



C & R Sweater Limited

Votulia (Nayeb Ali Market), P.O-Gazipur, P.S-Sreepur, Gazipur, Bangladesh.
(24.279432, 90.358833)

21st January & 13th February 2020



Building Information

1. **Building-1 (G+1)**
2. **Building-2 –(Utility Building)-(Single Storied RC Building)**
3. **Building-3 (Main Production Shed)-(Single Storied Steel Shed)**
4. **Building-4 (Winding Building)-(Single Storied RC Building)**



Observations



**Prepared DEA required to be revised &
Submitted to Accord**



Building-1: R=5 and V=215 kmph considered in the report, but R=8 and V= 210 kmph used in the sample calculation and FEA model. The values should be same in the calculation, model and report. If R=8 considered, provide justifications.

SEISMIC LOAD CALCULATION AS PER BNBC-2006		
Project name:	C & R Sweaters Ltd.	
Client:	C & R Sweaters Ltd.	
Address:	Sreepur, Gazipur	
Date:		
Seismic zone coefficient , Z	=	0.15
Structure importance Coefficient , I	=	1.00
Response modification Coefficient, R	=	8.00
Site Coefficient , S	=	1.50
Ct	=	0.073
Height of the building (M), Hn	=	12.50 M
Total Seismic Dead Load (Kip), W (From Etabs Model)	=	6612.78 Kip
	=	
T, $T = Ct [(Hn)]^{(3/4)}$	=	0.49
Numerical Coefficient , $C=(1.25S)/T^{(2/3)}$	=	3.04
Max Numerical Coefficient , C	=	2.75
Total design base shear , $V=(ZIC/R) * w$	=	340.97 Kip
Total Base shear from Etabs Analysis Model, kip		340.91 Kip

Factory is required to revised the DEA and submit to Accord for further review.

NIRMAN DESIGN AND DEVELOPMENT

DETAILS STRUCTURAL ANALYTICAL EVALUATION/ DESIGN REPORT

FOR FACTORY BUILDING

C & R SWEATERS LTD.

(TWO STORIED RCC BUILDING)

VOTULIA (NAYES ALI MARKET), P.O-GAZIPUR,
F.S-SREEPUR, DIST-GAZIPUR



DATE: DECEMBER 19, 2019

ASSESSMENT REPORT PREPARED BY:

NIRMAN DESIGN & DEVELOPMENT

H-426, R-30, Mohakhali, DOHS, Dhaka

Main Production Shed: Some design parameters have been overwritten. Revise the parameters and re-check the member stress ratio.



Lack of Water Proofing on Roof

Observations: Building-1



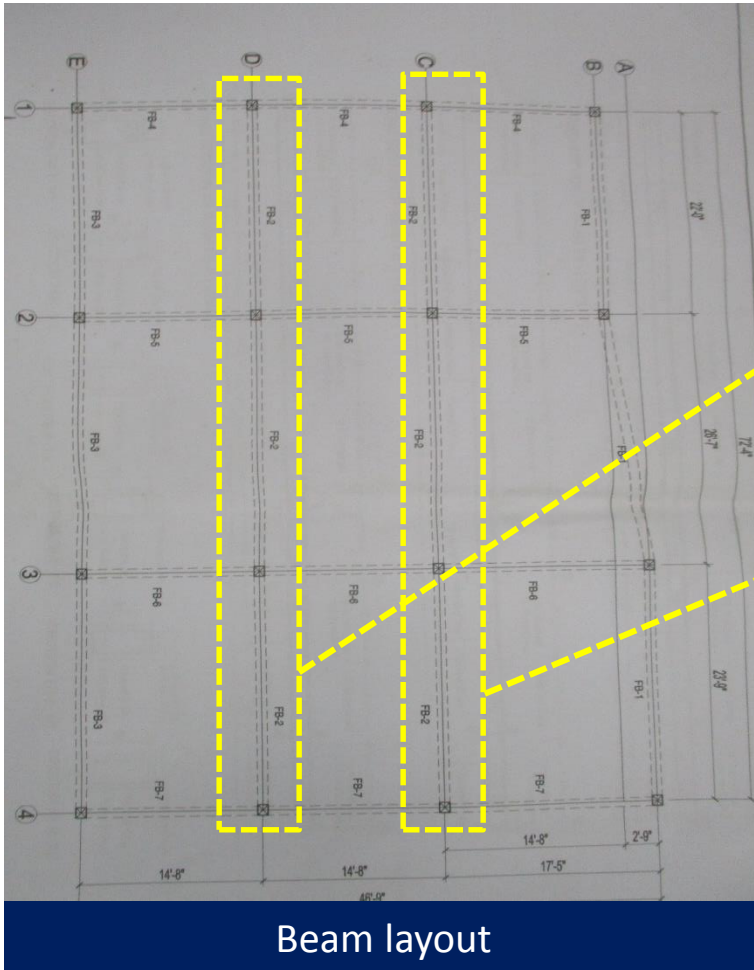
Water ponding was found at roof of Building-1. During inspection sign of water ponding was found. Factory is required to provide water proofing layer and improve drainage system to avoid water ponding.



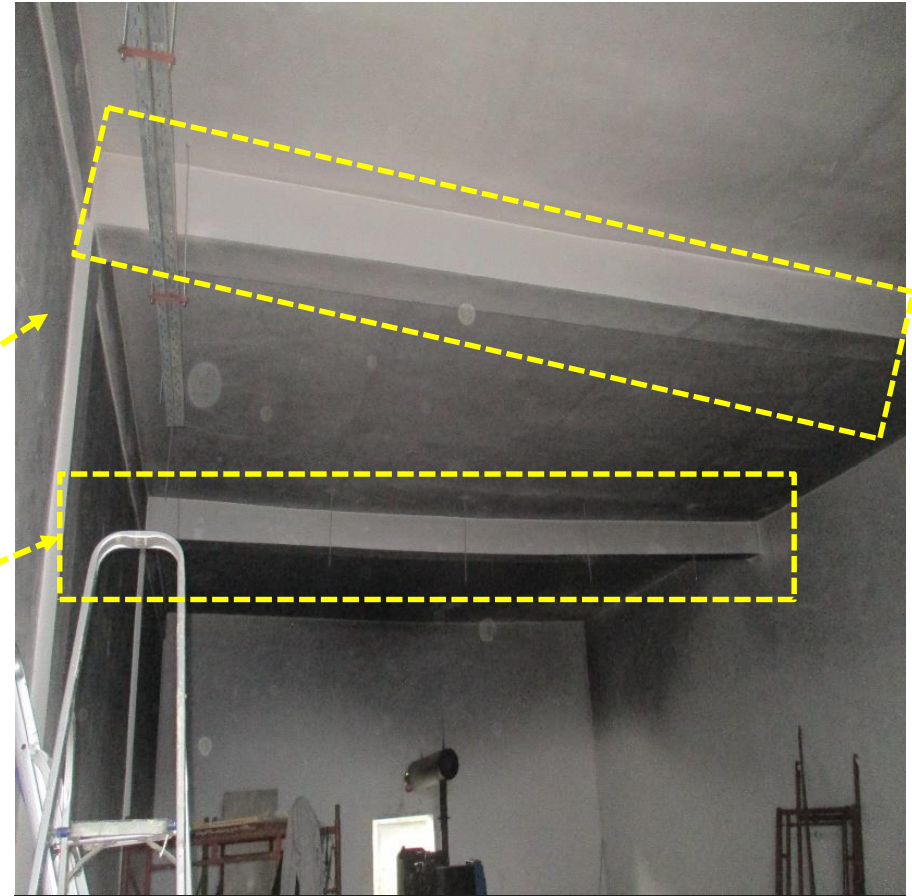
Water ponding on roof slab at Building-1



Beam appears to be undersized and sagged



Beam layout



Longitudinal sagged beam

Length of Span in longitudinal direction is 9.7m but beam size is 250mm (W)X 315mm (d/s) which appeared to be undersized. Beam were also found sagged. Factory engineer is required to carry out the adequacy check of all beams.



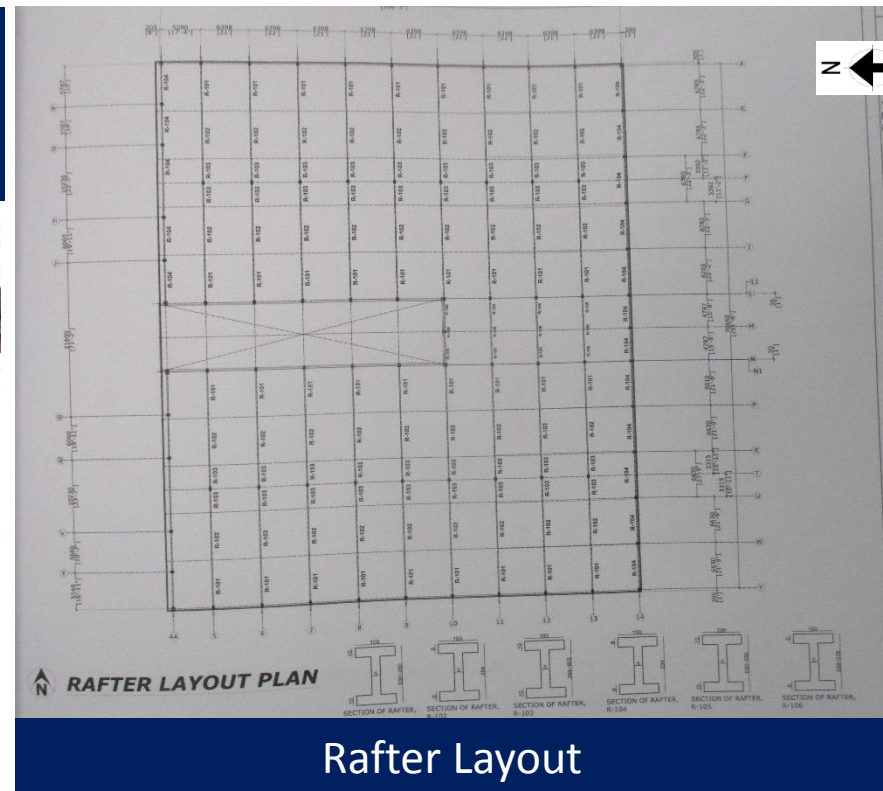
Inconsistency in drawing



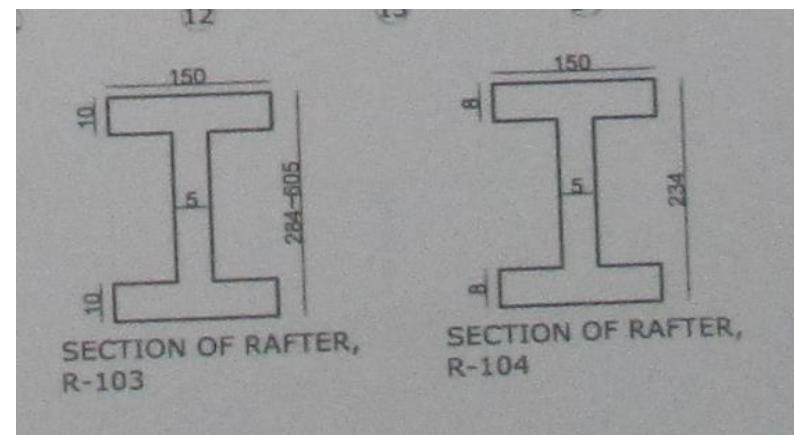
Flange thickness of end rafter was found 7 mm instead of 8 mm. Also, Connection details were not shown in drawing.



Flange thick 7 mm



Rafter Layout





Missing vertical bracings & loose roof bracings



Missing vertical bracing



Loose roof bracing

Vertical bracings are missing at all location which are shown in drawing. Also horizontal roof cable bracings were found loose.



Existence of significant gap between connections



Existence of significant gap was observed between rafter-rafter connections at several locations. Factory is required to fill the gaps as suggested by the engineer.



Gap between rafter-rafter connections



Gap between rafter-rafter connections



Water tank above unstable platform



Water tank supported on unstable platform

Water tank supporting slab is resting on two RC and two brick columns. Factory is required to remove the slab and water tank. Alternatively the water tank must be supported on properly designed structure.



Problems Observed

Building-1 & Main Production Shed:

Item 01: Prepared DEA required to be revised & Submit to Accord.

Building-1

Item 02: Lack of Water Proofing on Roof.

Utility Building :

Item 03: Beam appeared to be undersized and sagged.

Main Production Shed:

Item 04: Inconsistency in drawing.

Item 05: Missing vertical bracings & loose roof bracings.

Item 06: Existence of significant gap between connections.

Toilet Block:

Item 07: Water tank above unstable platform.

Priority Action

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Prepared DEA required to be revised & Submit to Accord (Building-1 and Main Production shed)	Revise the DEA report and complete the review from ACCORD.	within 6-weeks
02	Prepared DEA required to be revised & Submit to Accord (Building-1 and Main Production shed)	Complete remedial works arising from design report after reviewed by ACCORD.	within 6-months
03	Prepared DEA required to be revised & Submit to Accord (Building-1 and Main Production shed)	Continue to implement load plan (Building-1).	within 6-months
04	Lack of Water Proofing on Roof (Building-1)	Factory is required to provide water proofing layer and improve drainage system to avoid water ponding.	within 6-weeks
05	Beam appeared to be undersized and sagged (Utility Building)	Factory engineer is required to carryout the adequacy check of all beams.	within 6-weeks
06	Beam appeared to be undersized and sagged (Utility Building)	Implement remediation works if required.	within 6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
07	Inconsistency in drawing (Main Production shed)	Building Engineer to survey the structures and prepare accurate as-built documents with connection details.	within 6-weeks
08	Missing vertical bracings & loose roof bracings (Main Production shed)	Factory Engineer to survey the whole structure to identify locations of all missing vertical bracings and install them.	within 6-weeks
09	Missing vertical bracings & loose roof bracings (Main Production shed)	Factory Engineer to tighten loose bracings where necessary.	within 6-weeks
10	Existence of significant gap between connections (Main Production shed)	Factory is required to fill the gaps as suggested by the engineer.	within 6-weeks
11	Water tank above unstable platform (Toilet Block)	Factory is required to remove the slab and water tank. Alternatively the water tank must be supported on properly designed structure.	within 6-weeks