Aleya Apparels Ltd.

244 Singair Rorad, Hemayetpur, Saver, Dhaka-1340

(23.791179, 90.265718)

6 November 2023

1. Building Information

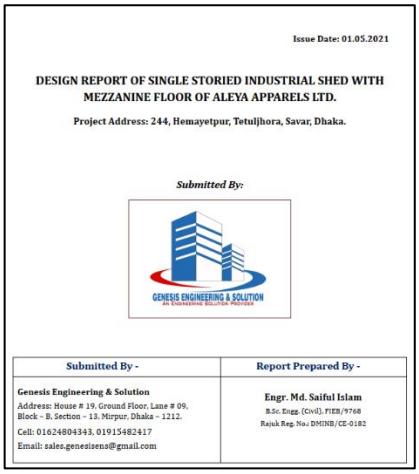
- Building 1 is a single storied prefabricated steel shed with a mezzanine floor at ground floor (east side).
- Building 2 is a single storied masonry structure with reinforced concrete (RC) roof.
- Building 3 is currently a six (G+5) storied RC building and has provision to construct up to ten (10) storey.
- Building 4 is a single storied masonry structure.

2. Observation:

Building-1:

Observation-1: Design report needs to be revised.

Building -1



Issue Date: 01.05.2021

DESIGN REPORT OF SINGLE STORIED INDUSTRIAL SHED WITH MEZZANINE FLOOR OF ALEYA APPARELS LTD.

Project Address: 244, Hemayetpur, Tetuljhora, Savar, Dhaka.

Submitted By:

GENESIS ENGINEERING & SOLUTION

Submitted By -	Report Prepared By -
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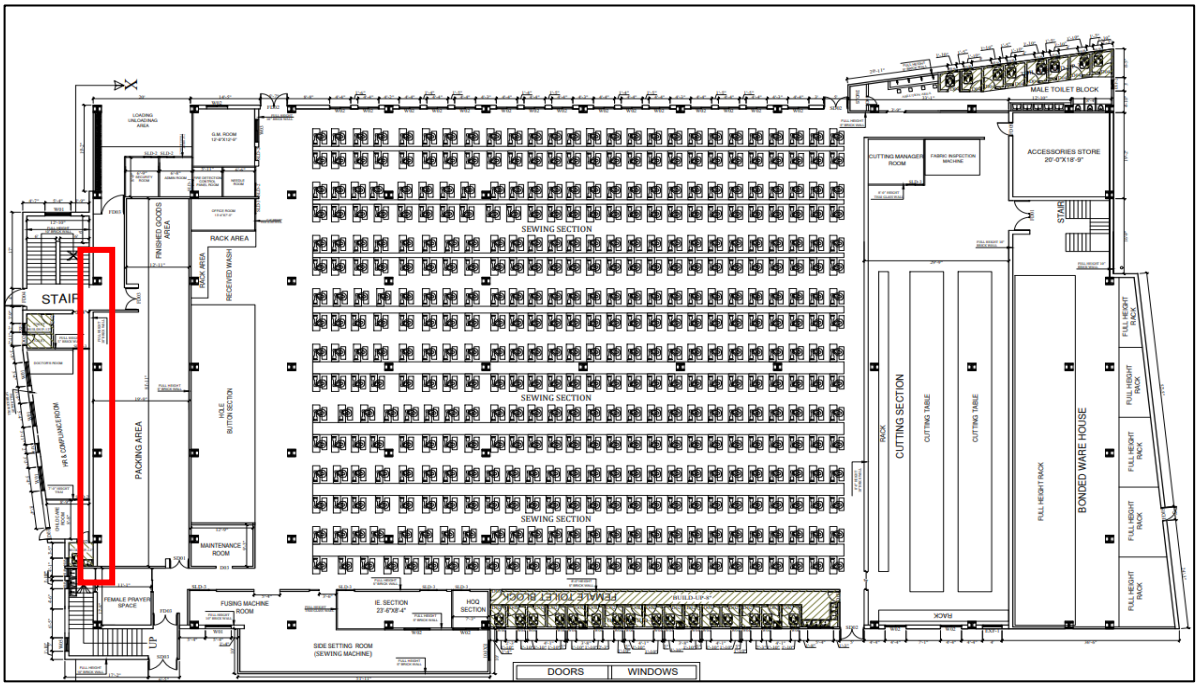
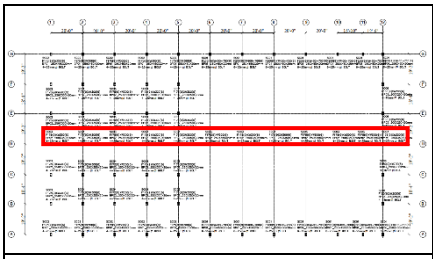
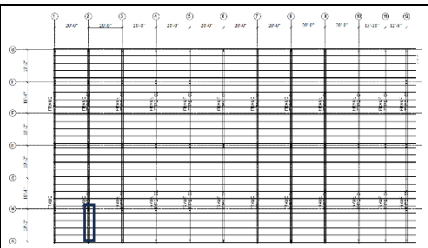
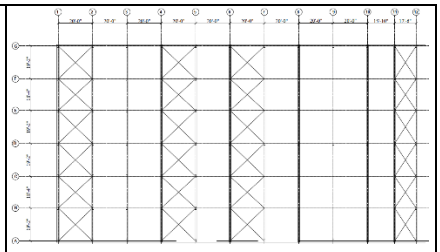
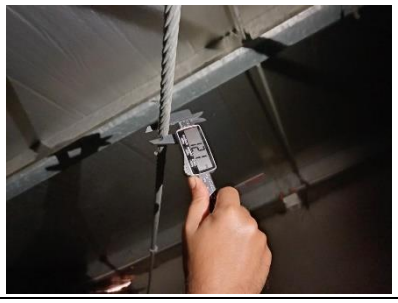
Prepared Design Report



250 mm thick load bearing wall adjacent to steel column of main Building-1

Description: A set of design reports have been prepared for Building-1 where detailed calculations were not provided for adequacy of foundation and connections. Moreover, the foundation system for 3 storied masonry structure is not clear as it is adjacent to steel column. A qualified building engineer is required to investigate the foundation system of the load bearing wall adjacent to the main building and prepare accurate as-built documents. The building engineer is required to incorporate detailed calculations in the design report. Submit the revised design report to the RSC for review.

Observation-2: Mismatch in between as-built drawing and on-site condition.

		
Column layout plan	Rafter & purlin Layout	Bracing layout
		
On site SC3 column flange width	On site R1 rafter flange width	On site 12mm cable bracing

Description: During inspection some mismatches were found between structural drawing & on-site condition.

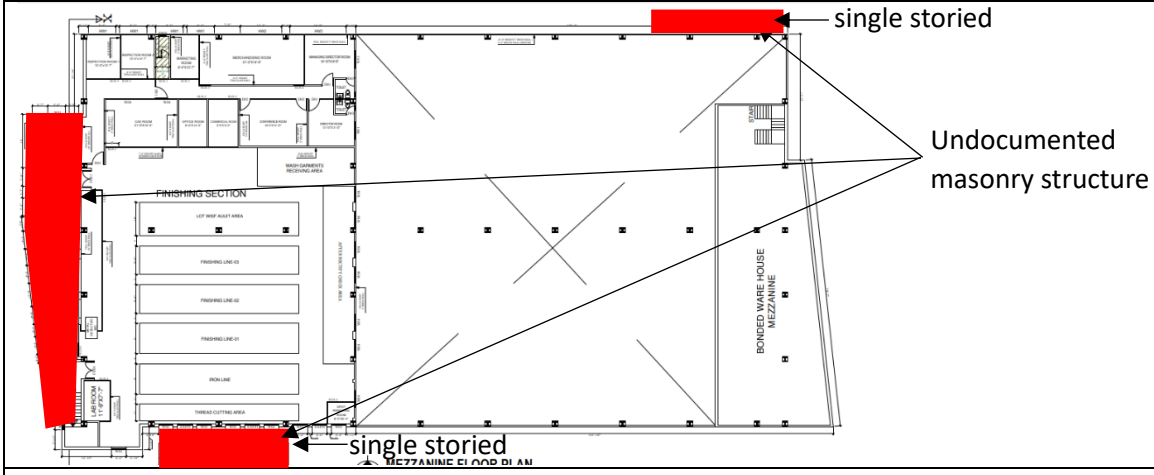
1. The flange of SC3 steel column was found 150 instead of 175.
2. The flange of R1 steel rafter was found 175 instead of 200.
3. Cable bracing diameter was found 12 mm instead of 16 mm.

Observation-3: Lack of design documents for extended masonry structures.

Singel storied extended toilet block (Masonry structure)

Two storied (Masonry structure)

Light weight roof frame.



Ground floor plan layout

Description: During inspection, undocumented extended masonry structure was found beside Building-3. No design documents were found for masonry structure. The building engineer is required to prepared design report and as-built drawing for masonry structure and submit to RSC for review.

Observation-4: Significant connection gap between steel plate.

Steel connection gap

Description: Connection gap found between steel connection plates of rafter. Building engineer is required to fill all the steel connection gap with suitable method.

Observation-5: Loose cable bracing.


Loose cable bracing

Description: During inspection, loose cable bracing was observed on the roof. Building engineer is required to identify all the loose bracing and tighten accordingly.

Building-3:

Observation 6: Inconsistencies in design report.

$$V=\frac{ZICW}{R}$$

Where

Z =0.15 (seismic zone coefficient given in Fig 6.2.10 of BNBC

I = 1.0 (structural importance coefficient given I Table 6.2.23 of BNBC)

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

W=Total seismic dead load in KN

C =Numerical coefficient given by the following relation.

Seismic design criteria in the design report

3.2. Foundation Type

Cast in Situ Piles have been considered for the foundation having **100 Ton** bearing capacity

Pile capacity mentioned in design report

2.1 ***Material Specification***

Structural Element	Design fc' (Psi)	Steel Yield Strength, fy (Psi)	Coarse Aggregate	Casting Ratio
Column/Shear wall	4000	72,000	Stone Chips	1:1.5:3
Beam	3500	72,000	Stone Chips	1:1.5:3
Slab	3500	72,000	Stone Chips	1:1.5:3
Pile & Pile caps	4000	72,000	Stone Chips	1:1.5:3
Stair and Others	3500	72,000	Stone Chips	1:1.5:3

Material Specification in Design Report

5.12.2 Frequency of Testing

5.12.2.1 Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, nor less than once for each 60 m^3 of concrete, nor less than once for each 250 m^2 surface area for slabs or walls.

5.12.2.2 On a given project, if the total volume of concrete is such that frequency of testing required by Sec 5.12.2.1 above would provide less than three strength tests for a given class of concrete, tests shall be made from at least three randomly selected batches or from each batch if three or fewer batches are used.

5.12.2.3 When the total quantity of a given class of concrete is less than 20 m^3, strength tests are not required when evidence of satisfactory strength is submitted to and approved by the Engineer.

5.12.2.4 A strength test shall be the average of the strengths of at least two 150 mm by 300 mm cylinders or at least three 100 mm by 200 mm cylinders made from the same sample of concrete and tested at 28 days or at test age designated for determination of f_c'.

Cylinder Test Criteria as per BNBC

Description: A Design Report was provided for Building-3 where intermediate moment resisting frame (IMRF, R=8) was considered without any justification. Also, foundation adequacy check was not found in the report and pile capacity was mentioned 100 tons where geotechnical investigation report recommends a range from 47 ton to 103 ton. Moreover, the number of concrete cylinder test report found on site doesn't comply with the frequency of testing requirements as per BNBC (Part VI, Chapter 5, 5.12.2), but in design report, design strength 4000 psi considered for column and shear wall. The building engineer is required to revise the report for actual framing system with proper justification, incorporate structural & geotechnical foundation adequacy check in the design report based on soil investigation report and confirm the design strength of in situ concrete by taking 100 mm dia core (min 4 nos) from lower tier columns. Submit the revised design report to the RSC for review.

Observation 7: Dampness in periphery wall.

Dampness in periphery wall

Description: During inspection, dampness was observed on the periphery wall. Building engineer is required to repair dampness with suitable method.

Building-4 (New Utility Building):

Observation-8: Lack of design documents for Building-4 (New utility Building).

Building 04 (New utility Building)

Description: Building-4 (New Utility Building) is a single storied masonry structure with large span. No design documents were found for this building. The building engineer is required to prepared design documents including as-built drawing & design report for masonry structure. Submit the design documents to the RSC for review.

3. Action Plan:

SL No.	Observation	Action Plan	Timeline
01.	Design report needs to be revised (Building-1)	The building engineer is required to incorporate all necessary calculations in the design report and add foundation adequacy for the masonry structures. Submit the revised design report to the RSC for review.	within 6 weeks
02.	Design report needs to be revised (Building-1)	Carry out remediation work if required.	within 6 months
03.	Mismatch in between as-built drawing and on-site condition. (Building-1)	The building engineer is required to survey the structure and produce accurate as-built structural drawings.	within 6 weeks
04	Lack of design documents for extended masonry structures. (Building-1)	The building engineer is required to prepared design report and as-built drawing for masonry structure and submit to RSC for review.	within 6 weeks
05.	Lack of design documents for extended masonry structures. (Building-1)	Carry out remediation work if required.	within 6 months
06.	Significant connection gap between steel plates. (Building-1)	Building engineer is required to fill all the steel connection gap with suitable method.	within 6 weeks
07.	Loose cable bracing (Building-1)	Building engineer is required to identify all the loose bracing and tighten accordingly.	within 6 months
08.	Inconsistencies in design report. (Building-3)	The building engineer is required to revise the report for actual framing system with proper justification and incorporate structural & geotechnical foundation adequacy check in the design based on soil investigation report. Submit the revised design report to the RSC for review.	within 6 weeks
09.	Inconsistencies in design report. (Building-3)	The building engineer is required to confirm the number of concrete testing is satisfied the frequency of testing requirement as per BNBC section 5.12.2; Otherwise, confirm the design strength of in situ concrete by taking 100 mm dia core (min 4 nos) from lower tier columns.	within 6 weeks
10.	Inconsistencies in design report. (Building-3)	Carry out remediation work if required.	within 6 months
11.	Dampness in periphery wall. (Building-3)	Building engineer is required to repair dampness with suitable method.	within 6 weeks
12.	Lack of design documents for Building-4 (New Utility Building).	The building engineer is required to prepared design report and as-built drawing for masonry structure and submit to RSC for review.	within 6 weeks
13.	Lack of design documents for Building-4 (New Utility Building).	Carry out remediation work if required.	within 6 months