

Sterling Designs Limited (Extension)

Word no-7, Biswashpara, Chandra, Kaliakoir, Gazipur.

(24.0327192, 90.2628762)

10 November 2024

Structural Inspection Report



1. Building Information

1. Building-02: Four storied (G+3) RC building.
2. Building-03: Two-storied (G+1) RC building.
3. Building-04: Single-storied RC building.
4. Building-05: Single storied RC building.
5. Building-06: Single storied RC building.
6. Building-07: Single storied RC building.

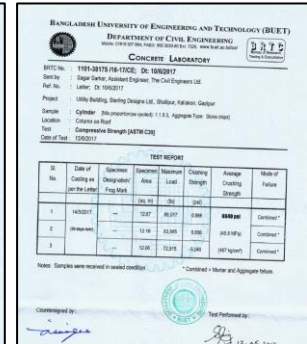
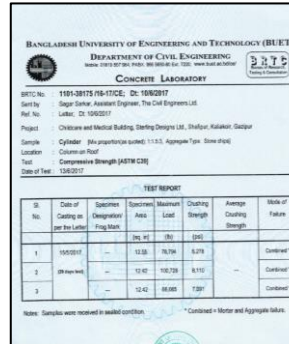
2. Observations

Observation 1: Lack of material test report for (Building-02 & Building-03).

5. Material:

5.1 Concrete:

- Compressive strength of concrete using 3/4" down graded stone chips is $f'_c = 3500$ psi (24.13 Mpa) for Column, Grade beam, Floor beam & Stair beam members work as specified in the drawings.
- Compressive strength of concrete (1:1.5:3) using 3/4" down graded Shingles is $f'_c = 3000$ psi (20.68 Mpa) for Pile work as specified in drawing.
- Compressive strength of concrete using 3/4" down graded stone chips is $f'_c = 3000$ psi (20.68 Mpa) for Pile Cap, Slab and Stair members work as specified in the drawings.
- Compressive strength of concrete 3/4" down graded using stone chips is $f'_c = 2700$ psi (18.61 Mpa) for Machine Room & Over head water tank slabs work as specified in the drawings.

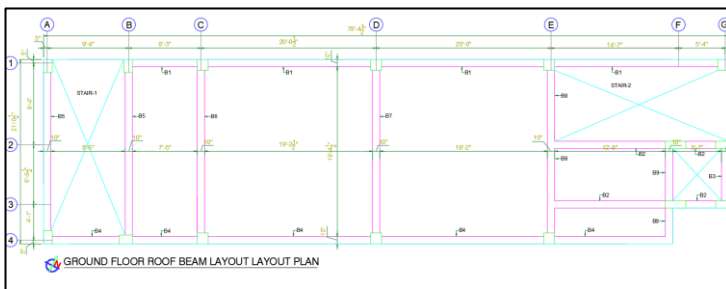


Concrete strength consideration in design report for Building-2 & 3

Available test reports

Description: During the inspection, concrete cylinder test report- (1 set from column for Building-2), (1 set from column, 1 set from beam & slab for Building-3,) were available. However, in the design reports of Building 2 & 3, f'_c was considered 24.14 MPa without any justification. The building engineer is required to take the necessary concrete cores to confirm the concrete strength. Update the analysis & design report based on in-situ material strength and submit to RSC for review.

Observation 2: Missing information in as-built drawing (Building-02)

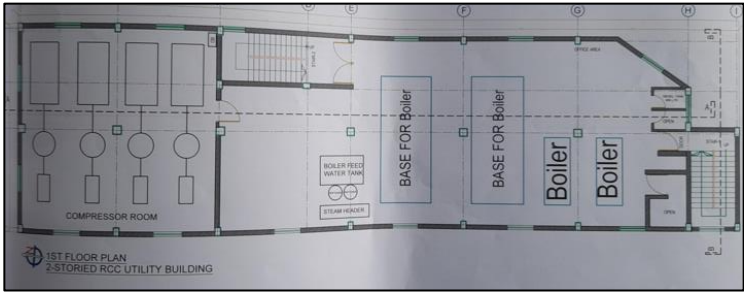


Typical floor beam layout

Existing tie beam in ground floor

Description: In the structural drawing, structural details of ground floor tie beam were not available. The building engineer is required to survey the structure and update the as-built drawing.

Observation 3: Missing information in as-built drawing of Building-03



Typical floor beam layout



Existing buildup in ground floor

Description: In the as-built architectural drawing, build-up thickness was not shown for base of boiler in 1st floor. The building engineer is required to survey the structure and update the as-built drawing.

Observation 4: Lack of design report (Building-04).



Description: 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, the design report was not available. The building engineer is required to prepare a design report in compliance with BNBC 1.9.1

Observation 5: Possible vertical extension (Building-04).

04 10 STORIED BUILDING			
Basement Floor Plan	= 1721.00 sft = (159.88 Sqm)	x 1	= 159.88 Sqm
Ground Floor Plan	= 36687.00 sft = (3408.33 Sqm)	x 1	= 3408.33 Sqm
Mezzanine Floor	= 14076.00 sft = (1307.70 Sqm)	x 1	= 1307.70 Sqm
Typical Floor	= 34946.00 sft = (3246.59 Sqm)	x 9	= 29219.31 Sqm
			Total = 34095.22 Sqm

05 RMS ROOM			
	= 294.00 sft = (27.31 Sqm)	x 1	= 27.31 Sqm



Permit for 10 storied building

Existing single storied with mezzanine

Description: The building has permit drawings for 10 storied with one basement. The building is constructed up to single storied with a mezzanine. The roof columns are extended for possible vertical extension in future. The building engineer is required to prepare a Detail Engineering Assessment (DEA) for the proposed building prior to conducting any vertical extension.

Observation 6: Lack of structural connection (Building-04).



Steel truss roofing system



Truss angle rested on masonry wall

Description: During inspection no structural connection was observed between the steel roof supporting the angle of staircase and supporting masonry wall. The building engineer is required to check the connection adequacy for uplift forces as part of EA and suggest remedial actions.

Observation-7: Falling hazard on the roof (Building-04).



Description: A lack of fall protection barrier/parapet wall/railing was found on roof. The building engineer is required to provide a fall protection barrier for the open roof/floor and for all openings.

4. Action Plan

Item No.	Observation	Action Plan	Timeline
1.	Lack of material test report (Building-02).	Verify in-situ concrete strength either by 100 mm diameter cores or existing credible cylinder test reports.	within 6 weeks
2.		The building engineer is required to revise the design report based on the in-situ material strength, the actual framing system, and proper design parameters. Submit the revised design documents to RSC for review.	within 6 weeks
3.		Carry out the suggested remedial if works.	within 6 months
4.	Missing information in as-built drawing (Building-02).	The building engineer is required to survey the structure and update the as-built drawing.	within 6 weeks
5.	Lack of material test report. (Building-03).	Verify in-situ concrete strength either by 100 mm diameter cores or existing credible cylinder test reports.	within 6 weeks
6.		The building engineer is required to revise the design report based on the in-situ material strength, the actual framing system, and proper design parameters. Submit the revised design documents to RSC for review.	within 6 weeks
7.		Carry out the suggested remedial if works.	within 6 months
8.	Missing information in as-built drawing (Building-03).	The building engineer is required to survey the structure and update the as-built drawing.	within 6 weeks
9.	Lack of design report (Building-04).	The building engineer is required to prepare a design report in compliance with BNBC 1.9.1 and submit to the RSC for review.	within 6 weeks
10.		Carry out suggested remedial works if required.	within 6 months
11.	Possible vertical extension (Building-04).	Factory engineers are required to prepare a Detail Engineering Assessment (DEA) report prior conducting any vertical extension and submit to RSC for review.	within 6 weeks
12.		Carry out the suggested remedial if requires.	within 6 months
13.	Lack of structural connection (Building-04).	Factory engineers are required to check the connection adequacy for uplift forces. Implement remediation work if required.	within 6 weeks
14.	Falling hazard on the roof and 5 th floor. (Building-04).	The building engineer is required to provide a fall protection barrier to the roof/floor and all openings.	within 6 weeks

Survey Limitations and Assumptions

This report is for the private and confidential use of RSC for whom it was prepared together with their professional advisors as appropriate. It should not be reproduced in whole or in part or relied upon by third parties for any use without the express written permission of RSC.

This report can be used in discussion with the supplier or factory owner as a means to rectify or address any observations made. The report is not comprehensive and is limited to what could be observed during a visual inspection of the building.

This Report is not intended to be treated as a generalized inspection and does not cover the deterioration of structural members through dampness, fungal or insect attack, nor does it deal with problems and defects of a non-structural nature. Other non-structural aspects of the building such as fire safety have not been assessed in this survey.

Except as otherwise noted, drains and other services were not viewed or tested during our inspection and are therefore similarly excluded from this Report. We have not inspected any parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

External inspection of the façade walls has generally been carried out from ground level only by visual sighting. No opening up works were carried out (except as noted) and we rely on the Architects and Engineers drawings provided to us for our views on concealed parts of the structure and in particular foundations. Strengths of materials and components are untested and we recommend that the factory owners Building Engineer carries out in situ testing over and above those suggested to satisfy themselves with the material strengths and component details.

Recommendations, where given, are for the purpose of providing indicative advice only, are not exhaustive, relate solely to identifying key and obvious structural defects as identified in this presentation, and do not take the form of or constitute a specification for works. We take no responsibility for the works as constructed. This report does not interfere with the factory owners Building Engineers responsibility for the structural performance of this building, The Building Engineer remains fully responsible for the structural adequacy of the building.

This report does not comment in detail on the future seismic performance of the building and only highlights the fact that the building may experience significant damage or collapse in a seismic event along with many others in the Dhaka region.

The observations in this report are based on the Engineering Judgement of the lead surveyor/engineer at the time of the survey. We assume in making these observations that no covering up of faults defects, filling or plastering over cracking or significant repair work has been carried out by the building owner. Any future alteration or additional work by the building owner will void this report.