

Nippon Garment Industries Ltd. (Extension)

Auchpara, Tongi, Gazipur- 1711

(23.916107, 90.393793)

27 October 2024



1. Building Information

Warehouse-1: Two storied (G+1) building

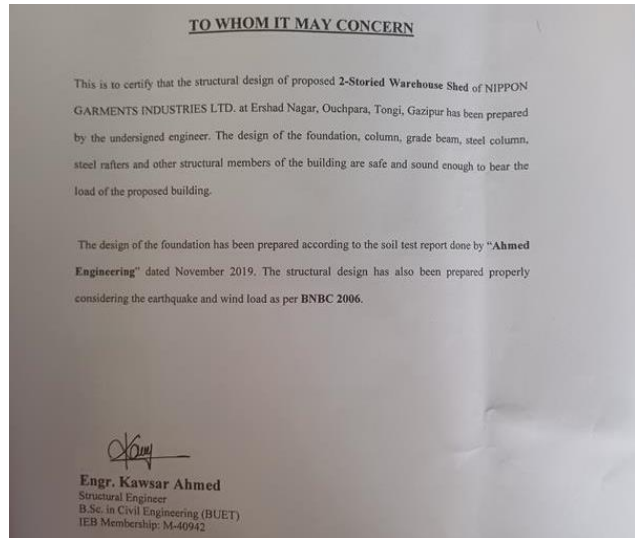
Security & Wastage Shed: Single storied shed

RMS Room: Single storied building

Parking Shed): Single storied shed

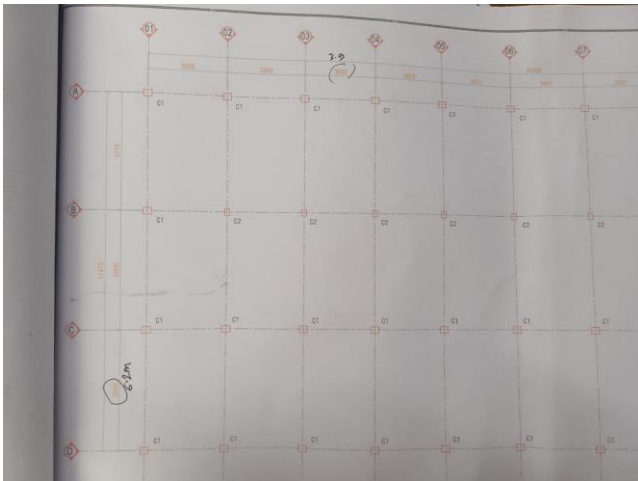
2. Observations

Observation 01: Lack of design documents for Warehouse-1.



Description: During the inspection, some drawings, a soil test report, and a declaration letter were available onsite. In the declaration letter, the consultant declared that the building is safe and sound enough to bear the proposed load without any reference calculation/design report. The building engineer is required to carry out an Engineering Assessment (EA) to confirm that the building has adequate capacity to bear the gravity & lateral loads as per BNBC-2006. And submit the EA documents to the RSC for detailed review.

Observation 02: Mismatch between drawing and as-built condition of Warehouse-1



Description: Mismatches in column grid spacing (6.2 m instead of 5.8 m at C-D & 3.9 m instead of 3.6 m at 3-4) were observed. Also, Steel short columns were not shown in the drawings. Furthermore, the steel rafter flange was found slightly more than the drawings (6 mm). The building engineer is required to survey the structures and prepare accurate as-built drawings.

Observation 03: Lack of (concrete & rebar) material test reports for Warehouse-1

Report of Tension Test of Steel Plate (ASTM A36/A36M-15)

Client: M/s. Farid Hossain

Project: Single Storey Prefabricated Steel Roof for Shed Building

Report No: TMS-001/2024

Date of Test: 16/03/2024

Sl. No.	Sample Identification	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)
1	SP-01	235	410	22
2	SP-02	235	410	22
3	SP-03	235	410	22
4	SP-04	235	410	22
5	SP-05	235	410	22
6	SP-06	235	410	22
7	SP-07	235	410	22
8	SP-08	235	410	22
9	SP-09	235	410	22
10	SP-10	235	410	22

Description: Only the steel plate test report was available for the structure. The building engineer is required to carry out necessary testing to determine in-situ concrete & rebar material strength.

Observation 04: Inconsistency between foundation system and soil test report (recommendation) for Warehouse-1

CONCLUSION & RECOMMENDATIONS

This Recommendations submitted in this report are prepared on the basis of supplied SPT & available subsurface Samples from field for the exclusive use of the following project:

Name: Nippon Garments

Name of Project: Construction of 4-Storey Factory Building

Location: Aachpara, Tonga, Gazipur.

From the field and laboratory test results, it can be concluded as follows:

- The sub-soil formations encountered at the proposed site is almost homogeneous. The sequence of lithological composition as well as consistency of the soil at different depths has been determined in the respective bore logs BH-1 through BH-6.
- RCC Cast-in-situ piles may be installed below the foundation. **Determining effective length of a pile segment requires engineering judgment. The allowable Load Bearing Capacity (ton) of 20 inch dia RCC cast-in-situ pile is given below for different depth.**

Dia of pile (inch)	Depth (ft from EGL)	Allowable Load Bearing Capacity (Ton) Considering factor of Safety = 2.5					
		BH-1	BH-2	BH-3	BH-4	BH-5	BH-6
20	65	37.32	64.27	57.11	67.60	67.78	63.08
	70	63.68	71.21	63.19	71.51	70.03	66.21
	75	71.81	80.07	72.67	82.10	78.26	76.54

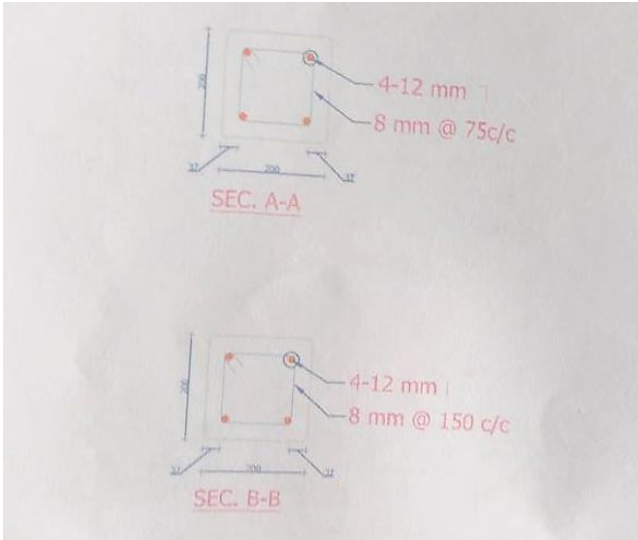
We have enclosed the allowable bearing capacity of soil for individual column footing through Table 3.1 to 1.2 & RCC Cast-in-situ pile for different depth and diameter respectively with this report through Table- 2.1 to Table-1.6

Bearing Capacity should be confirmed by Plate Load Test for shallow foundation or Pile Load Test for Deep Foundation.

Moreover considering the magnitude of the structure, the expert structural engineer will put his justice and experience to select the suitable type & depth of foundation.

For the precise recommendation, total load comes to the foundation is highly needed. This is not within the scope of this report.

Recommended by: 
K. H. HOSSAIN AHMED
B.Sc. Engineering (Civil) MEB
16/03/2024



Description: A 500 mm diameter RC cast in-situ pile was prescribed in the recommendation of the report but 250mmx250mm precast pile has been used in the building foundation. The capacity of the precast pile was not determined by any testing/calculation. The building engineer is required to determine the size, length, and capacity of the provided precast pile and calculate the foundation adequacy accordingly.

Observation 05: Poor structural configuration (framing, connection, members) and lack of documents for the Security & Wastage Shed



Description: The columns and rafters of the shed were made of steel angles, and some rafters (of wastage portion) were rested on the adjacent boundary wall. The framing arrangement, member sizes, and their joints were apparently inadequate. Also, the foundation of the shed was unknown. The building engineer is required to survey the structures, prepare accurate as-built drawings with foundation & joint details, prepare a safety check report, and suggest necessary alternatives for the Shed. Submit the safety check report to the RSC for review. The factory is required to follow the recommendation of the safety check report.

Observation 06: Lack of as-built drawings. (Parking Shed)



Description: There were no documents for the shed. The building engineer is required to survey the structure and prepare accurate as-built drawings with foundation and joint details.

Observation 07: Lack of bracing at the roof for Parking Shed



Description: There was no roof bracing and no efficient lateral load-resisting system in the shed. The building engineer is required to check the basic safety level of the structure and propose a suitable lateral load-resisting system accordingly. Submit the safety check report to the RSC for review. The factory is required to follow the recommendation of the safety check report.

Observation 08: Crack in column surface of Parking Shed. (Parking Shed)



Crack in RC column of parking shed

Description: A crack was observed in the RC column of the shed. During the onsite investigation, the column's sound was found as solid and the crack was found within the cover. The building engineer is required to check the reason for the crack, prepare an investigation report, and submit it to RSC for review. Repair the crack columns after RSC approval/engineer's consent.

3. Action Plan

SL	Observation	Action Plan	Timeline
1.	Lack of design documents for Warehouse-1.	The building engineer is required to carry out an Engineering Assessment (EA) to confirm that the building has adequate capacity to bear the gravity & lateral loads as per BNBC-2006. And submit the EA documents to the RSC for detailed review.	within 6 weeks
2.		Carry out suggested remedial works if required.	within 6 months
3.		Implement floor load management program (posting load plan, marking storage area and height, and maintaining floor loading).	within 6 months
4.	Mismatch between drawing and as-built condition of Warehouse-1	The building engineer is required to survey the structures and prepare accurate as-built drawings.	within 6 weeks
5.	Lack of (concrete & rebar) material test reports for Warehouse-1	The building engineer is required to carry out necessary testing to determine in-situ concrete & rebar material strength. Incorporate the strength in the EA report.	within 6 weeks
6.	Inconsistency between foundation system and soil test report (recommendation) for Warehouse-1	The building engineer is required to determine the size, length, and capacity of the provided precast pile and calculate the foundation adequacy accordingly.	within 6 weeks
7.	Poor structural configuration (framing, connection, members) and lack of documents for the Security & Wastage Shed	The building engineer is required to survey the structures, prepare accurate as-built drawings with foundation & joint details, prepare a safety check report, and suggest necessary alternatives for the Shed. Submit the safety check report to the RSC for review.	within 6 weeks
8.		The factory is required to follow the recommendation of the safety check report.	within 6 months
9.	Lack of as-built drawings. (Parking Shed)	The building engineer is required to survey the structure and prepare accurate as-built drawings with foundation and joint details.	within 6 weeks

10.	Lack of bracing at roof for Parking Shed	The building engineer is required to check the basic safety level of the structure and propose suitable lateral load resisting system accordingly. Submit the safety check report to the RSC for review.	within 6 weeks
11.		The factory is required to follow the recommendation of the safety check report.	within 6 months
12.	Crack in column surface of Parking Shed. (Parking Shed)	The building engineer is required to check the reason for the crack, prepare an investigation report, and submit it to RSC for review. Repair the crack columns after RSC approval/engineer's consent.	within 6 weeks