

Euro Jeans Ltd (New Shed)

Vogra, Chowdhury Bari, Gazipur
(23.978714, 90.379255)

07 September 2021



Building Information

1. Shed 3 – G+2

Observations

Design report required to be revised

Observations: Shed 3

1. GENERAL OVERVIEW OF THE BUILDING.

The 3 Storied steel structure for Euro Jeans Ltd. is a rectangular steel column-rafter structure having gable frame located at Vogra, Gazipur. Total area of the building is about 21,300 sqft.

Table: Basic information of the Building.

Information	Description
Structural System	Gable Frame, Columns and Rafters are made of Built Up steel.
Floor Area	Floor Area = 21,300 sqft.
Number of Stories	3 Storied
Construction Year	-
Foundation Type	Isolated Footing

2. GENERAL OBJECTIVE

Progati Engineers & Consultants Ltd. was assigned to conduct detail engineering assessment of the Washing Shed for Euro Jeans Ltd. The scope of work of the project has been shown below, which includes recommendation made by BNBC.

Engineering Assessment is comprised of following procedure.

2.1. Prepare/Update Structural and Structural Drawings

2.2 Material Strength Estimation.

2.3 Accomplish structural analysis and adequacy check for global structure and local member.

2.1. Prepare/Update Structural and Structural Drawings:

- Validate available structural design drawings by taking physical field measurement.
- Verify architectural drawings by taking physical field measurement.
- Highlight any variations between as-built and structure design drawings (if applicable)
- Prepare and update drawing as per section 8 as per BNBC guide line.

2.2 Material Strength Estimation:

The principal material of construction of gable frame is steel. Built up members are used as primary member for prepare steel column and rafter. Both bolted and welded connection are used in member connection. Foundation, grade beam & columns are reinforced concrete. As no test have been performed following strength is considered for various material.

Yield strength of steel for built up member, $f_y = 50,000 \text{ lb/in}^2$

Compressive Strength of Concrete, $f_c = 3000 \text{ psi}$

Connection Bolts are assumed as ASTM A325 N/DIN 8.8

Yield strength of steel for use in concrete structure, $f_y = 50,000 \text{ lb/in}^2$

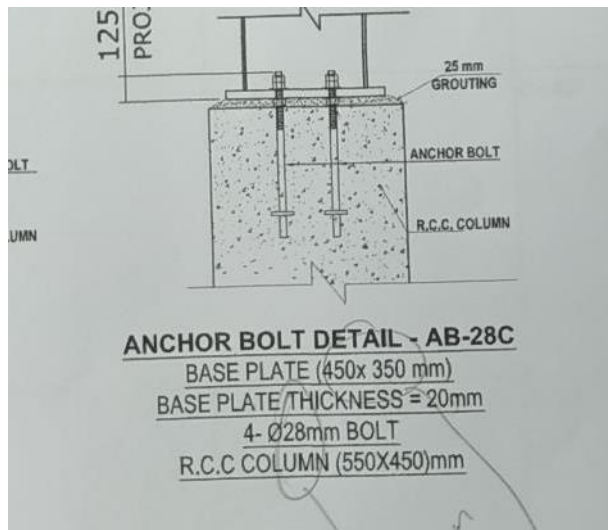
As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2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

In provided design, the strength of steel plate have been considered 50 ksi and the compressive strength of concrete have been considered 3000 psi. No credible test report has been found regarding that values. On the other hand, no analysis has been carried out for RC Part of the structure. Factory is required to submit the full set of Design Report with necessary corrections.

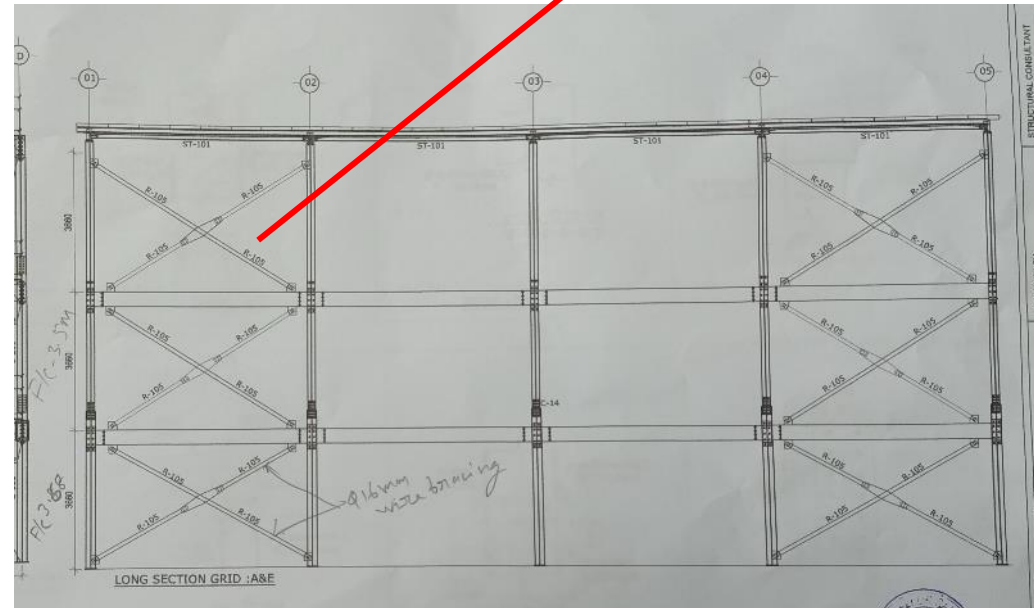
Provided Design Report

Inconstancies in the drawings

Observations: Shed 3

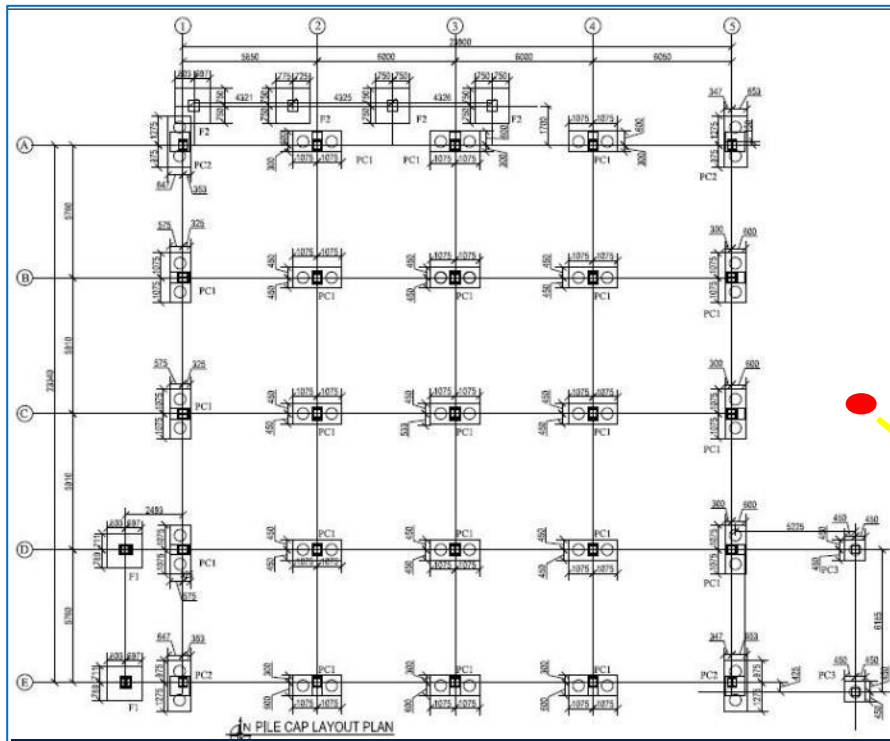


Base plate of AB-28C was found 400mm X 300mm instead of 450mm X 350mm



16 mm Cable bracings were found in as-built condition whereas drawing shows box bracings

Observations: Shed 3



Pile Cap Layout

Marked column did not shown in drawings. Also, foundation of the column is unknown.



Circular column at front

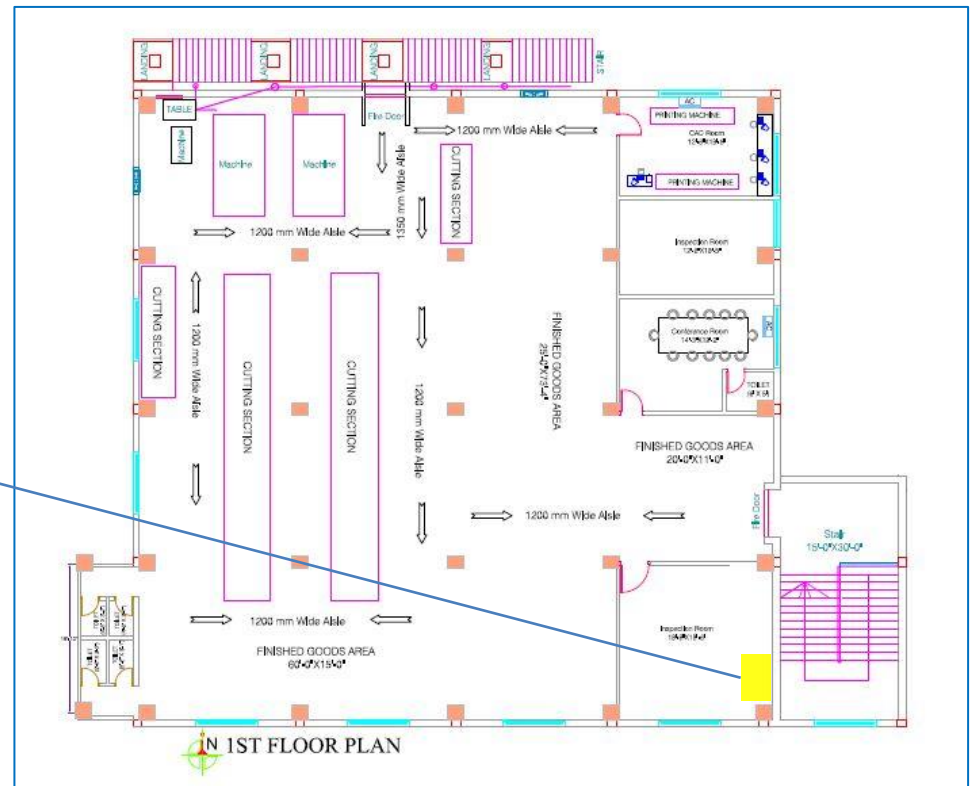
Plastic water tanks on stair top not shown in drawing. Also, toilet zone was found different with drawings.



Toilet zone of 1st floor
Not shown in drawings



Water tanks



Corrosion in steel member



Corrosion in Base Plate



Corrosion in steel beam

Corrosion in steel member was observed in several locations. The building engineer to investigate the reason of corrosion and suggest proper remedial measure accordingly.



Corrosion in steel column



Significant connection gap



Gap observed in Beam- Column connection

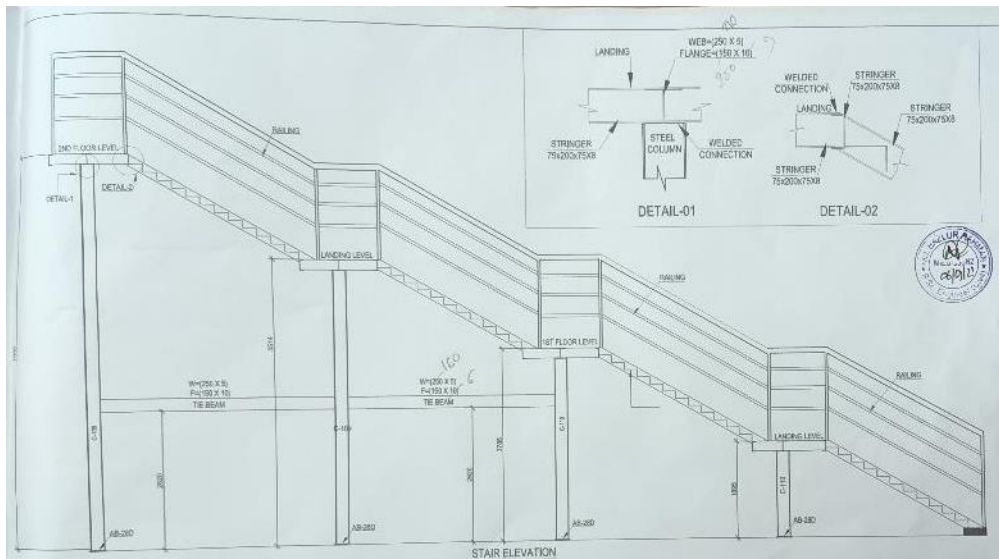
Significant gaps observed at column-beam joint at several locations. Factory engineer is required to carry out suitable remedial works.

Mismatch in drawing

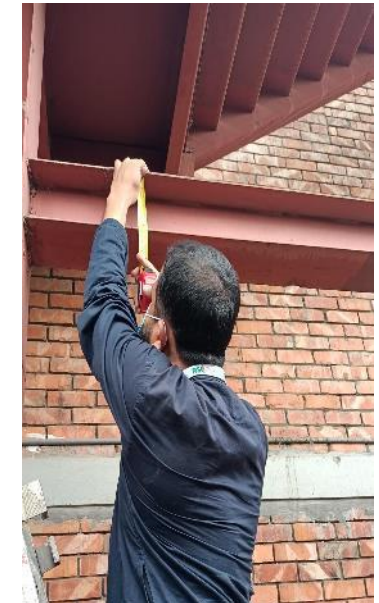


Landing Joist

The sizes of steel tie beam and landing joist are not matched with drawings. Web of landing joist was measured 210 mm instead of 250 mm. Flange thickness of tie beam was found 6 mm whereas drawing shows 10 mm. Also, the web of tie beam was measured 160 mm instead of 250 mm



Support System of Steel Stair



Tie beam

Lateral Stability

External steel stair is standing on single grid column. There is no visible lateral stability system. Factory engineer is required to carry out connection adequacy & lateral stability check of the steel stair.



Support System of Steel Stair



Single grid column

Undocumented Structures



Jhut Store



Compressor Room

Factory engineer is required to produce as-built drawing reflecting the as constructed condition.

Problems Observed

Shed-3

Item 1: Design report required to be revised.

Item 2: Inconstancies in the drawings.

Item 3: Corrosion in steel member.

Item 4: Significant connection gap.

Shed-3, External Steel Stair

Item 5: Mismatch in drawing.

Item 6: Lateral stability.

Jhut Store & Compressor Room

Item 7: Undocumented structures.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Design report required to be revised. (Shed-3)	Produce and actively manage a loading plan for all floor plates within the factory, considering floor, column and foundation capacity.	6-weeks
02	Design report required to be revised. (Shed-3)	Revise the prepared design report addressing all issues and submit to RSC.	6-weeks
03	Design report required to be revised. (Shed-3)	Complete remedial works if arising from design report.	6-months
04	Design report required to be revised. (Shed-3)	Implement floor loading plan.	6-months
05	Inconsistencies in the drawing. (Shed-3)	The building engineer to survey the structure and update the as-built drawings accordingly.	6-weeks
06	Corrosion in steel member. (Shed-3)	The building engineer to investigate the reason of corrosion and suggest proper remedial measure accordingly.	6-weeks
07	Corrosion in steel member. (Shed-3)	Take necessary measures to prevent further corrosion and repair the corroded steel members as per engineer's suggestion.	6-months
08	Significant connection gap. (Shed-3)	Identify the locations of connection gaps and carryout suitable repair works where necessary.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
09	Mismatch in drawing. (Shed-3, External Steel Stair)	The building engineer to survey the structure and update the as-built drawings accordingly.	6-weeks
10	Lateral Stability. (Shed-3, External Steel Stair)	The building engineer is required to carry out connection adequacy & lateral stability check of the steel stair.	6-weeks
11	Lateral Stability. (Shed-3, External Steel Stair)	Implement remediation work where necessary.	6-months
12	Undocumented Structures (Jhut Store & Compressor Room).	Factory engineer is required to produce as-built drawing reflecting the as constructed condition.	6-weeks