Al-Muslim Apparels Ltd. (Extension)

East Narsingdipur,Ashulia, Savar, Dhaka.
(23.9245265889, 90.308980602)
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RSC RMG SUSTAINABILITY COUNCIL

Building Information

1. Utility Building is a five storied (G+4) reinforced concrete (RC) structure with a small basement.
2. Dormitory Office Building is a two storied (G+1) RC structure.
3. Pump House Building is a single storied masonry structure.
4. Kitchen Shed is a single storied steel shed.
5. Jhute Store Shed is a single storied steel shed.
6. Security Office Building is a single storied masonry structure.

Observations

Seismic design consideration

Observations: Utility Building

Dynamic Response Method (Section 2.5.6, Part-6, BNBC) is adopted to calculate seismic lateral forces.

The total design base shear is calculated from the following equation.

$$V = \frac{ZIC}{R}W$$

Where,

Z = 0.15 (Seismic zone coefficient given in Fig. 6.2.10 of BNBC)

I = 1.0 (Structural importance coefficient given in Table-6.2.23 of BNBC)

R = 8 (Response modification coefficient for RCC Intermediate moment resisting frame (IMRF) given in Table 6.2.24 of BNBC)

W = Total seismic dead load in kN.

C = Numerical coefficient given by the following relation.

$$C = \frac{1.25S}{T^{2/3}}$$

Where,

S = 1.2 (Site coefficient for soil characteristics as provided in Table-6.2.25 of BNBC).

Response modification factor R considered as 8

Structural system is considered as IMRF (BNBC-2006) and Response Modification Factor R considered as 8 but no construction picture was available to confirm it also no calculation provided for the considered value. Building engineer is required to investigate the matter and confirm the structural system.

Observation: Utility Building

Twisted steel stair column and connection gap

Twisted column observed under stair at basement

Connection gap found between steel joints

Twisted column observed under stair at basement and connection gap found between steel joints. Building engineer is required to check the adequacy of the steel stair and incorporate in DEA report. Also, repair the twisted column and connection gap with a suitable method.

Observations: Utility Building

Non-structural elements found unbraced/not anchored

Storage rack found within the building without braced/anchored

Building engineer is required to brace/anchor all non structural elements.

Observations: Utility Building

Consideration of material strength

Observations: Dormitory Office Building

2.5 Structural System

Selection of structural system normally depends on the reinforcement detailing of the structure, connection type between beam-column-slab and bracing. Considering the above factors, **Ordinary Moment Resisting Frames (OMRF)** is adopted for this building.
(Ref. BNBC, Part 6, Sec. 1. 3. 2.)

2.6 Material

2.6.1.1 Concrete:

Compressive Strength of Concrete:

Compressive Strength of Concrete for R.C.C. column and foundation are considered f'_c = **3,000** psi and for beams & slabs f'_c = **2045 psi** is considered.

Reinforcing bar:

High strength deformed bar with Min^m Yield Strength, f_y = 400 Mpa (60,000 psi) conformed to one of the following ASTM specifications.

i) A615-40M, ii) A616-40M, iii) A617-40M, & iv) A706-40M

Concrete strength for column and foundation considered in DEA report

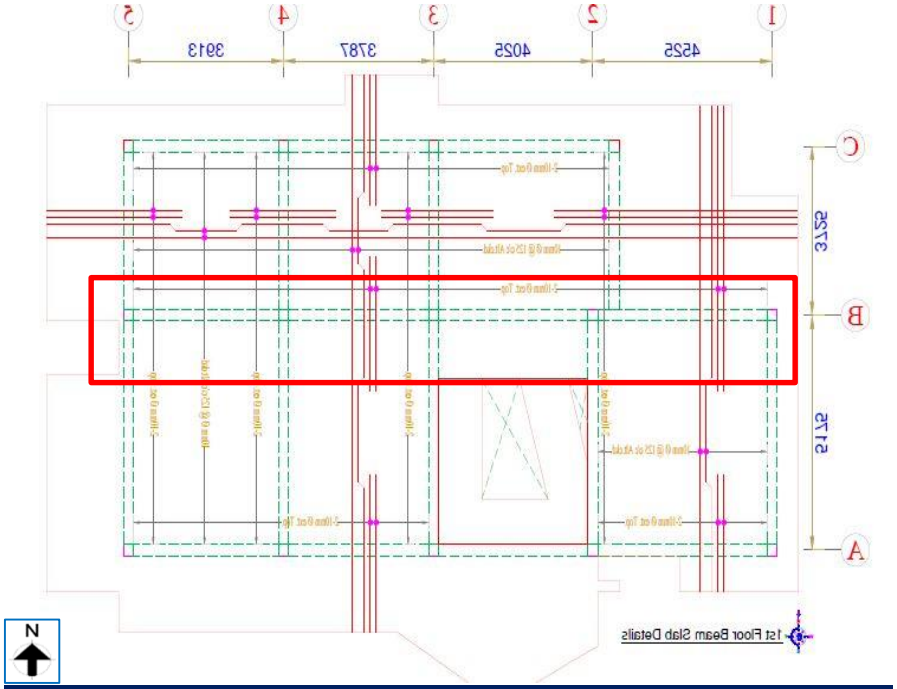
Concrete strength for column and foundation considered in analysis as 20.68 MPa without any test report. Also, rebar strength is considered as 400 MPa but the building was constructed before 2005. Building engineer is required to update the DEA report as per proper material strength of concrete and rebar.

Observation: Dormitory Office Building

Discrepancy in as-built drawing

Observations: Dormitory Office Building

Level difference in roof slab



Level difference not shown in slab layout

Level difference in roof slab which was not shown in slab layout. Building engineer is required to update the as-built drawing.

Observations: Dormitory Office Building

Apparently non engineered shed

Observations: Kitchen shed, Jhute Store Shed

Kitchen shed

Jhute Store Shed

Both Kitchen shed and Jhute Store Shed were appeared to be non engineered due to lack of apparent load path, poor connection and apparently inadequate member size. Building engineer is required to check the connection adequacy for uplift forces as part of EA and prepare a remediation plan.

Observations: Kitchen shed, Jhute Store Shed

Tests Carried Out

Utility Building : stone aggregate

Dormitory Office Building : Brick aggregate

Ferro scanning

Tests Carried Out:

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Problems Observed

Utility Building:

Item 1: Seismic design consideration

Item 2: Twisted steel stair column and connection gap

Item 3: Non-structural elements found unbraced/not anchored

Dormitory Office Building:

Item 4: Consideration of material strength

Item 5: Discrepancy in as-built drawing

Kitchen shed, Jhute Store Shed:

Item 6: Apparently non engineered shed

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Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Seismic design consideration (Utility Building)	Building engineer is required to investigate the matter and confirm the structural system.	6-weeks
02	Seismic design consideration (Utility Building)	Carry out the remedial works if required.	6-months
03	Twisted steel stair column and connection gap (Utility Building)	Building engineer is required to check the adequacy of the steel stair and incorporate in DEA report.	6-weeks
04	Twisted steel stair column and connection gap (Utility Building)	Repair the twisted column and connection gap with a suitable method.	6-months
05	Non-structural elements found unbraced/not anchored (Utility Building)	Building engineer is required to brace/anchor all non-structural elements.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
06	Consideration of material strength (Dormitory Office Building)	Building engineer is required to update the DEA report as per proper material strength of concrete and rebar.	6-weeks
07	Consideration of material strength (Dormitory Office Building)	Carry out the remedial works if required.	6-months
08	Discrepancy in as-built drawing (Dormitory Office Building)	Building engineer is required to update the as-built drawing.	6-weeks
09	Apparently non engineered shed (Kitchen shed, Jhute Store Shed)	Building engineer is required to check the connection adequacy for uplift forces as part of EA and prepare a remediation plan.	6-weeks
10	Apparently non engineered shed (Kitchen shed, Jhute Store Shed)	Carry out the remedial works if required.	6-months