



Cassiopea Sweaters Ltd.

Borta Para, PO- Pirujali, PS- Joydebpur, Dist-Gazipur, Bangladesh.

Coordinates: 24.134804 N, 90.368053 E

27th January 2019 and 5th February 2019





Observations



Review of design report

Observation: Production Building

7.4.4 FOUNDATION COMPLIANCE STUDY

Fy = 72000 psi
Fc' = 4914 psi

Bearing capacity of soil 3.54 ksf (F.S=2), According to soil test report.

Depth	Depth at 5'	Depth at 10'	Depth at 9'	AVG Allowable Bearing Capacity at 9' below from E.G.L.(tsf)	F.S.
HB-1	1.00	2.01	1.81	1.771 (3.905 Ksf)	2.5
HB-2	1.00	2.19	1.95		
HB-3	1.18	2.01	1.84		
HB-4	0.82	2.01	1.77		
HB-5	0.82	2.19	1.92		
HB-6	1.00	1.83	1.66		
HB-7	0.82	1.83	1.63		
HB-8	1.36	2.01	1.88		
HB-9	1.36	1.83	1.74		
HB-10	1.18	2.01	1.84		
HB-11	1.18	2.01	1.84		
HB-12	1.00	1.83	1.66		
HB-13	1.00	1.83	1.66		
HB-14	0.82	1.65	1.48		
HB-15	1.36	2.01	1.88		

Foundation capacity has been estimated based on SPT values given in the Soil Test Report. The ultimate bearing capacity of the foundation is found to be 9.7625 KSF (Kip / Sq Ft). Based on the support reactions detail footing analysis has been presented below.

Bearing capacity of soil 4.88 ksf (F.S=2), According to soil test report.

Factor of Safety 2 has been considered in foundation bearing check where a minimum bearing capacity 2.5 is guided in BNBC.

Material Name and Type

Material Name: CON4914

Material Type: Concrete, Isotropic

Design Properties for Concrete Materials

Specified Concrete Compressive Strength, f'c: 33.78 MPa

☐ Lightweight Concrete

Shear Strength Reduction Factor:

OK Cancel

Considered Concrete strength: 33.8 MPa

Observation : Production Building

5.0 ASSESSMENT OF CONCRETE STRENGTH.

Strength of concrete in structural members was taken from Cylinder test report. Which is attached in Appendix-2

7.4 Slab Capacity Study

7.4.1 SLAB SECTIONAL CAPACITY ASSESSMENT

Material Properties:

f'c = 5249 psi (Referenced from Core test report)

Type of Slab = Two Way

Code & Standard = BNBC 2006

Concrete strength considered without any calculation from test reports.

Live Load for Various Floors of Existing Structure Model

Building Name	Floors	Usage	Live Load (psf)
Main Building	Ground floor	Wet process, Finished goods storage, Raw material storage, Office room, Toilet	N/A
	1st floor	Iron section, Light manufacturing machine, Toilet Area.	100
	Mezzanine floor (bet. 2nd floor and 1st floor)	Office room	63
	2nd floor	Light manufacturing Machine, Loop stock linking, Office room, Toilet room	100
	3rd floor	Knitting machine, Distribution area, Toilet room	100
	4th floor	Knitting machine, Distribution area, Toilet room	100
	5th floor	Office room, conference room, Sample showroom, Prayer room, Personnel dining.	63
	Roof	Chiller machine, Open space, Stair room	63 (for chiller), 30 (for open

5 kPa Live Load considered in design report



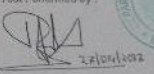
BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING
 Concrete Laboratory

BRTC No: 1101-34454/16-17/ICE Date: 20/4/2017
 Sent by: Mr. Md. Saiful Islam, QC Manager (PMC), HDE Ready-Mix Concrete Ltd., Unit-04, Rostamun, Ashahe, Savar, Dhaka.
 Ref. No: Letter, Date: 20/4/2017
 Project: Elegant Group, (Phase A/C), Holapara, Gazipur.
 Sample: Cylinder (Mix proportion as given) --, Aggregate Type: Stone chips
 Location: 3rd Floor Slab
 Test: Compressive Strength (ASTM C39)
 Date of Test: 22/4/2017

Sl. No.	Date of Casting as per the Letter	Specimen Designation/ From Mark	Specimen Area (sq. in)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Mode of Failure
1	25/3/2017	Elegant	12.15	64,749	5,329	4929 psi	Combined *
2	08 days test	Elegant	12.30	65,300	4,822	(34 MPa)	Combined *
3		Elegant	12.11	55,847	4,612	(348 kg/cm ²)	Combined *

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

Countersigned by: 
 Md. Ruhul Amin
 Assistant Professor
 Department of Civil Engineering
 BUET, Dhaka-1000, Bangladesh

Test Performed by: 
 Md. Saiful Islam
 QC Manager (PMC)
 HDE Ready-Mix Concrete Ltd., Unit-04, Rostamun, Ashahe, Savar, Dhaka.

Authenticity of this page is verifiable from <http://verify.ce.buet.ac.bd> with the QR Code or ID

Important Note: Samples as supplied to us have been tested in our laboratory. BRTC does not have any responsibility as to the veracity of the samples required to be tested. It is recommended that samples are sent in a secure and sealed container. In case of any discrepancy, it is recommended to re-test the samples.

Concrete cylinder report from slab



Observed live load 3 kPa

Cursory calculation indicates that column factor of safety is satisfactory considering 3 kPa live load and minimum concrete strength for stone chips aggregate.

Factor of Safety was found below normal design limit considering live load 5 kPa (mentioned in design report/live load plan) and minimum concrete strength for stone chips aggregate.

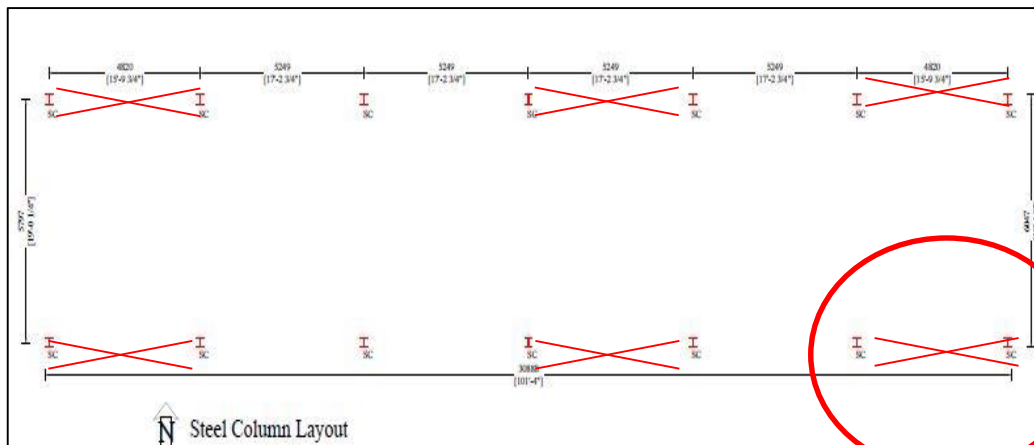
In design report and analysis model concrete strength of column is considered **33.8 MPa**. Calculation is not provided for the considered value of concrete strength. Also most of the concrete cylinder test report indicate that they were from slab.

Observation : Production Building



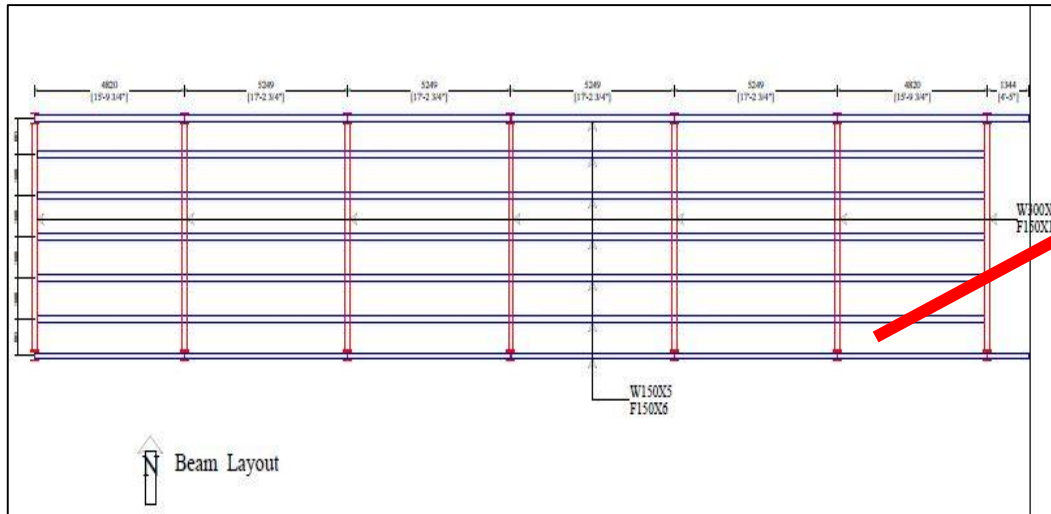
Missing bracing & lateral stability of utility shed

Observation : Utility Shed



Bracing layout

Missing bracing



Beam Layout

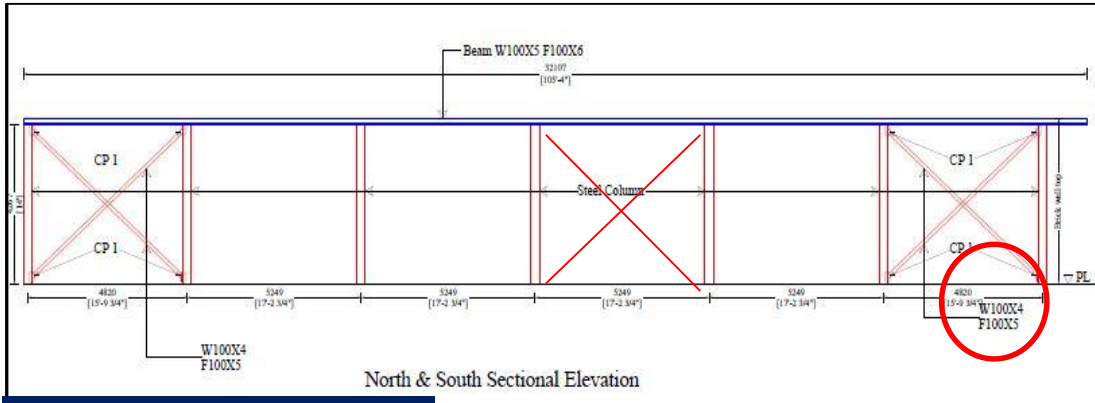


Number of beams in long direction are not matched. Six beams were observed instead of seven beams.

Observation : Utility Shed



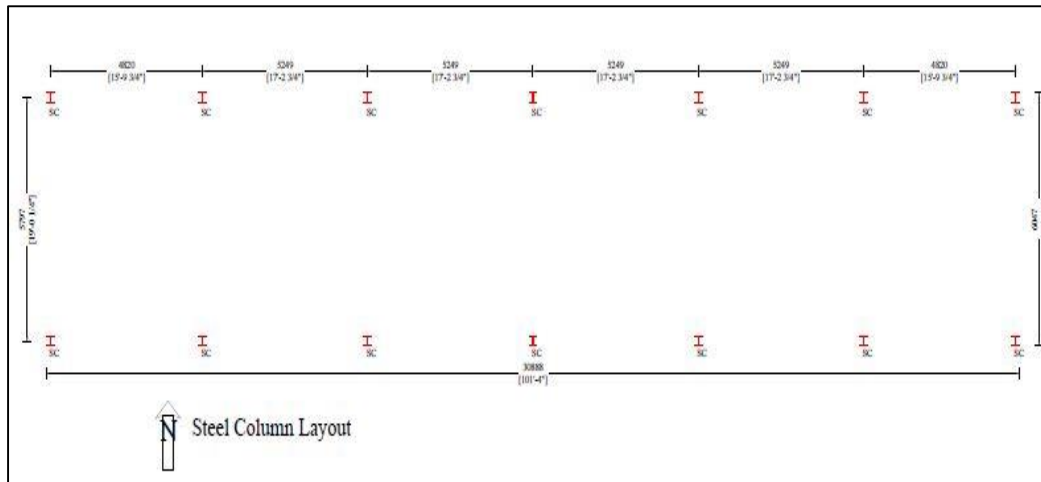
Inconsistency in as-built drawing



Bracing section



C section(150 X 75 X 5) instead of
W section(W:100 X 4 F:100X5)

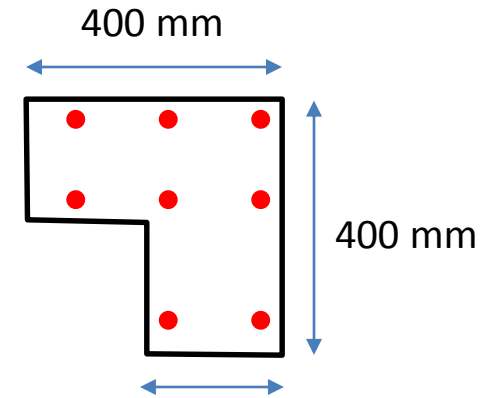
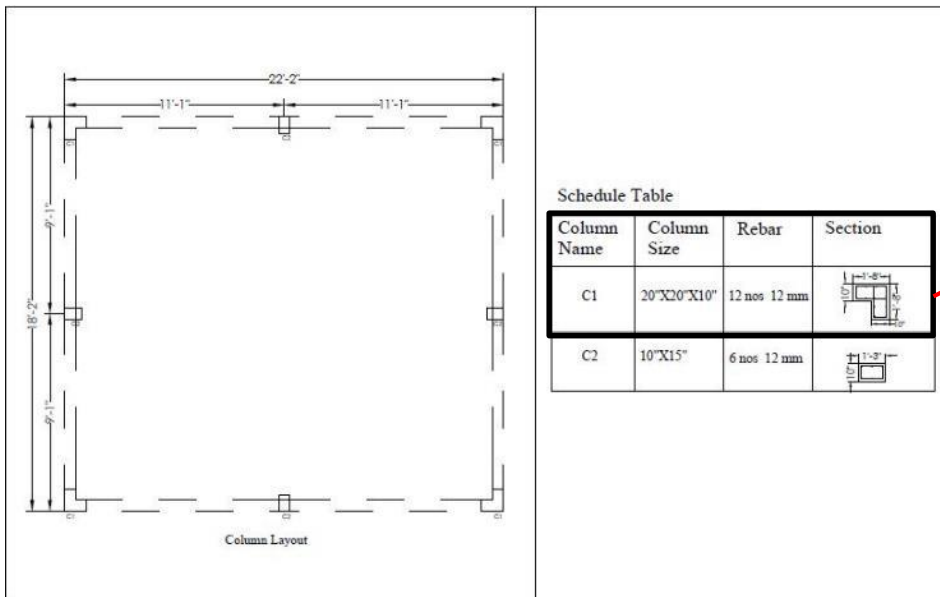


Grid dimension did not match with as-built condition

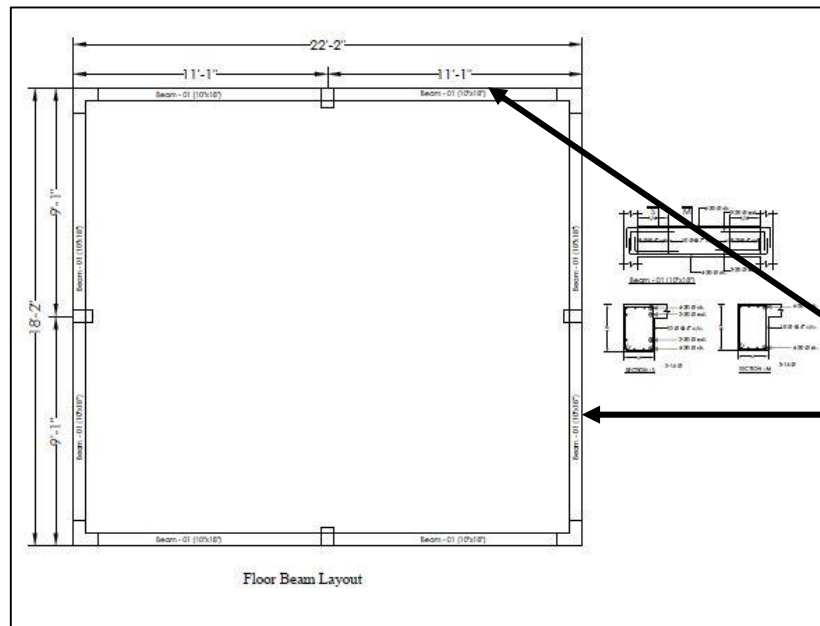
Observation : Utility Shed



Inconsistency in as-built drawing



Column size was measured 400mm instead of 450 mm. Also number of rebar counted 10 instead of 12.



Presence of this beams was not indicative.

Observation : Fire pump room



Problems Observed

Production Building:

1: Review of design report.

Utility Building:

2: Missing bracing & lateral stability of utility shed.

3: Inconsistency in as-built drawing.

Fire pump room:

4: Inconsistency in as-built drawing.



Priority Actions



Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Review of design report.(Production Building)	Review the existing design report for the mentioned observation.	6-weeks
2	Review of design report.(Production Building)	Verify the existing concrete strength by taking minimum 4 nos 100 mm dia. core from columns or by credible concrete cylinder test reports from column.	6-weeks
3	Review of design report.(Production Building)	Carry out remedial works arise from assessment report.	6-months
4	Missing bracing & lateral stability of utility shed.(Utility Building)	Building engineer is required to check the lateral stability for the existing bracing system.	6-weeks
5	Missing bracing & lateral stability of utility shed.(Utility Building)	Install missing bracing.	6-weeks
6	Missing bracing & lateral stability of utility shed.(Utility Building)	Carry out any further improvement works.	6-months
7	Inconsistency in as-built drawing. (Utility Building)	Building engineer is required to produce an accurate as-built drawings.	6-weeks
8	Inconsistency in as-built drawing. (Fire pump room)	Building engineer is required to produce an accurate as-built drawings.	6-weeks