

# Yester Jeans Ltd (Extension Building)

Plot # 115-116, Adamjee EPZ, Siddhirganj, Narayanganj-1431.

(23.673466, 90.529355)

19 June 2023



# Building Information

1. **Production Building-2:** This structure is a partially seven storied (G+5+Roof Shed) RC building including a steel rooftop shed.
2. **Chemical Store Shed:** This structure is a single storied shed.
3. **Utility Building-3:** This structure is a single storied reinforced concrete (RC) building.
4. **Utility Building-4:** This structure is a single storied reinforced concrete (RC) building.
5. **Childcare & Medical Building:** This structure is a partially two storied reinforced concrete (RC) building.
6. **Security Room & Fire control room:** This structure is a single storied reinforced concrete (RC) building.
7. **RMS Room & Pump Room:** This structure is a single storied reinforced concrete (RC) building.

# Observations

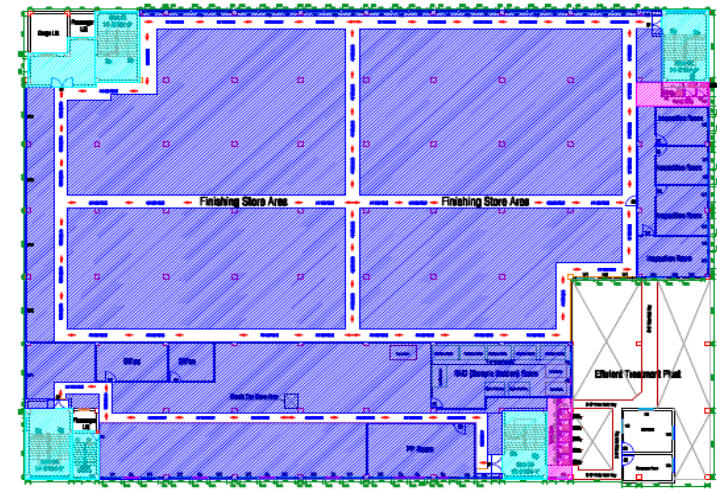
**Load plan & design report not comply  
with BNBC requirements**

The 1<sup>st</sup> floor of the building is being allotted for fabric store. As per BNBC, the minimum floor live load for light storage is 6 kN/m<sup>2</sup> (125 psf). But the storage area of the building is designed for 5 kN/m<sup>2</sup> live loads.

Building engineer is required to revise the storage live load limit and related design documents based on BNBC requirement.

|     |                                                            |                              |                                                               |      |                    |
|-----|------------------------------------------------------------|------------------------------|---------------------------------------------------------------|------|--------------------|
| 4.5 | INDUSTRIAL, STORAGE, & HAZARDOUS<br>(Occupancy - G, H & J) | Workshop, factory, warehouse | 1 Light workroom without storage                              | 3.0  | 2.7                |
|     |                                                            |                              | 2 Machinery hall & circulation area                           | 4.0  | 4.5                |
| 1.8 |                                                            |                              | 3 Factory, workshop etc.                                      | 5.0  | 4.5                |
|     |                                                            |                              | 4 Manufacturing : light                                       | 6.0  | 4.5 <sup>(5)</sup> |
|     |                                                            |                              | heavy                                                         | 12.0 | 9.0 <sup>(5)</sup> |
|     |                                                            |                              | ice                                                           | 15.0 | 9.0 <sup>(5)</sup> |
| 2.7 |                                                            |                              | 5 Printing plant :                                            |      | (5)                |
| 4.5 |                                                            |                              | Press room                                                    | 7.0  | 11.0               |
|     |                                                            |                              | Composing and linotype room                                   | 5.0  | 9.0 <sup>(5)</sup> |
|     |                                                            |                              | Paper storage room                                            | 12.0 | 9.0 <sup>(5)</sup> |
| 2.7 |                                                            |                              | 6 Motor room, fan room etc. including the weight of machinery | 7.5  | 4.5                |
| 4.5 |                                                            |                              | 7 Cold storage, grain storage                                 | 15.0 | 9.0 <sup>(5)</sup> |
| 4.5 |                                                            |                              | 8 Storage warehouses : light                                  | 6.0  | 4.5 <sup>(5)</sup> |
|     |                                                            |                              | heavy                                                         | 12.0 | 9.0                |
| 4.5 |                                                            |                              | 9 Foundries                                                   | 20.0 | 12.0               |
| 7.0 |                                                            |                              |                                                               |      |                    |

Live load chart of BNBC



| Existing Floor Loading for this Floor |                |          |        |        |                                    |
|---------------------------------------|----------------|----------|--------|--------|------------------------------------|
| No                                    | Item           | Load psf | ID No. | Symbol | Descriptions                       |
| 1                                     | Store, Office. | 105      | 01     |        | Finishing Store Area, Office Area. |
| 2                                     | Stair          | 105      | 02     |        | Stair                              |
| 3                                     | Toilet         | 42       | 03     |        | Toilet Zone                        |

5 kPa live load for fabric store



Floor live load

## Observation: Production Building-2

## EXECUTIVE SUMMARY

The primary purpose of the assessment was to confirm the structural integrity, risk and to determine the necessary steps for the factory. Detail Assessment Included-

- Preparation of As-built drawings
- Visual inspection to identify distress
- Conduct tests to evaluate material strength
- Structural analysis to assess safety and serviceability against loading as set out in BNBC 2006.

According to the need of assessment our Sr. Engineers and team of Jr. Engineers have done the assessment. For completing the assessment we have done Ferro-scanning in number of locations, cylinder testing of concrete.

The following findings have been identified during assessment:

- The as-built configuration almost matches with the provided design drawings. However we have prepared corrected as-built structural drawings to conduct the structural analysis.

**Concrete strength considered 4500 psi for column and 4000 psi for beam and slab.  
Concrete cylinder test conforms that strength which attached to the report.**

The reinforcement of beam, column and footing has been considered as 72 grades as per physical checking and chalan copy.

The building structure is 6(six) storied frame structure with roof top steel shed consisting of RCC slab, RCC beam and RCC column supported by pile Foundation. Detail structural analysis has been conducted using Finite Element Package ETABS 16.2.1 Dead load has been taken from the actual drawing that is prepared based on the existing structure as provided in **As Built Drawings**. Floor finish, interior wall and exterior partition wall along the periphery are also taken into consideration. Minimum live load has been considered to be 42 psf as per BNBC standard. Wind loads have been considered as per BNBC.

## BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)



### DEPARTMENT OF CIVIL ENGINEERING

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### CONCRETE LABORATORY



BRTC No. : 1102-31686 /20-21/CE; Dt: 13/3/2021

Sent by : Md. Mahmudul Islam, Executive Director, Yeaster Jeans Ltd.  
Siddhirgonj, Narayanganj

Ref. No. : Yeaster/Test/05/2021; Dt: 10/03/2021

Project : Yeaster Jeans Ltd. Plot 115-116, 5th Storied RCC Factory Building

Sample : Concrete Cylinder [Mix proportion (as quoted): 4500 psi, Aggregate Type: Stone chips]

Location : Grid E2 (C3) Column [Admixture Added (as per letter): Not mentioned]

Test : Compressive Strength Test of Concrete Cylinder [ASTM C39]

Date of Test : 14/3/2021

### TEST REPORT

| Sl. No. | Date of Casting as per the letter | Specimen Designation/ Frog Mark | Specimen Area | Maximum Load | Crushing Strength | Average Crushing Strength | Mode of Failure |
|---------|-----------------------------------|---------------------------------|---------------|--------------|-------------------|---------------------------|-----------------|
|         |                                   |                                 | (sq. in)      | (lb)         | (psi)             |                           |                 |
| 1       | 13/2/2021                         | -                               | 12.42         | 88,007       | 7,085             | 6870 psi                  | Combined *      |
| 2       | (29 days test)                    | -                               | 12.92         | 93,172       | 6,437             | (47.4 MPa)                | Combined *      |
| 3       |                                   | -                               | 12.42         | 88,007       | 7,086             | (483 kg/cm <sup>2</sup> ) | Combined *      |

Note: Samples were received in unseasoned condition.

\* Combined = Mortar and Aggregate Failure

Countersigned by:

Dr. A. B. M. Badruzzaman  
Professor

Department of Civil Engineering  
BUET, Dhaka-1000, Bangladesh



h326r5f2T

Test Performed by:

Rubayya Ruman  
Assistant Professor  
Department of Civil Engineering  
BUET, Dhaka-1000, Bangladesh



Important Notice: Samples as supplied to us have been tested in our laboratory. BRTC does not have any responsibility as to the representativeness

## Cylinder test report for column

Concrete strength 4500 psi is considered in design report for material specification. Twenty sets of concrete cylinder test report for Production Building 02: eight sets from column; seven sets from slab/beam and five sets from pile/walls were available. Therefore, the available sets of test reports do not meet the requirement for frequency of cylinder test report for any structural member as per BNBC section 5.12.

## **Mismatch in as built drawing**



**Expose rebar on roof**



Exposed rebar at column on roof

Exposed reinforcement was found extended from column on roof. All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete. Factory engineer is required to take necessary measures to prevent the corrosion in exposed rebar.

## **Construction debris on the roof**



Construction debris was found on the roof. The factory is required to remove wastage from roof and keep the roof clean.

**Columns susceptible to vehicle impact**

Columns are susceptible to vehicle impact in the loading-unloading areas on ground floor. Building engineer is required to install a barrier to prevent vehicle impact in column.



Susceptible column



Susceptible column

## **Discrepancies in as-built drawings**

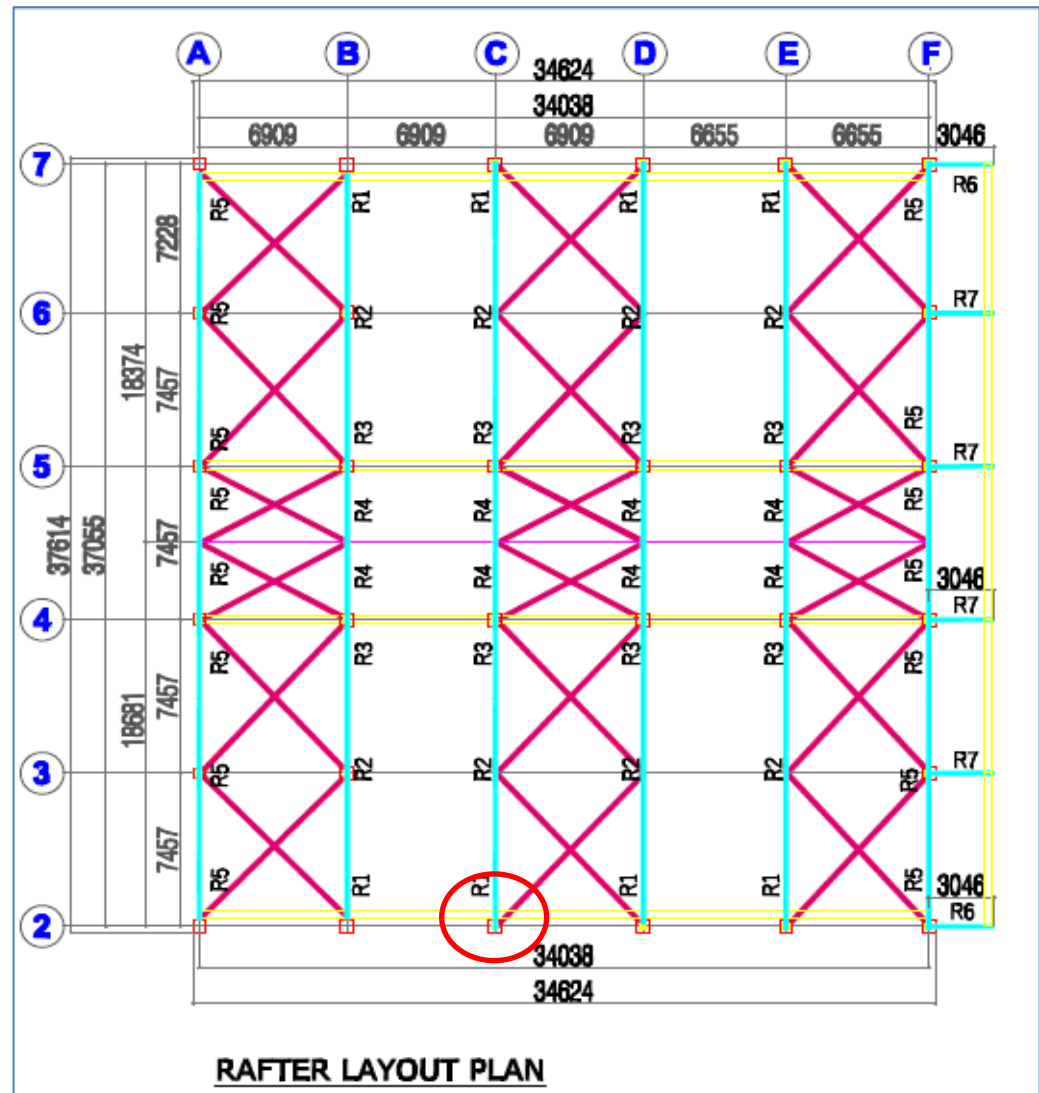
Lateral load transfer media (compression strut) was found offset along grid 2 at point C. Also, number of joint of rafter did not match with provided drawings. Building engineer is required to revise the drawings as per as-built condition and submit to RSC.



Rafter section

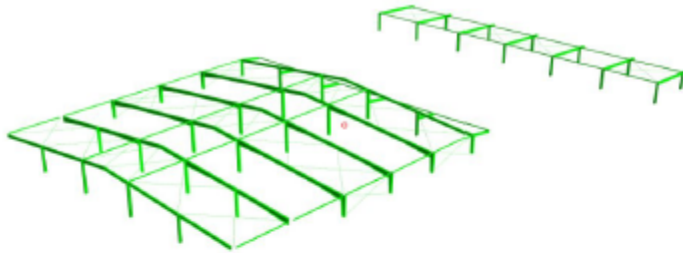


Offset strut



## **Incomplete design report**

### Steel Part.



Roof top steel shed

#### Load Combinations

|                |                             |
|----------------|-----------------------------|
| LOAD COMB - 1  | $1.2DL+1.6LF+0.5LR$         |
| LOAD COMB - 2  | $1.4DL$                     |
| LOAD COMB - 3  | $1.2DL+1.6LR+0.8WIX+$       |
| LOAD COMB - 4  | $1.2DL+1.6LR+0.8WIX-$       |
| LOAD COMB - 5  | $1.2DL+1.6LR+0.8WIZ+$       |
| LOAD COMB - 6  | $1.2DL+1.6LR+0.8WIZ-$       |
| LOAD COMB - 7  | $1.2DL+0.5LR+0.5LF+1.3WIX+$ |
| LOAD COMB - 8  | $1.2DL+0.5LR+0.5LF+1.3WIX-$ |
| LOAD COMB - 9  | $1.2DL+0.5LR+0.5LF+1.3WIZ+$ |
| LOAD COMB - 10 | $1.2DL+0.5LR+0.5LF+1.3WIZ-$ |
| LOAD COMB - 11 | $1.2DL+0.5LF+1.5EX+$        |
| LOAD COMB - 12 | $1.2DL+0.5LF+1.5EX-$        |
| LOAD COMB - 13 | $1.2DL+0.5LF+1.5EZ+$        |
| LOAD COMB - 14 | $1.2DL+0.5LF+1.5EZ-$        |
| LOAD COMB - 15 | $0.9DL+1.3WIX+$             |
| LOAD COMB - 16 | $0.9DL+1.3WIX-$             |
| LOAD COMB - 17 | $0.9DL+1.3WIZ+$             |
| LOAD COMB - 18 | $0.9DL+1.3WIZ-$             |
| LOAD COMB - 19 | $0.9DL+1.5EX+$              |
| LOAD COMB - 20 | $0.9DL+1.5EX-$              |
| LOAD COMB - 21 | $0.9DL+1.5EZ+$              |
| LOAD COMB - 22 | $0.9DL+1.5EZ-$              |

In the design report, wind load calculation for roof shed and rafter deflection check was not found. Building engineer is required revised the design report incorporating all the missing information.



Roof Shed

# **Apparently inadequate connection**

**Observations: Chemical Store Shed**



Rafter inserted to brick wall

Rafter were inserted to brick wall. The connection between rafter & brick wall was appeared to be inadequate. Building engineer is required to check the connection adequacy for uplift forces as part of EA.

# **Absence of design documents**

**Observations: Childcare & Medical Building**



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. At the time of inspection, design report was not available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

# Problems Observed

## **Production Building-2:**

Item 01: Load plan & design report not comply with BNBC requirements.

Item 02: Mismatch in as built drawing.

Item 03: Expose rebar on roof.

Item 04: Construction debris on the roof.

Item 05: Columns susceptible to vehicle impact.

Item 06: Discrepancies in as-built drawings. (Roof Shed)

Item 07: Incomplete design report. (Roof Shed)

## **Chemical Store Shed:**

Item 08: Apparently inadequate connection

## **Childcare & Medical Building:**

Item 09: Absence of design documents

# Priority Actions

| Item No. | Observation                                                                             | Recommended Action Plan                                                                                                     | Recommended Timeline |
|----------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------|
| 01       | Load plan & design report not comply with BNBC requirements.<br>(Production Building-2) | Building engineer to update the design documents based on verifying in-situ concrete strength in compliance with BNBC-2006. | 6-weeks              |
| 02       | Load plan & design report not comply with BNBC requirements.<br>(Production Building-2) | Building engineer is required to revise the storage live load and related design documents based on BNBC requirement.       | 6-weeks              |
| 03       | Load plan & design report not comply with BNBC requirements.<br>(Production Building-2) | Implement the recommendations of design report.                                                                             | 6-months             |
| 04       | Load plan & design report not comply with BNBC requirements.<br>(Production Building-2) | Implement floor load plan.                                                                                                  | 6-months             |
| 05       | Mismatch in drawings.<br>(Production Building-2)                                        | Building engineer is to survey the whole structure and update as-built drawings representing accurate site condition.       | 6-weeks              |

| Item No. | Observation                                                           | Recommended Action Plan                                                                                               | Recommended Timeline |
|----------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------|
| 06       | Expose rebar on roof. (Production Building-2)                         | All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete.              | 6-weeks              |
| 07       | Construction debris on the roof. (Production Building-2)              | Remove construction materials from the roof.                                                                          | 6-weeks              |
| 08       | Columns susceptible to vehicle impact. (Production Building-2)        | Install a barrier to prevent vehicle impact in column.                                                                | 6-weeks              |
| 09       | Discrepancies in as built drawings. (Production Building-2 Roof Shed) | Building engineer is to survey the whole structure and update as-built drawings representing accurate site condition. | 6-weeks              |
| 10       | Incomplete design report. (Production Building-2 Roof Shed)           | Building engineer is required revise the design report providing all the necessary calculation and checks.            | 6-weeks              |
| 11       | Incomplete design report. (Production Building-2 Roof Shed)           | Carry out remedial works (if any) after review by RSC.                                                                | 6-months             |

| Item No. | Observation                                                 | Recommended Action Plan                                                                                          | Recommended Timeline |
|----------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|
| 12       | Apparently inadequate connection. (Chemical Store Shed)     | Building engineer is required to check the connection adequacy for uplift forces and propose a remediation plan. | 6-weeks              |
| 13       | Apparently inadequate connection. (Chemical Store Shed)     | Carry out remedial works where required.                                                                         | 6-months             |
| 14       | Absence of design documents. (Childcare & Medical Building) | Building engineer is required to prepare a design report in compliance with BNBC (part-6, section 1.9.1.1).      | 6-weeks              |
| 15       | Absence of design documents. (Childcare & Medical Building) | Carry out remedial work if required.                                                                             | 6-months             |

# Survey Limitations and Assumptions

This report is for the private and confidential use of RSC for whom it was prepared together with their professional advisors as appropriate. It should not be reproduced in whole or in part or relied upon by third parties for any use without the express written permission of RSC.

This report can be used in discussion with the supplier or factory owner as a means to rectify or address any observations made. The report is not comprehensive and is limited to what could be observed during a visual inspection of the building.

This Report is not intended to be treated as a generalised inspection and does not cover the deterioration of structural members through dampness, fungal or insect attack, nor does it deal with problems and defects of a non-structural nature. Other nonstructural aspects of the building such as fire safety have not been assessed in this survey.

Except as otherwise noted, drains and other services were not viewed or tested during our inspection and are therefore similarly excluded from this Report. We have not inspected any parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

External inspection of the façade walls has generally been carried out from ground level only by visual sighting. No opening up works were carried out (except as noted) and we rely on the Architects and Engineers drawings provided to us for our views on concealed parts of the structure and in particular foundations. Strengths of materials and components are untested, and we recommend that the factory owners Building Engineer carries out in situ testing over and above those suggested to satisfy themselves with the material strengths and component details.

Recommendations, where given, are for the purpose of providing indicative advice only, are not exhaustive, relate solely to identifying key and obvious structural defects as identified in this presentation, and do not take the form of or constitute a specification for works. We take no responsibility for the works as constructed. This report does not interfere with the factory owners Building Engineers responsibility for the structural performance of this building. The Building Engineer remains fully responsible for the structural adequacy of the building.

This report does not comment in detail on the future seismic performance of the building and only highlights the fact that the building may experience significant damage or collapse in a seismic event along with many others in the Dhaka region.

The observations in this report are based on the Engineering Judgement of the lead surveyor/engineer at the time of the survey. We assume in making these observations that no covering up of faults defects, filling or plastering over cracking or significant repair work has been carried out by the building owner. Any future alteration or additional work by the building owner will void this report.