

Adury Fashion & Print Ltd

Karardi, Shibpur, Narsingdi, Bangladesh

(23.959308, 90.717795)

28 October 2025

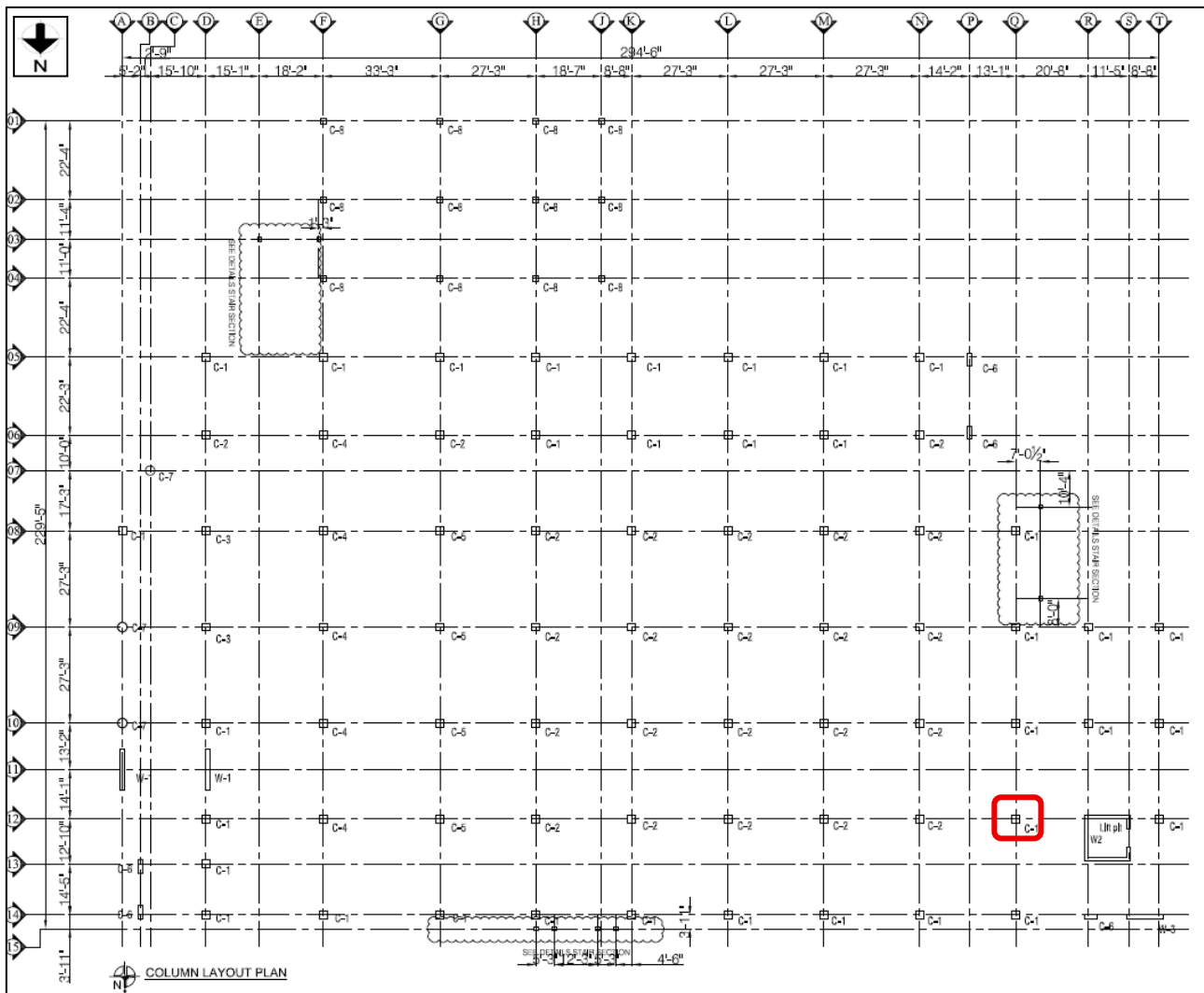


1. Building Information

Building-13 (AFPL)- six storied building.

2. Observation:

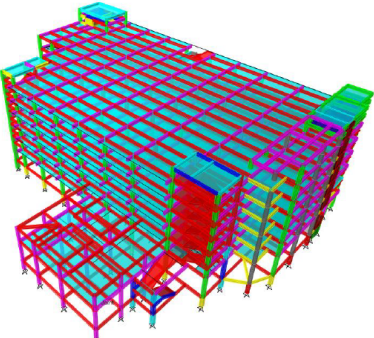
Observation 01: Stress in column exceeds normal design limit. Building-13 (AFPL)



Description: Cursors calculation indicates stress in column exceeds normal design limit at marked location considering prepared floor live load and minimum concrete strength.

The building engineer is required to check the design, loads, and column stress in the structural member based on in-situ material strength and revise the prepared Detail Engineering Assessment (DEA) report accordingly.

Observation 02: Inconsistency in the prepared DEA report. Building-13 (AFPL)

ADURY FASHION & PAINT LTD.		DEA REPORT
DETAILED ENGINEERING ASSESSMENT REPORT FOR ADURY FASHION & PAINT LTD. Project type: Six Storied RCC Building Location: Karandi, Shilpura, Narasingdi. Client: ADURY FASHION & PAINT LTD.  Assessed by Md. Kazi Iqbal Mahmud B.Sc. in Civil Engineering (BUET) MIEB- 37447 Submitted by IMARAT DESIGNERS & CONSULTANTS House #10 (4B), Road # 03, Nikunja 2, Khilkhet, Dhaka-1212 Cell: +8801799-663800		TABLE OF CONTENTS EXECUTIVE SUMMARY.....1 1 INTRODUCTION.....2 1.1 BACKGROUND.....2 1.2 GENERAL OBJECTIVE.....2 2 STRENGTH OF MATERIALS.....4 2.1 CONCRETE STRENGTH.....4 3 ANALYSIS FOR STRUCTURAL ADEQUACY.....4 3.1 STRUCTURAL SYSTEM.....4 3.2 CODES AND PRACTICES.....5 3.3 MATERIAL PROPERTY.....5 3.4 LOADS.....5 3.4.1 Dead Loads.....5 3.4.2 Live Load.....5 3.4.3 Wind Load (W).....6 3.4.4 Earthquake Load (E).....8 3.5 METHOD OF ANALYSIS.....8 3.6 LOADING AND LOAD COMBINATION.....8 3.7 BOUNDARY CONDITIONS.....10 3.8 APPLICATION OF LOAD AND ANALYSIS.....10 4 EVALUATION OF STRUCTURAL MEMBERS.....14 4.1 CHECKING ADEQUACY OF FOUNDATION.....14 4.2 CHECKING ADEQUACY OF RCC COLUMNS.....22 4.3 CHECKING ADEQUACY OF BEAMS.....30 4.3.1 Evaluation of Grade Beams & Floor Beams.....30 4.4 CHECKING ADEQUACY OF SHEAR WALL.....39 4.5 CHECKING ADEQUACY OF SLABS.....39 5 DEFLECTION CHECK.....40 6 DRIFT CHECK.....40 7 CONCLUSION.....41 8 DISCLAIMER.....41

ADURY FASHION & PAINT LTD.		DEA REPORT
3.2 CODES AND PRACTICES For the present project relevant sections of Bangladesh National Building Code (BNBC, 2006) have been used for analysis. For the reinforced concrete design, American Concrete Institute (ACI 318-99) & for RCC design, AISC360-05 (American Institute of RCC Construction, LRFD) code has been consulted as and when became necessary to complement the BNBC.		
3.3 MATERIAL PROPERTY The principal material of construction is reinforced concrete. As per investigation and design drawings, the following material properties has been used: - Yield strength of Rebar, f_y = 72500 lb/in² - Compressive strength of concrete (Beam), f'_c = 3500 lb/in² - Compressive strength of concrete (Slab), f'_c = 3500 lb/in² - Compressive strength of concrete (Column), f'_c = 4000 lb/in² - Young's modulus of concrete, E_c = 57,000 $\sqrt{f'_c}$		
3.7 BOUNDARY CONDITIONS In any finite element analysis, applying appropriate boundary conditions are important. Without appropriate boundary conditions the model of building structure may not be stable. On the other hand, application of excessive restraints may render the structure too stiff resulting in development of unreasonable stresses. For a structure like this building, it is reasonable to assume that the bases of columns are fully restrained in all directions. the weight of the different components of the structure. For the sake of convenience in the analysis, sometimes this kind of loads are divided into two types, namely a) self-weight of the structure (SW) and b) the weight coming from the non-structural permanent components of the building (SDEAD). - Unit weight of reinforced concrete = 150 pcf - Unit weight of brickwork = 120 pcf		
3.4.2 Live Load Live load is the gravity load due to non-permanent objects like machines, furniture, and human. Analysis has been carried out base on load recommended by BNBC (2006). For checking if needed reduced live load are also used to find present condition of the structure 75 pcf in floor finish, 63 pcf for live load, 31 pcf in roof, 84 pcf for typical stair area have been considered to find present condition of the structure.		

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DEPARTMENT OF CIVIL ENGINEERING

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STRENGTH OF MATERIALS LABORATORY

TENSION TEST OF DEFORMED M.S. BARS (ASTM A 370-14/ ASTM A 615M-09S)

Sent by: Saiful Haque Shammim, Asst. Manager
Adury Kint Composite Ltd., Karandi, Shilpura, Narasingdi

Project: All over print (AKCL)

Contractor: _____

BRTC No.: 1105-94/62/2/14

Ref.: AKCL/Adm/BRTC/15

Date of Test: 26/10/2015

Sl. No.	Frog Mark	Nominal Dia	Actual Dia	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength	Ultimate Load	Ultimate Strength	Average Ultimate Strength	TS/SYS	Elongation (%)	Average Elongation (%)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa		(G length = 200 mm)	(G length = 200 mm)
1	RSRM X POWER 500 W	32	31.9	6.278	6.154	358.0	450	470	510.0	620	630	1.34	17	17
2	RSRM X POWER 500 W	32	31.5	6.101	6.154	415.0	510	510	530.0	650	650	1.23	18	18
3	RSRM X POWER 500 W	32	31.4	6.061	6.154	374.0	455	455	500.0	620	620	1.23	18	18
1	RSRM X POWER 500 W	25	25.7	4.060	4.047	314.0	620	600	380.0	750	740	1.23	18	18
2	RSRM X POWER 500 W	25	25.6	4.052	4.047	305.0	600	600	375.0	730	730	1.23	18	18
3	RSRM X POWER 500 W	25	25.6	4.028	4.047	305.0	600	600	370.0	730	730	1.23	18	18
1	RSRM X POWER 500 W	20	19.7	2.383	2.357	182.0	590	570	220.0	700	690	1.21	16	16
2	RSRM X POWER 500 W	20	19.6	2.362	2.357	177.0	560	560	220.0	700	700	1.21	16	16
3	RSRM X POWER 500 W	20	19.4	2.327	2.357	175.0	560	560	215.0	680	680	1.21	16	16

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STRENGTH OF MATERIALS LABORATORY

TENSION TEST OF DEFORMED M.S. BARS (ASTM A 370-14/ ASTM A 615M-09S)

Sent by: Mr. Saiful Haque
Deputy Manager, **Thermax Group Ltd., Karandi, Shilpura, Narasingdi**

BRTC No.: 1101-06107/07

Ref.: TG/Adm/BRTC/15

Date of Test: 5/02/2016

Project: Construction of 73 Factory Building of Adury Kint & Print Ltd.; 62 Factory Building of Thermax Yarn Dyeing Ltd.; 93 Godown Building of Thermax Chen's Dates Fats Ltd.; 25 Other Building of Thermax Yarn Dyeing Ltd.

Sl. No.	Frog Mark	Nominal Dia	Actual Dia	Actual Unit Weight	Average Actual Unit Weight	Yield or Proof Load	Yield or Proof Strength	Average Yield or Proof Strength	Ultimate Load	Ultimate Strength	Average Ultimate Strength	TS/SYS	Elongation (%)	Average Elongation (%)
		mm	mm	kg/m	kg/m	kN	MPa	MPa	kN	MPa	MPa		(G length = 200 mm)	(G length = 200 mm)
1	RSRM X POWER 500 W	32	31.9	6.274	6.285	447.0	550	550	560.0	680	670	1.22	20	19
2	RSRM X POWER 500 W	32	31.8	6.226	6.285	451.0	550	550	560.0	680	670	1.22	20	19
3	RSRM X POWER 500 W	32	32.4	6.356	6.285	442.0	550	550	530.0	650	650	1.23	20	21
1	RSRM X POWER 500 W	25	24.6	3.719	3.721	233.0	455	455	460.0	590	590	1.20	22	22
2	RSRM X POWER 500 W	25	24.6	3.727	3.722	233.0	455	455	460.0	590	590	1.29	23	23
3	RSRM X POWER 500 W	25	24.6	3.721	3.722	242.0	475	475	470.0	600	600	1.23	23	23
1	RSRM X POWER 500 W	20	19.9	2.450	2.444	181.0	570	560	220.0	700	690	1.23	22	22
2	RSRM X POWER 500 W	20	20.0	2.456	2.444	164.0	520	520	200.0	630	630	1.23	20	20
3	RSRM X POWER 500 W	20	19.8	2.425	2.444	183.0	580	580	230.0	730	730	1.23	21	21

Description: During inspection, a set of Detailed Engineering Assessment (DEA) report found onsite where several inconsistencies were observed. 27.58 MPa (4000 psi) concrete strength considered in the design having inadequate material test reports (only 12 sets of concrete cylinder test reports were available for the building which doesn't satisfy the frequency of testing requirements) as per BNBC. Also, 500 MPa (72.5 ksi) rebar strength considered in the design where two sets of test report show lower values (25mm dia-465 MPa & 32mm dia-470 MPa). Overall, 3 kPa (63 psf) floor live considered in the design where dedicated storage observed on different floors. Fully restraint column considered in the design where typical foundations are isolated shallow footing. Also, irregularity checks are not included in the design. The building engineer is required to revise the DEA documents based on actual material strength, BNBC prescribed loading, and submit them to RSC for detail review.

Observation 03: Undocumented storage and lack of floor load management. Building-13 (AFPL)



Storage on 4th floor



Storage on 5th floor



Description: At the time of inspection, floor load plan was not found posted suspended ground floor level. Also, storage area & height marking was not observed in several storage locations. The building engineer is required to post the floor load plan on all floor levels, provide storage area & height marking, and maintain floor loading accordingly.

Observation 04: Discrepancies in as-built drawing. Building-13 (AFPL)



Description: Some discrepancies were observed between floor layout and as-built drawings- dedicated storage was observed in several locations instead of production occupancy. Toilet zone false ceiling was not mentioned in the drawings. The building engineer is required to survey the structure and prepare accurate as-built drawings.

Observation 05: Vehicle impact on ground floor column. Building-13 (AFPL)



Description: There was no protection system for the ground floor columns which are susceptible to vehicle impact. During inspection, damage due to vehicle impact on columns was observed. The building engineer is required to provide separate barriers around columns to avoid vehicle impact.

Observation 06: Trolley impact on columns/walls in several locations. Building-13 (AFPL)



Description: Column guards have been provided to prevent trolley impact on columns. However, several guards were found loose due to repeated impacts, resulting in additional damage to column and wall surfaces at various floor levels. The factory is required to repair all damaged areas and install adequate and robust column/wall guards where required.

Observation 07: Dampness on brick walls. Building-13 (AFPL)



Description: Dampness on brick walls was observed in several locations, especially in toilet and washing zones. The building engineer is required to identify all the locations, seal the source of water and repair the dampness with suitable methods.

Observation 08: Crack on brick walls. Building-13 (AFPL)



Description: Crack on brick walls was observed in several locations, including stair zone and washing zone. The building engineer is required to identify all locations, investigate the reason for cracking and repair all cracks following suitable methods.

Observation 09: Lack of anchorage/brace for non-structural elements. Building-13 (AFPL)



Description: Non-structural elements, such as racks and water tanks, were observed without adequate anchorage or bracing. The Building Engineer is required to ensure all non-structural elements are securely anchored or braced as necessary.

3. Action Plan:

Item No.	Observation	Action Plan	Timeline
1.	* Stress in column exceeds normal design limit. *Inconsistency in the prepared Detail Engineering Assessment (DEA) report *Inadequate material test report. *Floor load plan doesn't satisfy BNBC requirements. Building-13 (AFPL)	Verify in-situ concrete strength by taking minimum 4 cores from each structural element (column, beam/slab) to confirm design strength.	within 6 weeks
2.		Update the floor load plan as per actual occupancy and BNBC minimum floor live load requirements.	within 6 weeks
3.		The building engineer is required to check the design, loads, and column stress in the structural member based on in-situ material strength and BNBC prescribed floor load plan and revise the prepared DEA documents accordingly. Submit the revised DEA to RSC for review.	within 6 weeks
4.		Carry out remedial work as per revised DEA (if required).	within 6 months
5.	Undocumented storage and lack of floor load management. Building-13 (AFPL)	Post floor load plan on all floor levels, provide storage area & height marking, and maintain floor loading accordingly.	within 6 weeks
6.	Discrepancies in as-built drawing. Building-13 (AFPL)	The building engineer is required to survey the structure and prepare accurate as-built drawings.	within 6 weeks
7.	Vehicle impact on ground floor column. Building-13 (AFPL)	Provide separate barriers around ground floor columns to avoid vehicle impact.	within 6 weeks
8.	Trolley impact on columns/walls in several locations. Building-13 (AFPL)	Repair the damage and install adequate and robust column/wall guards where required.	within 6 weeks
9.	Dampness on brick walls. Building-13 (AFPL)	The building engineer is required to identify all locations, seal the source of water and repair the dampness with suitable methods.	within 6 weeks
10.	Crack on brick walls. Building-13 (AFPL)	The building engineer is required to identify all locations, investigate the reason for cracking and repair all cracks following suitable methods.	within 6 weeks