

Ananta Garments Ltd (Extension)

Nishchintapur, Ashulia, DEPZ Road, Savar, Dhaka.

(23.927000, 90.310306)

05 May 2026



1. Building Information

- i) Prefabricated Store Shed-2: This is a single-storied steel shed.
- ii) Utility Building: This is a four-storied (G+3) RC building.
- iii) Security Post: This is a single-storied structure with an RC slab supported by unreinforced masonry walls.

2. Observation:

Observation-1: Design report required to be reviewed by RSC for lateral loading. (Prefabricated Store Shed-2)



Description: Design report of Prefabricated Store Shed-2 and storage racks were available on-site. Factory is required to submit the design report along with other documents (as-built drawing, test reports, etc.) to RSC for detailed review against lateral forces.

Observation-2: Lack of information in the prepared drawings. (Utility Building)



Floor build-up

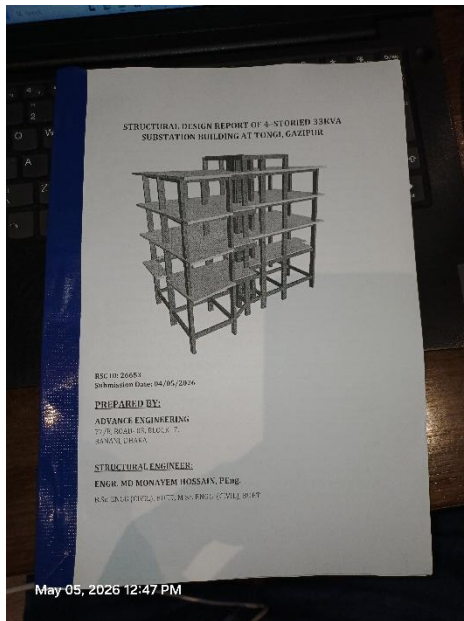


Canopy on the ground floor

Description: Floor build-up details in the washing area and canopy details of the ground floor were not provided in the as-built drawings.

Building engineer is required to survey the structure and update the as-built drawing.

Observation-3: Inconsistencies in the design report. (Utility Building)



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Seismic Force-Resisting System	Response Reduction Factor, R	System Overstrength Factor, Ω_o	Deflection Amplification Factor, C_d	Seismic Design Category B	Seismic Design Category C	Seismic Design Category D
				Height limit (m)		
4. Ordinary reinforced concrete shear walls	5.5	2.5	4.5	NL	NL	NP
F. DUAL SHEAR WALL-FRAME SYSTEM: ORDINARY REINFORCED CONCRETE MOMENT FRAMES AND ORDINARY REINFORCED CONCRETE SHEAR WALLS	4.5	2.5	4	NL	NP	NP

Building Height, h	=	21.87	m
Building Location	=	Dhaka	
Building Seismic Zone	=	3	
Seismic Zone Coefficient, Z	=	0.2	
Structure Importance Category	=	II	Standard occupancy structures
Structure Importance Coefficient, I	=	1	
Building Type	=	All other structural systems	
Building Period, T	=	0.49	
Site Class	=	SC	
Soil Factor, S	=	1.15	
Design Category	=	D	
β	=	0.15	
T_B	=	0.20	
T_C	=	0.60	
T_D	=	2.00	
Damping Ratio, η	=	5.0%	
Normalized Acceleration, C_s			$\eta = \frac{10}{(5+\xi)} \geq 0.55$
	C_s	5.41	0.00
	C_s	2.88	2.88
	C_s	3.50	0.00
	C_s	14.16	0.00
Selected, C_s	=	2.88	
Seismic Weight, W (DL+0.25LL)			
Seismic Force Resisting System	=	IMRF	
Response Reduction Factor	R =	5.5	
System Overstrength Factor	Ω =	2.5	
Deflection Amplification Factor	C_d =	4.5	
Spectral Acceleration	S_a =	0.07	
Seismic Weight (From ETASB)	W =	22071	kN
Base Shear (Manual)	V =	1538.28	kN 6.97%
Base Shear (ETASB)	V =	1437.34	kN 6.51%

Figure 3.3.4: Base Shear Calculation

3 Analysis for Structural Adequacy

3.1 Structural System

The structure is proposed to be constructed in Tongi, Dhaka, which is in the Seismic Zone II as outlined in BNBC-2020. Basic structural system is DUAL Systems: Intermediate Moment Resisting Frame System (IMRF) with Ordinary Shear Wall. IMRF detailing requirements outlined in BNBC-2020 are followed in the detailing for beams and columns of the structure. A detailed discussion and presentation regarding detailing compliance requirements have been presented in this report in the respective section.

Building-3

Description: As per the design report, the seismic design category is 'D'. Response reduction factor (R), System overstrength factor (Ω), and Deflection amplification factor (C_d) are considered as 5.5, 2.5, and 4.5, respectively, considering the DUAL system. But the DUAL system is "Not permitted" for the seismic design category 'D'. Also, the site classification was not provided in the design report based on the soil test report.

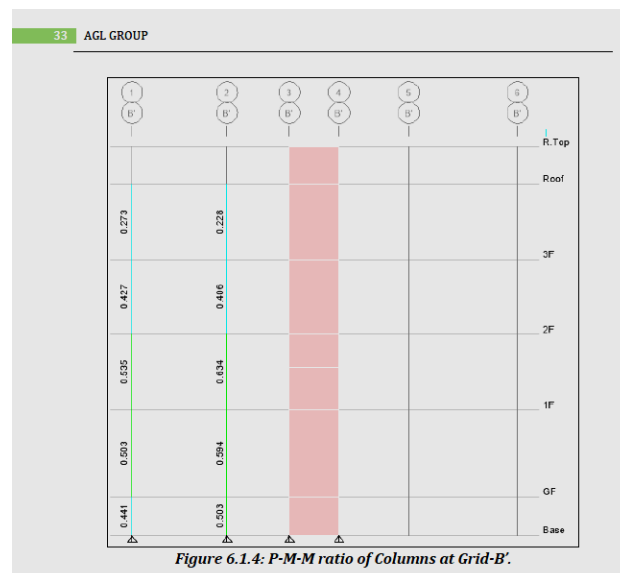
Table 2.1.2 Considered Concrete Compressive Strength

Serial	Structural Components	Concrete Compressive Strength
1.	Footing	4000 psi
2.	Column and Wall	4000 psi
3.	RC Beams	4000 psi
4.	RC Slab	4000 psi

The 4 storied building has RCC beam & two-way slab and column frame structure. Stone and brick chips are used for columns and slab respectively.

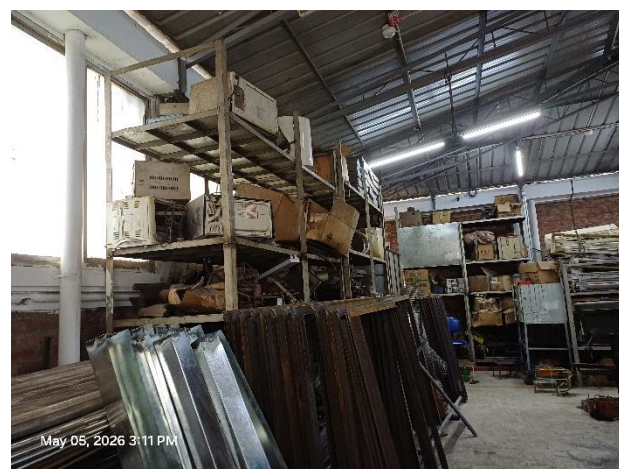
2.2 Tensile Strength of Rebar

Deformed steel bar with minimum yield strength = 72,500 psi has been considered for the structural design.



Description: In the design report, the yield strength of rebar is considered 500 MPa (72,500 psi). But no material test report was available to confirm the design strength. Also, the adequacy of the RC shear wall was not incorporated in the provided design report. The building engineer is required to incorporate all types of adequacy checks into the design report and submit them to the RSC for review.

Observation-4: Non-structural elements found unbraced/not anchored. (Utility Building)



Description: Non-structural elements suspended from, attached to, or resting atop the structure shall be adequately anchored and braced to resist earthquake forces. Factory is required to brace/anchor all non-structural elements (office cabinet, storage racks).

Observation-5: Cracks on the brick wall. (Security Post)



Description: In this structure, the RC slab is supported on unreinforced masonry walls. During the inspection, a crack was found on the brick wall. Building engineer is required to investigate the crack and repair it with a suitable method.

3. Action Plan:

Item No.	Observation	Action Plan	Timeline
1.	Design report required to be reviewed by RSC for lateral loading. (Prefabricated Store Shed-2)	The factory is required to submit design reports for both Prefabricated Store Shed-2 and high storage racks, along with other documents to RSC for detail review against lateral forces.	within 6 weeks
2.		Carry out suggested remedial works (if required)	within 6 months
3.	Lack of information in the prepared drawings. (Utility Building)	Building engineer is required to survey the structure and update the as-built drawing.	within 6 weeks
4.	Inconsistencies in the design report. (Utility Building)	The building engineer is required to address the inconsistencies in the design report and submit revised design documents to RSC to complete the review. Incorporate all types of adequacy checks into the design report.	within 6 weeks
5.		Verify in-situ material strength (steel grade)	within 6 weeks
6.		Carry out suggested remedial works (if required)	within 6 months
7.	Non-structural elements found unbraced/not anchored. (Utility Building)	Factory is required to brace/anchor all non-structural elements.	within 6 weeks
8.	Cracks on the brick wall. (Security Post)	Building engineer is required to investigate the crack and repair it with a suitable method.	within 6 weeks