

Lantabur Apparels Ltd (Extension Unit)

Kewa, Boherarchala Sreepur, Gazipur
(24.1969 N, 90.4071 E)

26 December 2021 & 23 January 2022



Building information

Building-1 (Garments Building): 7 storied (G+6) reinforced concrete (RC) building

Building-2 (Warehouse Building): 5 storied (G+4) steel building.

Building-3 (Color Kitchen Building): 4 storied (G+3) steel building.

Building-4 (Utility Building): 2 storied (G+1) reinforced concrete (RC) building.

Building-5 (Dining Building): 2 storied (B+G+1) (Proposed 4 storied) steel building with a basement

Building-6 (Printing Shed): Single storied steel shed.

Building-7 (Gate House): 2 storied (G+1) reinforced concrete (RC) building.

Building-8 (Daily Need Shop): Single storied reinforced concrete (RC) building.

Observations

Verify in-situ concrete strength

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CONCRETE LABORATORY

BRTC No. : 1102-12023 /19-20/CE; Dt: 29/6/2020

Sent by : Md. Saiful Islam Rony, Engr. (QC & QA), Mir Concrete Products Limited, Plant-3, Gazipur, Dhaka

Ref. No. : MCPLIAD-P3/06/2020/OL-08; Dt: 29/6/2020

Project : 6 storied RCC painting building of Lantabur Group at Kewin, Boheranahala, Gila Baramed, Sreepur, Gazipur

Sample : Cylinder [Mix proportion(as quoted)-, Aggregate Type: Stone chips]

Location : 1st floor slab

Test : Compressive Strength [ASTM C39]

Date of Test : 30/6/2020

TEST REPORT

Sl. No.	Date of Casting as per the Letter	Specimen Designation/ Frog Mark	Specimen Area (sq. in.)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Mode of Failure
1	8/2/2020	-	12.66	87,504	6,972	-	Combined *
2	(145 days test)	-	12.80	87,504	6,830	-	Combined *
3	-	-	12.67	71,884	5,674	-	Combined *

Note: Samples were received in unsealed condition. * Combined = Mortar and Aggregate failure.

Countersigned by: 
 Dr. Md. Abdul Jalil
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Test Performed by: 
 Dr. Md. Delwar Hossain
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 Authenticity of this page is verifiable from <http://verify.ce.buet.ac.bd>
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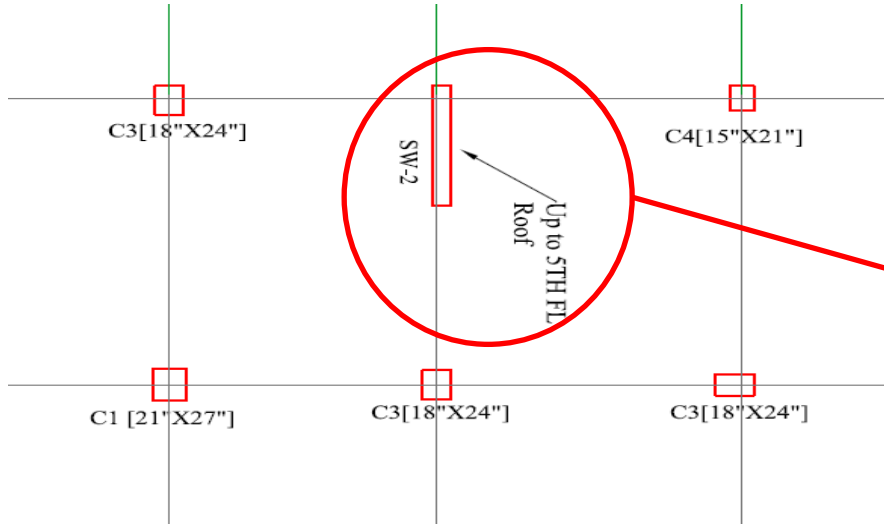
Cylinder test report



Core locations

The factory has 12 sets of cylinder test report, among them some doesn't have average value & almost all cylinder tested more than 4 to 10 month later after the sample taking date, which is not conclusive to verify the concrete design strength (24.1 MPa). However, Factory has taken cores from beams & columns to verify in-situ concrete strength, but test report was unavailable during inspection. The building engineer is required to use core test results to verify the in-situ concrete strength as a part of EA.

Missing shear wall at 5th floor.



Existing shear wall drawing

The building engineer is required to update the shear wall location in structural drawing & check the stability of the structure.



Missing shear wall at 5th floor. Brick wall constructed instead of RC shear wall

Prepared live load plan not comply with BNBC

Staircase roof not considered in the design report

**DESIGN REPORT FOR 2-STORIED UTILITY(SUB-STATION)
BUILDING
OF**

LANTABUR APPARELS LTD. (EXTENDED UNIT)

Project Type: 2-Storied Utility Building
Location: Kema, Bohararchala, Gilarasheed, Sreepur, Gazipur-1740.

CLIENT: LANTABUR APPARELS LTD. (EXTENDED UNIT)



Assessed by-

Engr. Md. Shamim Kabir Sarkar
Senior Structural Engineer
B.Sc in Civil Engineering, BUET
M.Sc in Structural Engineering, BUET
MIEB-31004,
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Submitted by

COMPOSITE CONSULTANT
H-23, R-04, Nikunja-2, Khilkhet, Dhaka-1207.
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Design report



Additional room at staircase top

A design report with software-based analysis file was provided for Utility Building. The additional room above stair has not consider in the provided design report. Building engineer is required to revise the design report considering the full structure and submit to RSC.

Apparently non-engineered connection at roof shed

Observation: Building-4 (Utility Building)



Roof Shed

Non engineered connections were observed at light weight roof. Factory engineer is required to check the connection of the roof for the up-lift pressure of wind.



Non engineered connection

Missing vertical bracing



Vertical bracing was found missing in the short direction. The building engineer is required check the stability system of the structure.

Falling hazard on roof & stair



No parapet/barrier on roof & stair

The building engineer is required to provide parapet/barrier on roof and stair zone to prevent possible falling hazard.

Loose bolts



Loose bolts

Loose bolts was observed at some points. The building is required check the structure to identify the loose bolts & take action to tighten up the loose bolts.

**Design check of compression member not
addressed 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 of part-6, BNBC.

2.1 STRUCTURAL SYSTEM

The structural system of the building is a RC beam-column frame structure. The building is classified as an ordinary moment resisting frame structure. General 3D view of the building has been presented in Figure 2.1.1.

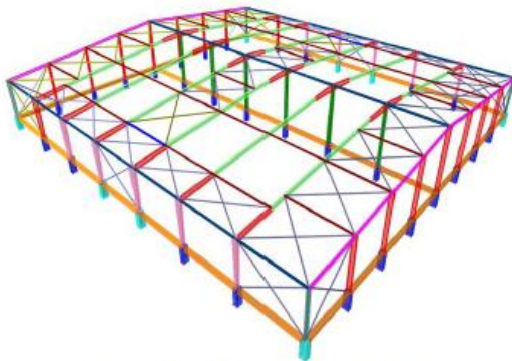


Figure 2.1.1: 3D View of Analytical Model

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 318-99) code has been consulted as and when became necessary to complement the BNBC.

2.3 MATERIAL PROPERTY

As there is no test report for concrete, we considered the minimum strength for assessment. Considered material strength are listed below-

❖ Yield strength of Rebar, f_y	$= 72,500 \text{ lb/in}^2$
❖ Compressive strength of column, f'_c	$= 3,500 \text{ lb/in}^2$
❖ Compressive strength of Beam, f'_c	$= 3,000 \text{ lb/in}^2$
❖ Young's modulus of concrete, E_c	$= 57,000 \sqrt{f'_c}$

Design report



No Compression strut along ridge

A design report with software-based analysis file was provided for Printing Shed. Purlins (along ridge) are considered as compression member, but adequacy check of the purlins are not provided in the design report.

Concrete compression strength 3500 psi has been considered for short column in design report, but sufficient test report were not available. Also, the test has been performed after 281 days of casting.

Problems Observed

Building-1 (Garments Building):

- 01. Verify in-situ concrete strength.
- 02. Missing shear wall at 5th floor.

Building-2 (Warehouse Building):

- 03. Prepared live load plan not comply with BNBC.

Building-4 (Utility Building):

- 04. Staircase roof not considered in the design report.
- 05. Apparently non-engineered connection at roof shed.

Building-5 (Dining building):

- 06: Missing vertical bracing.
- 07: Falling hazard on roof & stair.
- 08: Loose bolts.

Building-6 (Printing Shed):

- 09. Design check of compression member not in the design report.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Verify in-situ concrete strength. (Garments Building)	As a part of EA, the building engineer is required to use core test results to verify the in-situ concrete strength.	6-weeks
02	Verify in-situ concrete strength. (Garments Building)	Carry out remedial works as per the EA report.	6-months
03	Missing shear wall at 5th floor. (Garments Building)	As a part of Engineering Assessment (EA), the building engineer is required to update shear wall location in structural drawing & check the stability of the structure and suggest necessary remedial actions.	6-weeks
04	Missing shear wall at 5th floor. (Garments Building)	Carry out remedial works as per the EA report.	6-months
05	Prepared live load plan not comply with BNBC. (Warehouse Building)	The building engineer to check the occupancies and update the floor live loading plan for the building based on BNBC loading requirements and capacity of building floor, column & foundations.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
06	Prepared live load plan not comply with BNBC. (Warehouse Building)	Implement the floor loading plan (posting load plan, providing signage and maintaining loadings)	6-months
07	Staircase roof not considered in the design report. (Utility Building)	Building engineer is required to revise the design report considering the full structure and submit to RSC.	6-weeks
08	Staircase roof not considered in the design report. (Utility Building)	Complete implementation of any remedial works if required.	6-months
09	Apparently non-engineered connection at roof shed. (Utility Building)	Building engineer is required to check the connection of the steel roof shed for the up-lift pressure of wind.	6-weeks
10	Apparently non-engineered connection at roof shed. (Utility Building)	Complete implementation of any remedial works if required.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
11	Missing vertical bracing. (Dining Building)	Building engineer is required check the stability system of the structure.	6-weeks
12	Missing vertical bracing. (Dining Building)	Carry out remedial works as per the EA report.	6-months
13	Falling hazard at roof & stair. (Dining building)	The factory is required to provide parapet/barrier on roof and stair zone to prevent possible falling hazard	6-weeks
14	Loose bolts. (Dining Building)	The building is required check the structure to identify the loose bolts & take action to tighten up the loose bolts.	6-weeks
15	Design check of compression member not in the design report (Printing Shed)	Address the design check of the long direction compression member in the design report.	6-weeks
16	Design check of compression member not in the design report (Printing Shed)	Implement the recommendation of design report.	6-months