

BIG BOSS WASHING LTD

Aptech Industrial Park, 30, Sarabo, Kashimpur, Gazipur

(23.985737, 90.285089)

21st September 2021



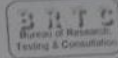
Building information

Washing Building:

Four storied (G+3) with two mezzanine reinforced concrete building.

Observations

**Stress in column and foundation marginally
exceeds normal design limit**



BRTC No. : 1101-55083 /17-18/CE; Dt: 25/2/2018
 Sent by : Crown Cement Concrete & Building Products Ltd.
 Ref. No. : CCC & BPL, Unit-4/Aplech/18; Dt: 20/2/2018
 Project : Aplech Industrial Park, Raaninger, Gazipur
 Sample : **Cylinder** [Mix proportion (as quoted): ---, Aggregate Type: Stone chips]
 Location : Washing Building Column
 Test : Compressive Strength (ASTM C39)
 Date of Test : 27/2/2018

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	23/1/2018	Big Boss	12.67	90,674	7,157	6930 psi	Combined *
2	(35 days test)	Big Boss	12.55	88,881	7,082	(47.8 MPa)	Combined *
3		Big Boss	12.55	82,156	6,545	(487 kg/cm ²)	Combined *

Note: Samples were received in unsealed condition.

* Combined = Mortar and Aggregate failure.

Countersigned by:

Signature

Dr. Abu Siddique
 Professor
 Department of Civil Engineering
 BUET, Dhaka-1000, Bangladesh



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

Test Performed by:

Signature
 6/3/18

Dr. Nazrul Islam
 Assistant Professor
 Department of Civil Engineering
 BUET, Dhaka-1000, Bangladesh

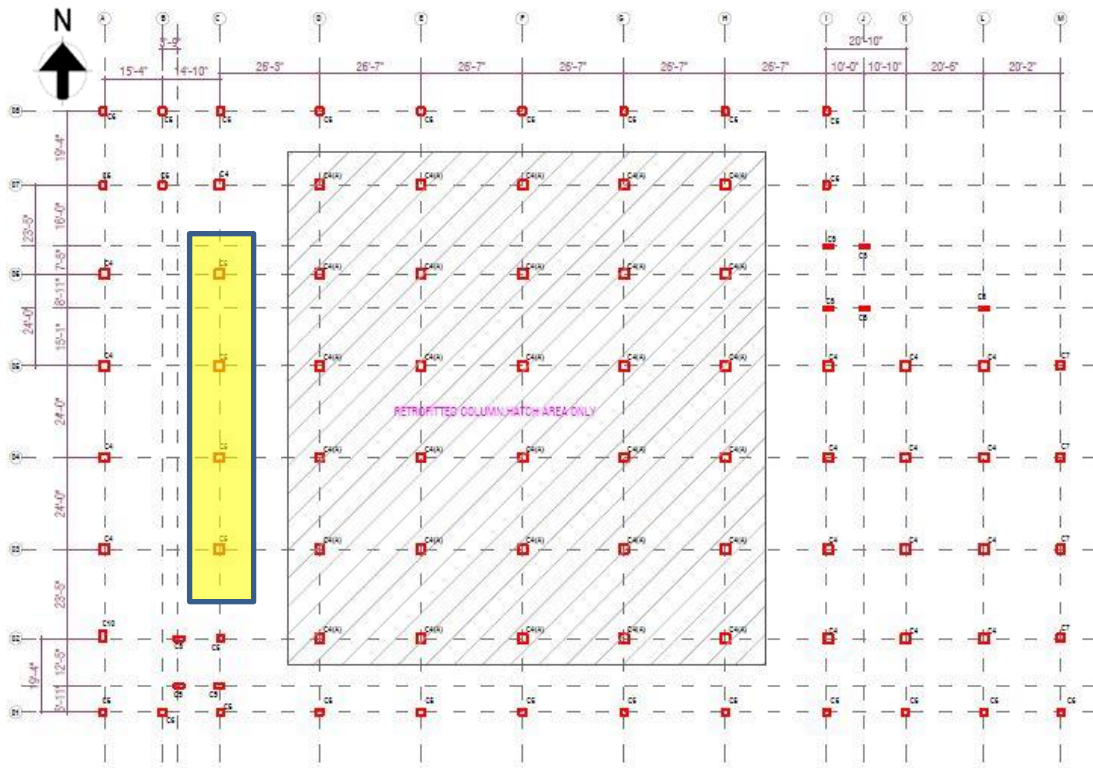


Important Notes: Samples as supplied to us have been tested in our laboratory. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that samples are sent in a secure and sealed cover/packet/container under signature of the competent authority. In order to avoid fraudulent fabrication of test results, it is recommended that all test reports are collected by duly authorized person, and not by the Contractor/Supplier.

13 sets of concrete cylinder test reports for were available. The concrete sample locations were unknown, mix ration of different structural members were not mentioned, minimum number of sample requirement did not comply with BNBC. Also, design strength was unknown. Therefore, minimum concrete strength has been considered for capacity calculation. The factory engineer is required to determine in-situ concrete strength of the building.

Column grid, floor, concrete mix ration are not mentioned

Observations: Washing Building



Marginally stressed column/foundation layout



Live load (storage) at highlighted area

Cursory calculation shows that stress in marked columns and foundations marginally exceeds the normal design limit considering the floor live load 4 kPa for typical floors (as per load plan) and 6 kPa for storage areas only. Factory engineer is required to review the design, loads and column/foundation stresses based on in-situ concrete strength.

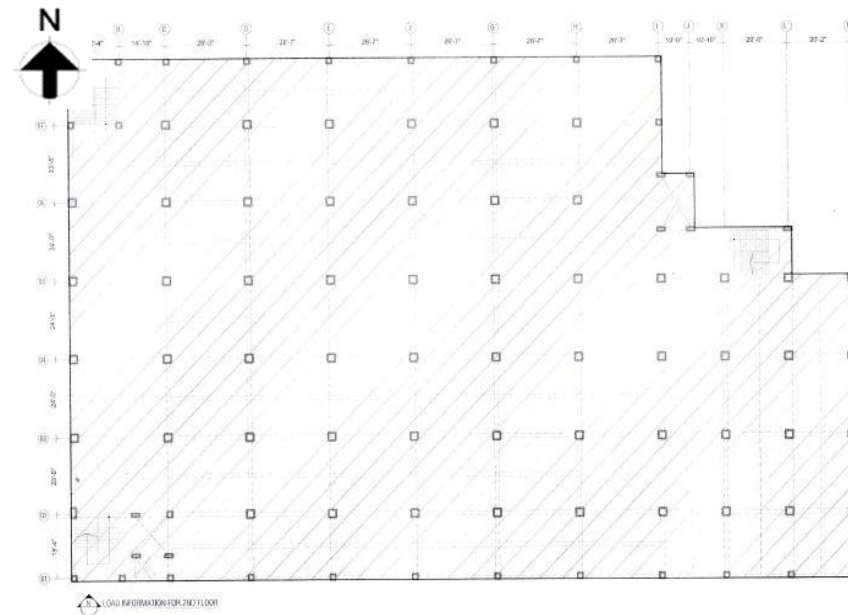
Design Report needs to be prepared



South-west view

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, only as-built drawing and load plan were available, but no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

Prepared load plan to be revised



Load Information for Typical floor		
S/N	Item	Description
01	Live load	Stair Zone Others Zone
		5.0kn/m2 4.0kn/m2
02	Seismic load	$V=ZICW, R=6, I=1, W=$ Dead Load, $Z=0.15$ fig6.2.10 BNBC1993

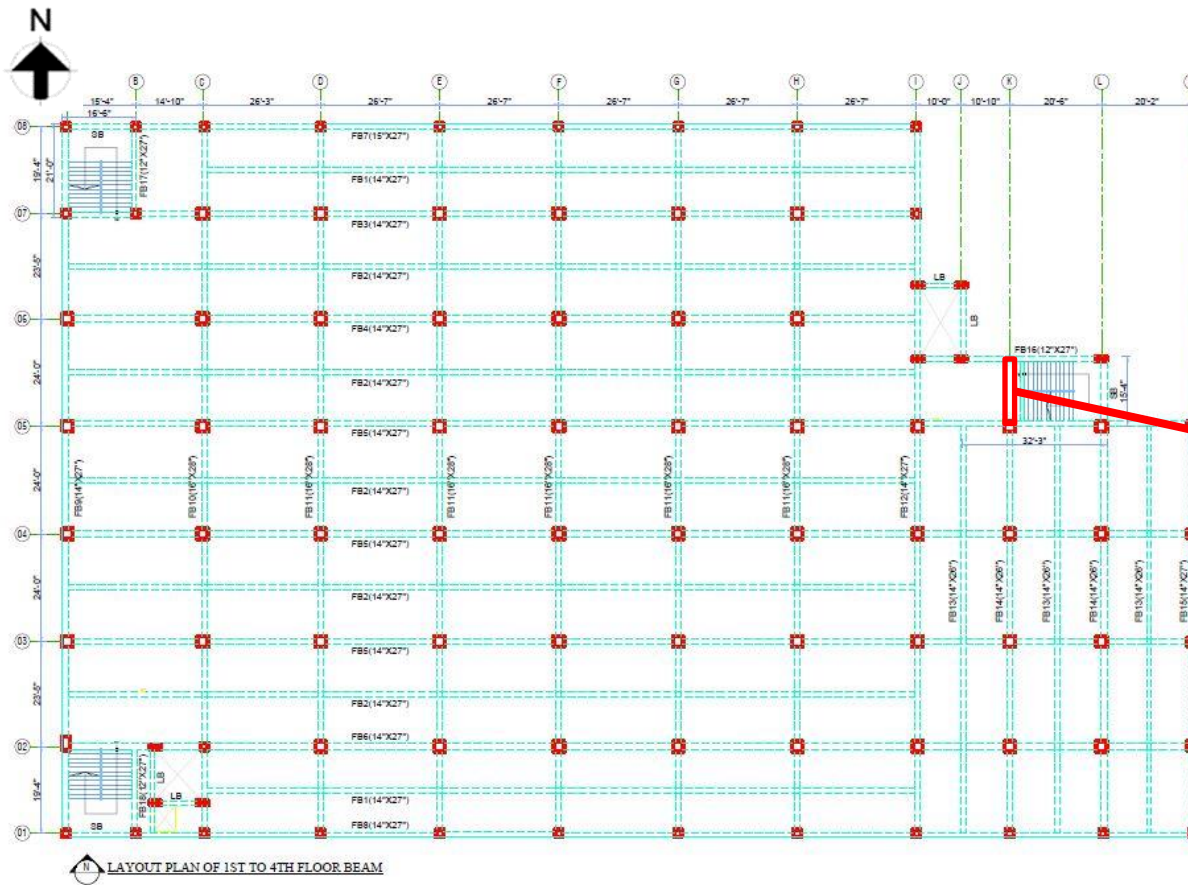
Live load on typical floor is considered as 4 kPa in prepared load plan. As per BNBC- Part 6, live load for light storage areas is required to be considered minimum 6 kPa. Also, value of R is mentioned as 6 which should be 5 or 8 based on the rebar detail. However, the factory engineer is required to revise the load plan as per BNBC requirement and check the design accordingly.



INDUSTRIAL, STORAGE & HAZARDOUS (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
	3	Factory, workshop etc.	5.0	4.5
	4	Manufacturing : light	6.0	4.5 ^(S)
		heavy	12.0	9.0 ^(S)
		ice	15.0	9.0 ^(S)
	5	Printing plant :		^(S)
		Press room	7.0	11.0
		Composing and linotype room	5.0	9.0 ^(S)
		Paper storage room	12.0	9.0 ^(S)
	6	Motor room, fan room etc. including the weight of machinery	7.5	4.5
	7	Cold storage, grain storage	15.0	9.0 ^(S)
	8	Storage warehouses : light	6.0	4.5 ^(S)
		heavy	12.0	9.0
	9	Foundries	20.0	12.0

Observations: Washing Building

Inconsistency in as-built drawing



Beam found but not shown in layout

Typical beam layout

Beam at highlighted location was not shown in beam layout but found at site (every floor). Factory engineer is required to update the as-built structural drawing.

Observations: Washing Building

Problems Observed

Washing Building:

Item 1: Stress in column and foundation marginally exceeds normal design limit

Item 2: Design Report needs to be prepared

Item 3: Prepared load plan to be revised

Item 4: Inconsistency in as-built drawing

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Stress in column and foundation marginally exceeds normal design limit (Washing Building)	Factory engineer is required to review the design, load, column and foundation stresses based on in-situ concrete strength.	6-weeks
02	Stress in column and foundation marginally exceeds normal design limit (Washing Building)	Verify in-situ concrete strength by take minimum 4 concrete cores (100mm diameter) from lower tier of the buildings.	6-weeks
03	Stress in column and foundation marginally exceeds normal design limit (Washing Building)	Implement any remediation work if required.	6-months
04	Design Report needs to be prepared (Washing Building)	Factory engineer is required to prepare the Design Report in compliance with section 1.9.1.1 (part-6, BNBC).	6-weeks
05	Design Report needs to be prepared (Washing Building)	Implement any remediation work if required	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
06	Prepared load plan to be revised (Washing Building)	Produce and actively manage a set of floor live loading plan following BNBC minimum live load requirement and considering foundation & column capacity of the building.	6-weeks
07	Prepared load plan to be revised (Washing Building)	Implement floor loading plan	6-months
08	Inconsistency in as-built drawing (Washing Building)	Factory engineer is required to update the as-built structural drawing.	6-weeks