

East Coast Knitwear Pvt. Ltd. (Extension)

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(23.654470,90.481981)

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1. Building Information

Extension Building: Six (G+5) storied RC building with an underground water reservoir and fire pump room.

2. Observations

Observation-1: Design documents need to be reviewed by RSC.

- ❖ Zone co-efficient, $Z = 0.15$ (zone 2, As Per BNBC 2006)
- ❖ Structure importance co-efficient, $I = 1.00$ (Standard Occupancy, Table 6.2.23, BNBC 2006)
- ❖ Response modification co-efficient, $R = 8.0$ (IMRF, Table 6.2.24, BNBC)
- ❖ Site co-efficient, $S_3 = 1.5$ (type 3 soil as suggested in Table 6.2.25, BNBC)

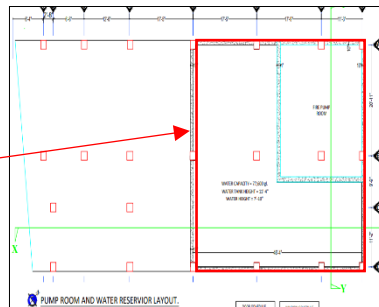


R=8 considered in the design report

50mm Expansion Gap

Description: Response modification factor $R=8$ has been considered in the design report. But no detailed calculation has been provided to support the consideration for the connection details. During inspection, the 50 mm expansion gap was observed in expansion joint. Calculations regarding building separation need to be included in design report in compliance with BNBC. The building engineer is required to provide necessary calculations to support $R=8$ and justify the provided expansion gap & submit the design report to RSC for further review.

Observation-2: Load plan does not comply BNBC requirement.



Storage on suspended ground floor

Storage on 3rd floor

Description: Storage found on the ground floor suspended slab over the water reservoir and fire pump room. However, the load plan has not been prepared for this suspended floor. Additionally, 4 kPa live load is considered for stairs instead of 5 kPa.

Moreover, in the provided load plan 3 kPa has been considered on the 3rd floor but the floor is being used as storage which does not comply with BNBC. As per BNBC, 6kPa needs to be considered for storage live load.

The building engineer is required to update the load plan considering 6 kPa for storage areas and 5 kPa for stairs and revise the design documents accordingly.

Observation-3: Inadequate number of concrete cylinder test reports.



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Note -

Concrete strength, $f'_c = 4000$ Psi

Concrete mix = 1:1.5:3 (With Stone Chips)

Which to be confirmed by trial mix design

Yield Strength of Steel, $f_y = 72500$ psi (72.5 grade)

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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	14/11/2021	Column	12.42	34,926	2,812	—	Mortar
2	(34 days test)	Column	12.18	39,327	3,229		Mortar
3		Column	12.18	30,525	2,506		Mortar

2

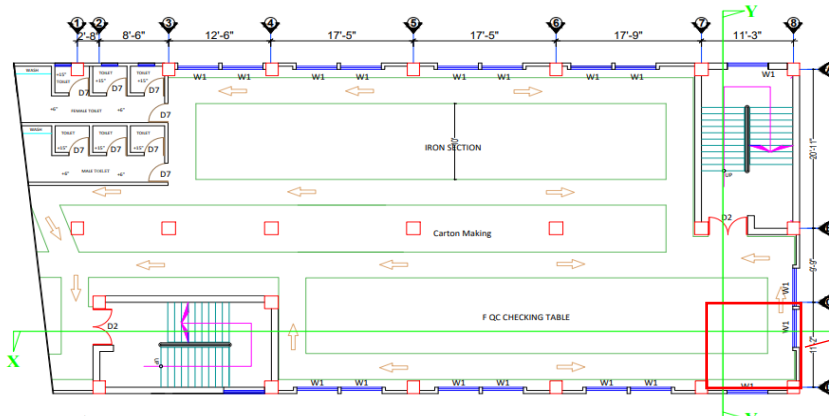
TEST REPORT							
SL No.	Date of Casting as per the letter	Specimen Designation/ Frog Mark	Specimen Area	Maximum Load	Crushing Strength	Average Crushing Strength	Mode of Failure
			(sq. in)	(lb)	(psi)		
1	28/10/2021	Column	12.18	29,467	2,419	—	Combined *
2	(30 days test)	Column	12.67	37,576	2,966		Combined *
3		Column	12.42	34,873	2,808		Combined *

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* Combined = Mortar and Aggregate failure							
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Description: Concrete compressive strength f'_c considered 4000 psi (27.5 MPa) in the design documents. The adequate number of concrete cylinder test reports were not available onsite as per BNBC. Additionally, two sets of cylinder test reports were available from the column, where the average result was not obtained. However, the individual strength of the cylinder does not meet the design strength at the age of more than 28 days for columns. The building engineer is required to verify in-situ material strength by taking four numbers of 100mm dia concrete core samples from lower tier of columns to justify the design strength.

Observation-4: Mismatch in as-built drawing.



3rd-floor layout plan



Toilet with 250mm build-up

COLUMN SCHEDULE

COLUMN ID	BELOW GRADE BEAM	GROUND FLOOR TO 1ST FLOOR	2ND FLOOR TO 3RD FLOOR	4TH FLOOR TO TOP FLOOR	TIE ROD INFO
C1	 18-20mmØ	 18-20mmØ	 4-20mmØ + 12-16mmØ	 12-16mmØ	10mmØ @ 4'-6"~4'-4" c/c
C2	 20-20mmØ	 20-20mmØ	 4-20mmØ + 16-16mmØ	 18-16mmØ	



C1 column at 4th floor found 18"x20" instead of 15"x20"

Description: During the inspection, mismatches were found between the onsite condition and the as-built drawing. On the 3rd floor toilet with 250mm build-up was found which is not mentioned in the drawing. Also, the C1 column on the 4th floor was found 18" 20" instead of 15" 20". The building engineer is required to survey the full structure and produce accurate as-built drawings.

Observation-5: Unbraced nonstructural elements.



Unbraced PVC tank on the roof

Description: During inspection, three unbraced PVC tanks on the roof were observed. The building engineer is required to brace/anchor all nonstructural elements to avoid falling hazards during lateral loading.

3. Action Plan

Item No.	Observation	Action Plan	Timeline
1	Design documents need to be reviewed by RSC.	The building engineer is required to provide necessary calculations to support R=8 and justify the provided expansion gap & submit the design report to RSC for further review.	within 6 weeks
2	Design documents need to be reviewed by RSC.	Carry out suggested remedial works if required.	within 6 months
3	The load plan does not comply with BNBC requirements.	The building engineer is required to update the load plan considering 6 kPa for storage areas and 5 kPa for stairs and revise the design documents accordingly.	within 6 weeks
4	Inadequate number of concrete cylinder test reports.	The building engineer is required to verify in-situ material strength by taking four numbers of 100mm dia concrete core samples from lower tier of columns to justify the design strength.	within 6 weeks
5	Mismatch in the as-built drawing.	The building engineer is required to survey the full structure and produce accurate as-built drawings.	within 6 weeks
6	Unbraced nonstructural elements.	The building engineer is required to brace/anchor all nonstructural elements to avoid falling hazards during lateral loading.	within 6 weeks