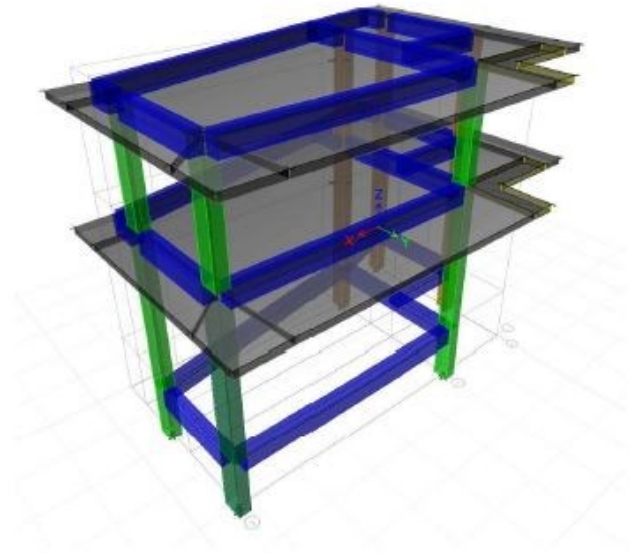
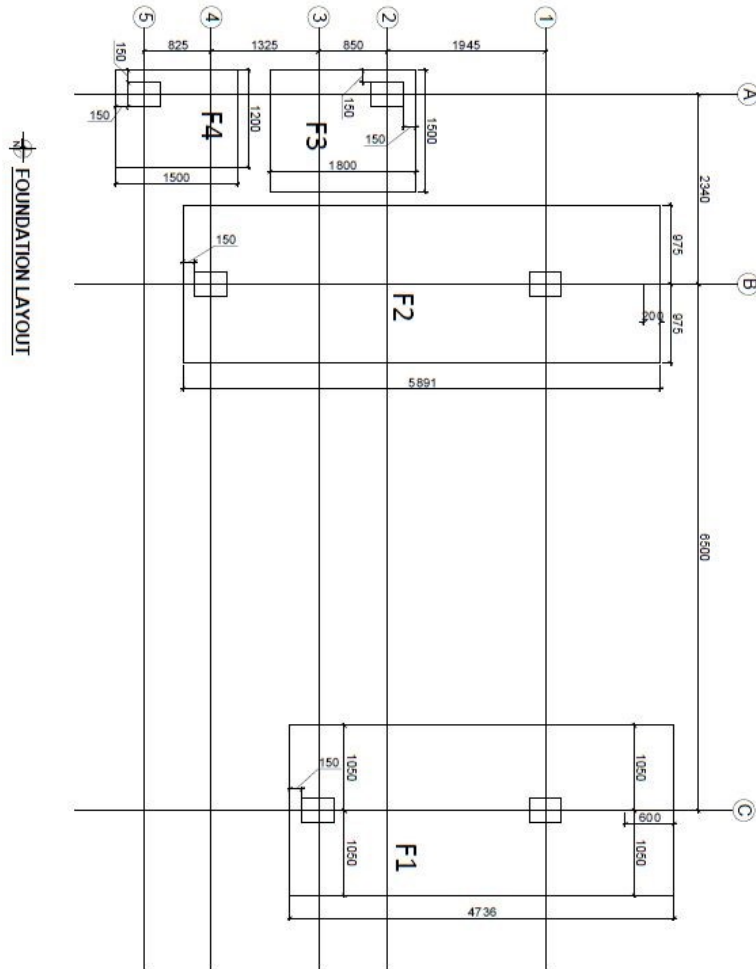


Figure 3.3.1: 3D View of Analytical Model

Provided Design Report

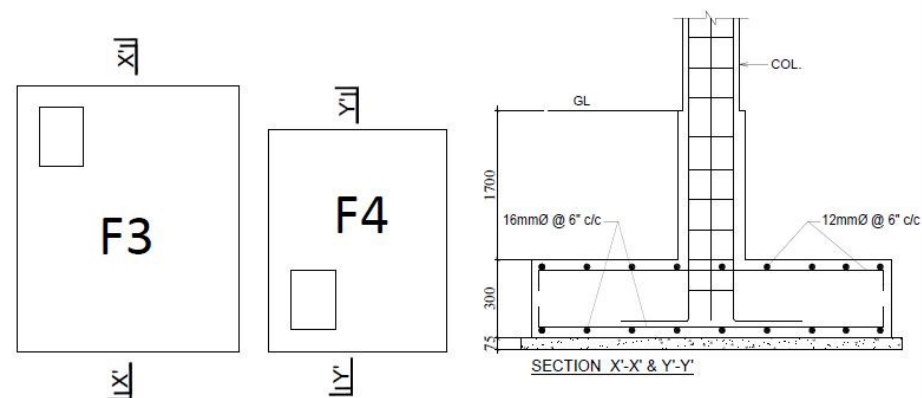
As per BNBC every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2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

A Design Report was provided for the Fire Control Room and Pump House at the time of inspection which is prepared based on software analysis. However, no software analysis (FEA) model was provided to review the Design report. Factory is required to submit the full set of Design Report with software-based analysis model for review.



Footing Layout

As per provided structure drawings few columns are found eccentric with the isolated footing. Building engineer is to provide necessary calculation regarding the eccentric loading on the footing and make sure the center of column and center of footing coincide.



Footing Section

Non engineered external steel stair

Apparently inadequate connection was observed at external steel stair of Utility Building. Factory engineer is required to carry out connection adequacy & lateral stability check of the steel stair.



External Steel Stair



Support System of Steel Stair



Inadequate Connection

Corrosion on steel member of external steel stair

Excessive corrosion was found in steel member of External Steel Stair. The building engineer to investigate the reason & extent of corrosion and suggest proper remedial measure accordingly.



Corrosion at Stair

Problems Observed

Main Building:

- 1: Information missing in the design report.
- 2: Columns susceptible to impact loading.

Fire Control Room and Pump House:

3. Incomplete design report.
- 4: Non engineered external steel stair.
- 5: Corrosion found on steel member of external steel stair.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Information missing in the design report.	Building engineer is required to check the serviceability issues as per BNBC and incorporate proper loading assignment in the design report.	6-weeks
02	Information missing in the design report.	Building engineer is required to provide slab adequacy check for 6 kPa live load.	6-weeks
03	Information missing in the design report.	Building engineer is required to provide detail pile capacity calculation.	6-weeks
04	Information missing in the design report.	Complete implementation of any remedial works deemed necessary by the design report.	6-months
05	Columns susceptible to impact loading.	Construct and maintain protection to critical column and continue to assess likelihood of vehicle impact to critical elements.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
06	Incomplete Design Report.	Factory is required to submit the design report with analysis model for review.	6-weeks
07	Incomplete Design Report.	Provide necessary calculation/explanation (with reference) regarding the eccentric loading on the footing and make sure the center of column and center of footing coincide.	6-weeks
08	Incomplete Design Report.	Carry out remedial works where necessary.	6-months
09	Non engineered external steel stair.	Factory engineer is required to carry out connection adequacy & lateral stability check of the steel stair.	6-weeks
10	Non engineered external steel stair.	Implement remediation work where necessary.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
11	Corrosion found on steel member of External Steel Stair.	The building engineer to investigate the reason & extent of corrosion and suggest proper remedial measure accordingly.	6-weeks
12	Corrosion found on steel member of External Steel Stair.	Take necessary measures to prevent further corrosion and repair the corroded steel members as per engineer's suggestion.	6-months