

Sams Attire Ltd (Extension 2)

Bhuiyan Tower, Plot No. 10, Ashulia Jamgora, Savar, Dhaka.

(23.936484, 90.284598)

3 November 2024



North Part



South Part

1. Building Information

Building-4 is a four-storied RC building (B+G+3) with an underground fire pump room and water reservoir.

Building-5 is a single-storied masonry structure.

2. Observations:

Observation-1: Inconsistencies in design documents. (Building-4)

3. CONCRETE :

a) TYPE: CONCRETE COMPRESSIVE STRENGTH CONSIDERED AS FOLLOWS :

I) FOR FOOTING - f_c = MINIMUM 4500 psi (1 : 1.5 : 3), USE STONE CHIPS

II) FOR COLUMN - f_c = MINIMUM 4500 psi (1 : 1.5 : 3), USE STONE CHIPS

III) FOR PILE CAP, GRADE BEAM - f_c = MINIMUM 4500 psi (1 : 1.5 : 3), USE STONE CHIPS

IV) FOR SLAB & SLAB BEAM - f_c = MINIMUM 4,000 psi (1 : 1.5 : 3), USE STONE CHIPS

WHICH ARE TO BE CONFIRMED BY TRIAL MIX DESIGN.

MATERIAL PROPERTY

The principal material of construction is reinforced concrete. As per investigation and design drawings, the following material properties have been used:

- ❖ Yield strength of Rebar, f_y = 72000 psi
- ❖ Compressive strength of concrete, f'_c (Column) = 4000 psi
- ❖ Compressive strength of concrete, f'_c (Slab & Beam) = 4000 psi
- ❖ Young's modulus of concrete, E_c = $57\sqrt{f'_c}$

General note of construction drawing



f'_c considered in design report

Material Property Design Data

Material Name and Type

Material Name: Fc 4.0

Material Type: Concrete, Isotropic

Design Properties for Concrete Materials

Specified Concrete Compressive Strength, f'_c : 4000 lb/in²

☐ Lightweight Concrete

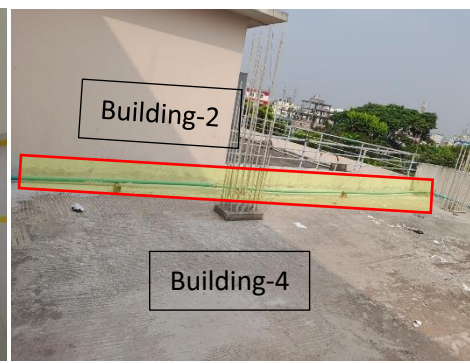
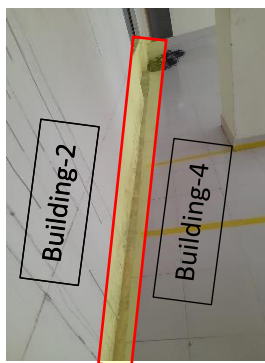
Shear Strength Reduction Factor:

Provided cylinder test report

f'_c considered in design report

In general note of the drawing, design concrete strength has been considered 4500psi for the column, foundation, and grade-beam and 4000psi have been considered for the slab & beam. But in the EA report and FEA model 4000psi have been considered for all the structural members.

During inspection, Total 5 sets of cylinder test report (3 sets from columns, 1 set from foundation and 1 sets from slab) were available which does not satisfy the frequency of cylinder tests as per BNBC-2020. The deviation from the requirement, the building engineer is required to take concrete core samples from RC members to verify the in situ concrete strength. Revise the design documents based on in-situ material strength.



Separation of Building-2 & Building-4

Separation of North Part and South Part

The separation between Building-2 and Building-4 is not clear. Also, the expansion gap has been provided 2 inch between the north part and south part. In the provided design report, the required width of the expansion gap has not been mentioned. The building engineer is required to check the required width of the expansion gap in the design report and suggest accordingly.

Response Acceleration, S_s : 0.5

Response Acceleration, S_1 : 0.2

User Defined F_a : 1.15

User Defined F_v : 1.725

Factors

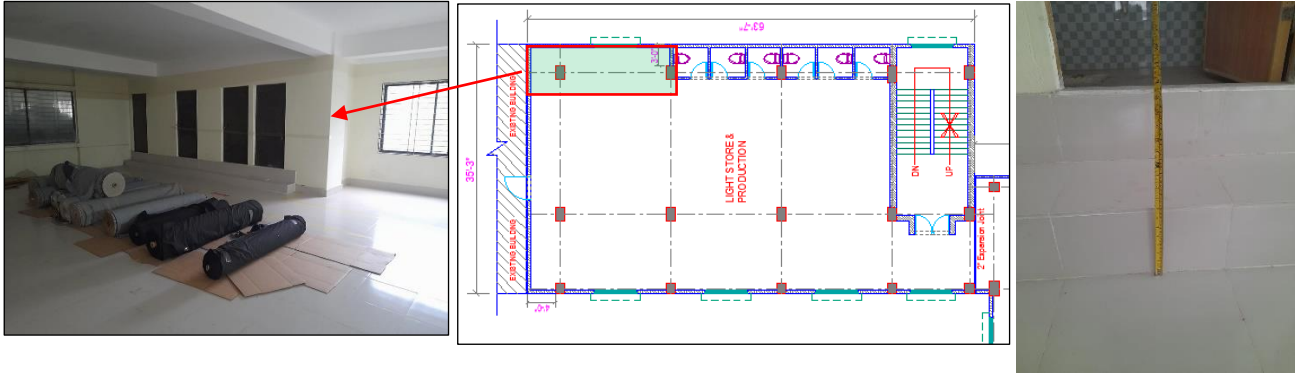
Response Modification, R : 5

Cancel

- ❖ Zone co-efficient, Z = 0.2 (Zone 2, Fig. 6.2.24, BNBC 2020, P-3195)
- ❖ Site Class = SC (Table 6.2.13, BNBC 2020, P-3191)
- ❖ Structure importance co-efficient, I = 1.00 (Table 6.1.1 BNBC 2020 (P-3061)
- ❖ Response modification co-efficient, R = 5.0
- ❖ (SDC-C, Table 6.2.18, BNBC 2020, P-3198 & Section 8.3.2, BNBC 2020, P-3669)

In the design document, the response reduction factor has been considered $R=5$ that is Intermediate reinforced concrete moment frames. But in the design report, supporting calculations have not been provided in detail.

Observation-2: Mismatch in the provided drawing. (Building-4)

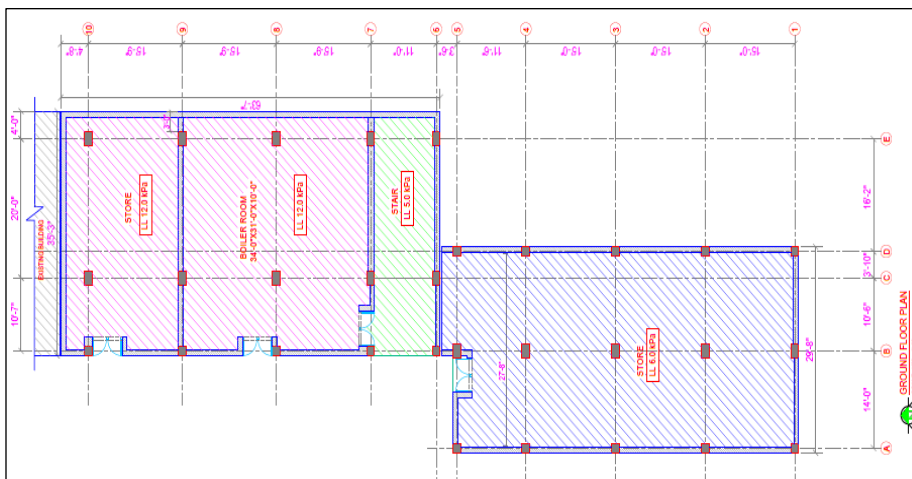


Description: During the inspection, the mismatch was found between the provided drawing and the site condition. The toilet zone position was not found as per the drawing. The toilet zone was found as marked location in the layout. Also, approximately 350mm build-up was found in the toilet zone.



The is a lightweight steel tin shed over the stair top. The drawing was not available for the shed in the provided drawing,
The building engineer is required to survey the whole structure and prepare accurate as-built drawings.

Observation-3: Lack of load management program. (Building-4)



Load plan of suspended ground floor column and loading at ground floor

Description: During the inspection, utility facilities (boiler room) were found on ground floor slab. But the weight of the machine has not been mentioned in the load plan. Also uncontrolled storage loading was found at ground floor slab. Load limit marking has not been provided in the storage area. The building engineer is required to update the load plan mentioning the machine weight and provide load limit marking at storage area.

Observation-4: Appearance of corrosion in re-bar at roof. (Building-4)



Description: Corrosion was found in reinforcement of roof columns. The building engineer is required to provide anti-corrosive coating in re-bar to prevent the corrosion.

Observation-5: Signage of water ponding at roof (Building-4)



Description: During inspection, signage of water ponding was found on existing roof (4th floor slab). The building engineer is required to develop a drainage system with adequate slope to avoid water ponding.

Observation-6: Falling hazard risk at roof. (Building-4)



Description: During inspection, a portion of the parapet wall found missing on roof which is susceptible to falling hazard. The building engineer is required to provide barrier or construct parapet wall at that location to mitigate the falling hazard.

Observation-7: Lack of as-built drawing. (Building-5)



Description: During inspection, the as-built drawing was not available for Building-5. The building is being used for the RMS room and security room. The building engineer is required to survey the structure and prepare accurate as-built drawings.

3. Action Plan:

Serial No	Observation	Action Plan	Timeline
1	Inconsistencies in design documents. (Building-4)	Building engineers is required to revise the design document and submit to RSC for further review.	within 6 weeks
2	Inconsistencies in design documents. (Building-4)	Provide the adequate number of the cylinder test report. Otherwise, verify the in situ concrete strength for the RC members by taking concrete core.	within 6 weeks
3	Inconsistencies in design documents. (Building-4)	Carry out remedial work if required.	within 6 months
4	Mismatch in the provided drawing. (Building-4)	The building engineer is required to survey the whole structure and prepare accurate as-built drawings.	within 6 weeks
5	Lack of load management program. (Building-4)	The building engineer is required to update the load plan mentioning the machine weight and provide load limit marking at the storage area.	within 6 weeks
6	Lack of load management program. (Building-4)	Implement the floor load management plan.	within 6 months
7	Appearance of corrosion in re-bar at roof. (Building-4)	The building engineer is required to provide anti-corrosive coating in re-bar to prevent the corrosion.	within 6 months
8	Signage of water ponding at roof (Building-4)	Building engineer is required to develop the drainage system to avoid water ponding.	within 6 months
9	Falling hazard risk at roof. (Building-4)	The Building engineer is required to provide barrier or parapet wall to avoid falling hazard.	within 6 months
10	Lack of as-built drawing. (Building-5)	The building engineer is required to survey the whole structure and prepare accurate as-built drawing	within 6 weeks