

Revision : Issue 01
Date: 01.09.2014

GREEN

BG Collection Ltd. (10959)

Baniarchala, Bhabanipur, Gazipur

(+ 24.149103N, 90.425039E)

01.SEPTEMBER.2014

Client Summary Report

Observations & Actions

James Parmley – 01.09.14

O-ran Luangpetcharaporn – 01.09.14

Approved by Geoff Minto – 18.09.14



Executive Summary

On 01.09.2014 Mr. James Parmley and Mr. O-ran Luangpetcharaporn carried out a visual structural survey of the **BG Collection Ltd.** factory at the address and co-ordinates given on the cover page of this report. We met with Mrs. Tamanna Faroque (Managing Director) and Mr. Md. Morshed Chowdhury (Manager, Marketing & Merchandising). We were further accompanied by Mr. Abdullah - Al - Mahmud from Kaymonto and Partners.

We were provided with copies of Architectural and Engineering Design drawings and these appeared to be permit drawings for a 2-storey building from a local authority dated 2014. We were informed that the building actually dated from 2005 and was completed in 2007. We were also provided with copies of the Structural drawings for this building. These drawings were incomplete. We recommend that the Factory Engineer surveys the actual conditions and revises the drawings as early as possible.

This buildings is used for ironing and storage on ground floor. And the 1st floor is used for garment manufacturing with partial office use.

We inspected the whole of building, which was made accessible to us in all parts, only to look for conditions concerning imminent danger to people, and identified the following:

We do not have any major concerns with the structure or the loading.

We do have some important concerns that need to be addressed immediately, which gave rise to our recommendation for an Engineering Assessment (see Item 1 and Item 2 below). The key concerns are:

1. **Unknown stability system to the structure.**
2. **Inadequate steel detailing on the rafter connections to the concrete columns and the steel roofs over staircases & the dining shed.**

Executive Summary (continued)

3. Structural “as built” drawings show information based on back calculations, the plan drawings are not dimensioned and some drawings are incorrectly titled.
4. No loading plans exist for the structure.
5. Cracks observed in one beam and slab.
6. No fireproofing material was noted on any structural steel elements.
7. The plastic tanks on the roof appear to be leaking.

At this point we see **no reason to suspend operations in the facility due to these concerns (subject to immediate responses to the required actions noted at the end of this report).**

Further actions with associated priorities and timeframes are given at the end of this report. Please note that these actions should be completed as soon as possible and certainly within the timeframes noted.

We have reviewed the property from an outline seismic perspective and would consider that the building along with many others in the Dhaka region to have a significant risk in a major Seismic event. We have some concerns with the stability system in day to day loading conditions and require this be addressed in an Engineering Assessment.

We have carried out some on-site testing and preliminary analysis to support the findings of this report.

Our Limitations and Assumptions are also noted at the end of this report.

This short report has 4 sections namely:

1. Executive Summary (this section)
2. Short Graphical Section showing key issues observed
3. Priority Action List
4. Limitations and Assumptions

Factory Location

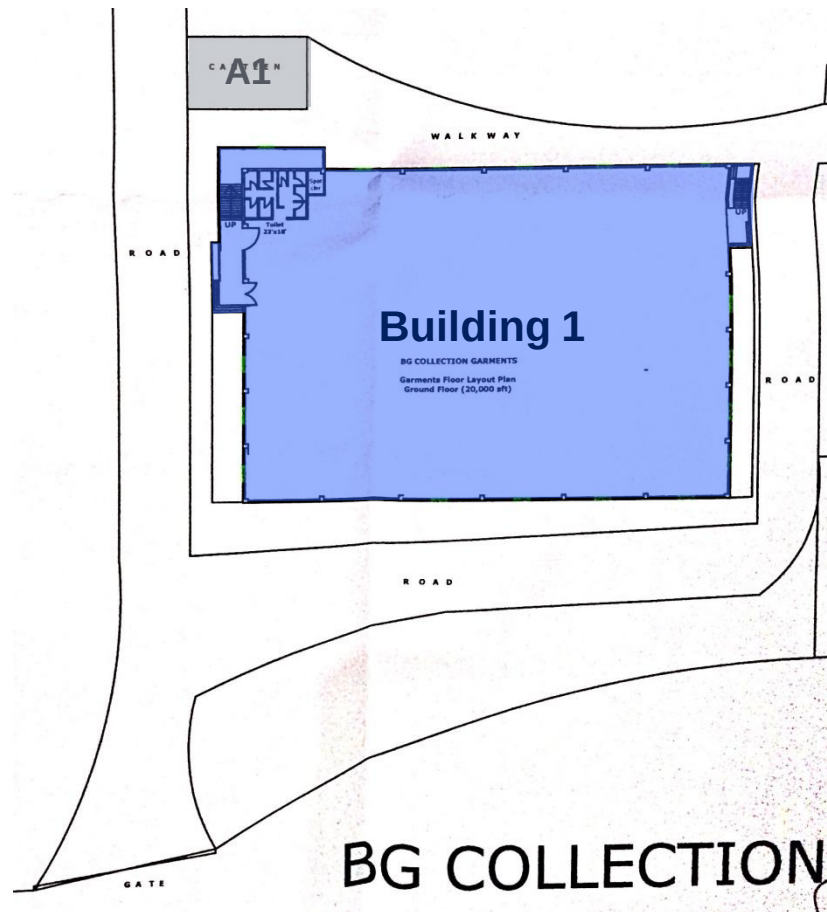
The **BG Collection Ltd.** factory is located in Baniarchala, Bhabanipur, Gazipur as shown below.



Building Extents

Factory Layout

There is one building and one auxiliary building in the **BG Collection Ltd.** factory area as follows:



Building 1, 2 storeys, is used for ironing and storage on ground floor. The 1st floor is used for garment manufacturing with partial office use.

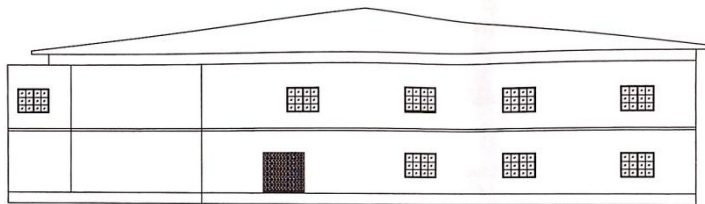
Auxiliary Building 1, single storey, is used as a canteen.

Building Extents

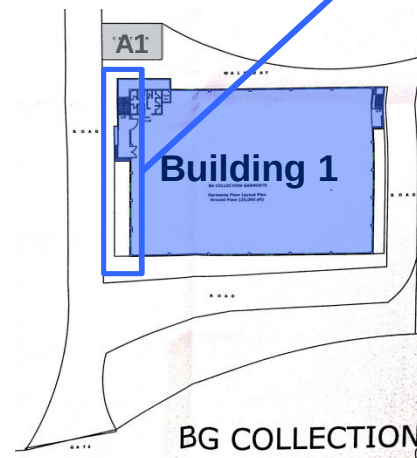
Elevation

East Side

1st floor
Ground



Building Extents



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on Fire and Building Safety in Bangladesh



Elevation

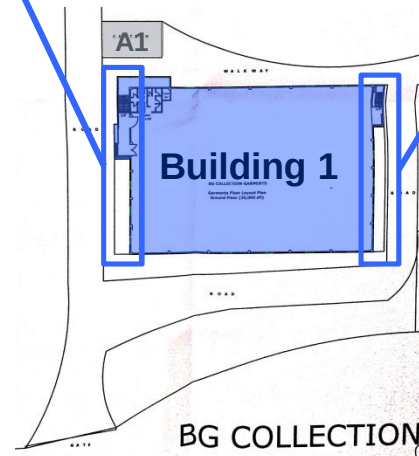
North Side



South Side

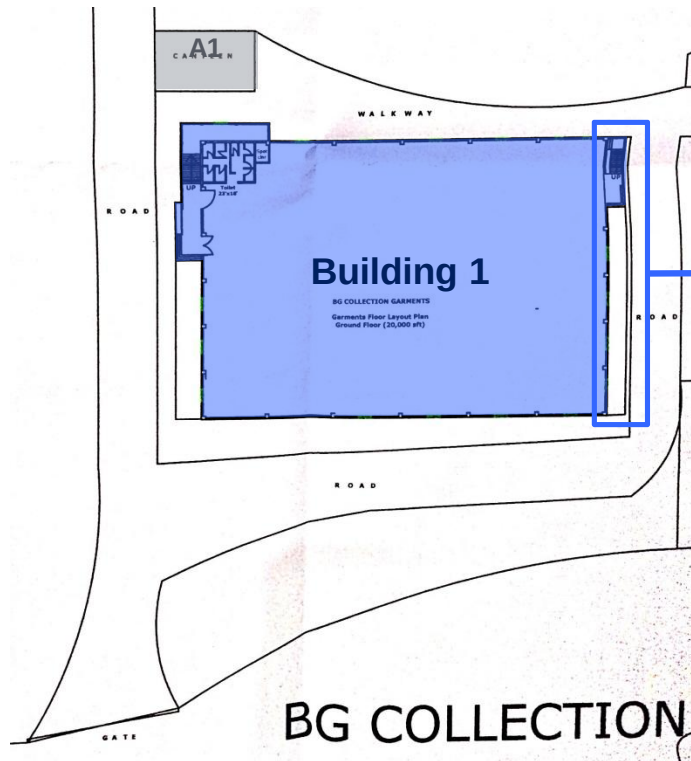


Building Extents



Elevation

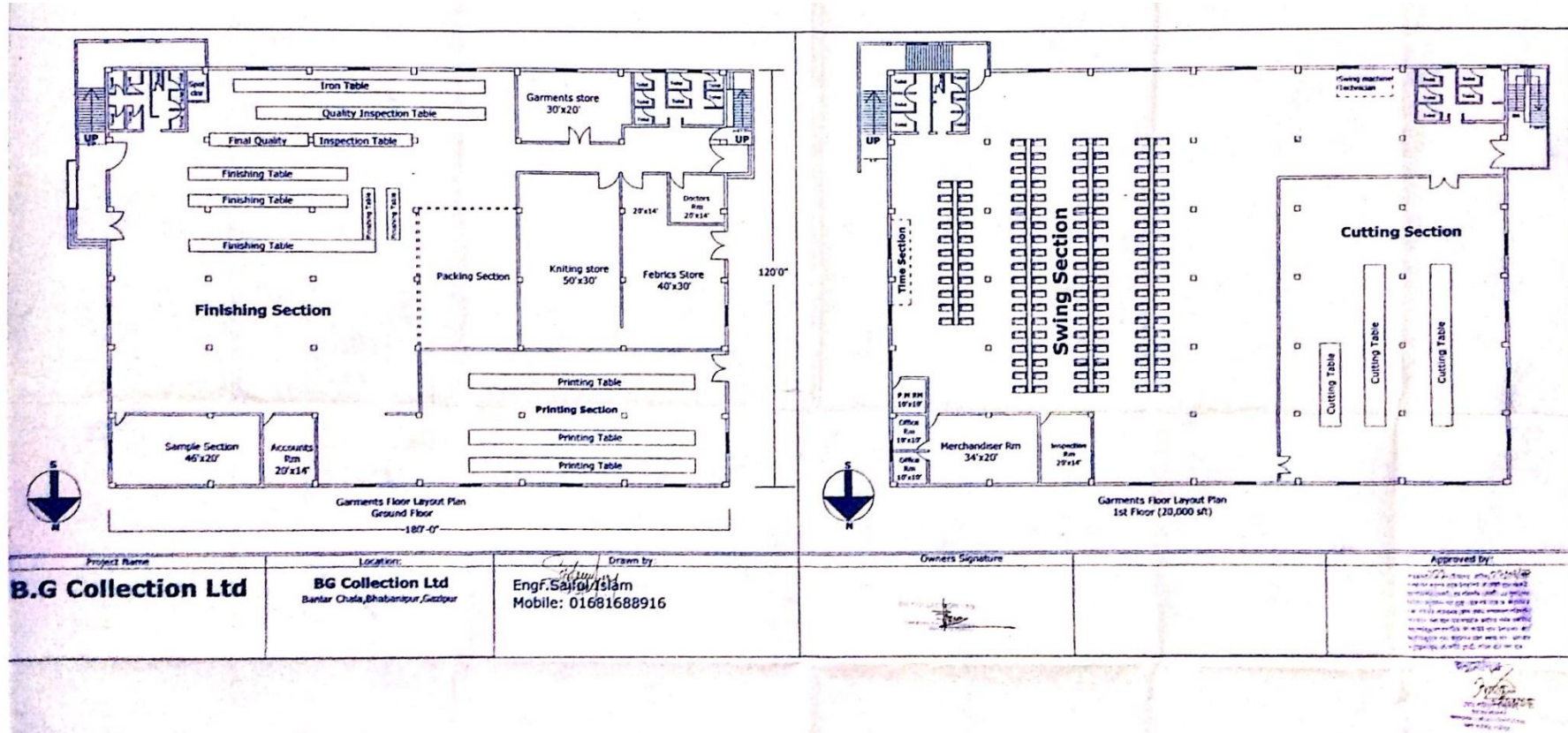
West Side



Building Extents

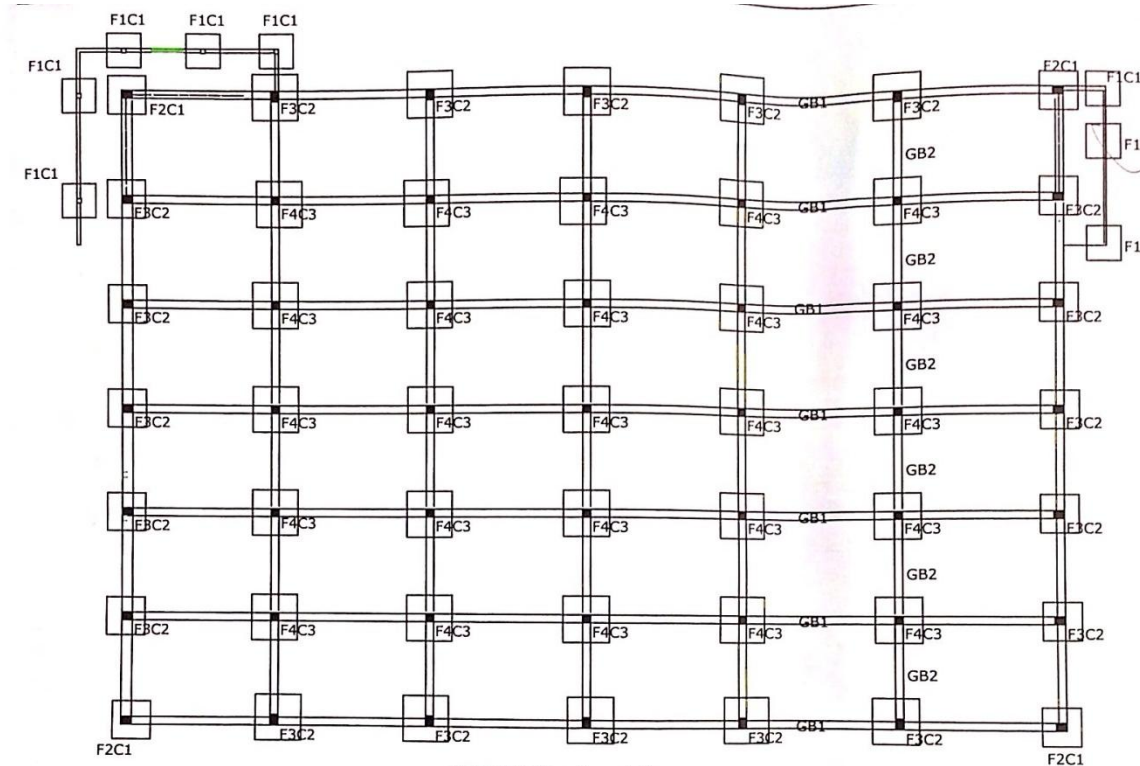
Permission Layout

This building was proposed to be a 2-storey building and was approved by a local authority in 2014. We were informed that this building actually dated from 2005 and was completed in 2007.



Building Extents

Foundation Layout Plan



FOUNDATION DESIGN

RC beam and column frame with a 2-way beam slab

Stability provided by moment frame action and brick in-fill walls

Slab Thickness 125 mm

Column Size at ground floor
C3 305 x 305 mm (typ.)

Grid
9.10 m x 5.75 m (typ.)

Building Extents

Load Calculation

We were provided with copies of load calculation. The live load of 20 kg/sq.ft. (42psf / 2.0 kPa) was stated on the load calculation.

Load calculation

Sl no.	Description of Component	No	Length	Bredth	Thickness	Volume	Unit weight	Total Weight	
1.	Dead load of slab	1	180	120	0.42	9072	70 kg /cft	635040	Kgs
2.	Dead load of beam	7	180	1	2	2520	70 kg /cft	176400	Kgs
3.	Dead load of beam	10	120	1	1.25	1500	70 kg /cft	105000	Kgs
4.	Dead load of Column	40	1	1	11	440	70 kg /cft	30800	Kgs
5.	Floor Finishing	1	180	120	1	21600	25 kg /sft	540000	Kgs
6.	Live load	1	180	120	1	21600	20 kg /sft	432000	Kgs
7.	Swing Machine	92	1	1	1	92	50 kg /nos	4600	Kgs
8.	Cutting Table	3	1	1	1	3	200 /nos	600	Kgs
							Total =	1924440	Kgs

So Imposed Load per sft = 90 kgs

20 kg /sft

We recommend that the Factory Engineer should state the maximum weight that is allowed per square meter on notice boards in these areas.

Building Extents

Auxiliary Building 1: Elevation

East Side



East Side



There were no structural drawings provided for this building.

Building Extents

Auxiliary Building 1: Elevation

Inside



Roof



There were no structural drawings provided for this building.

Building Extents

Identified Priority 1 Concerns

(None)

Identified Priority 2 Concerns

- Inadequate steel detailing on the rafter connections to concrete columns and the steel roofs over staircases & the dining shed.

1st Priority 2 Concern

Inadequate steel detailing on the, rafter connections to concrete columns, steel roofs over staircases & the dining shed.

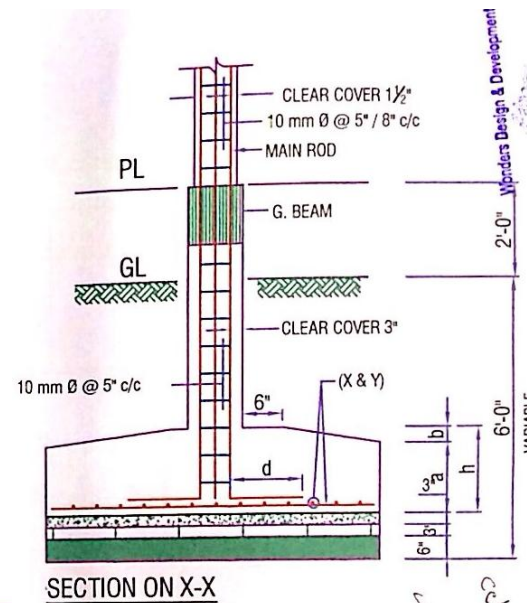


Identified Priority 3 Concerns

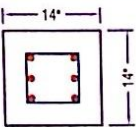
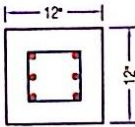
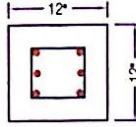
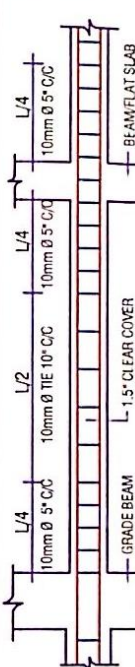
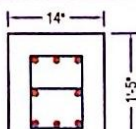
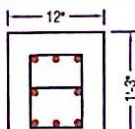
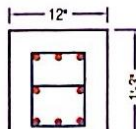
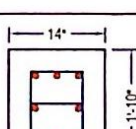
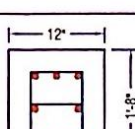
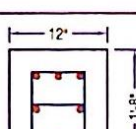
- Structural “as built” drawings show information based on back calculations, the plan drawings are not dimensioned and some drawings are incorrectly titled.
 - No loading plans exist for the structure.
 - Cracks observed in one beam and slab.
- No fireproofing material was noted on structural steel elements.
- The plastic water tanks on the roof appear to be leaking.

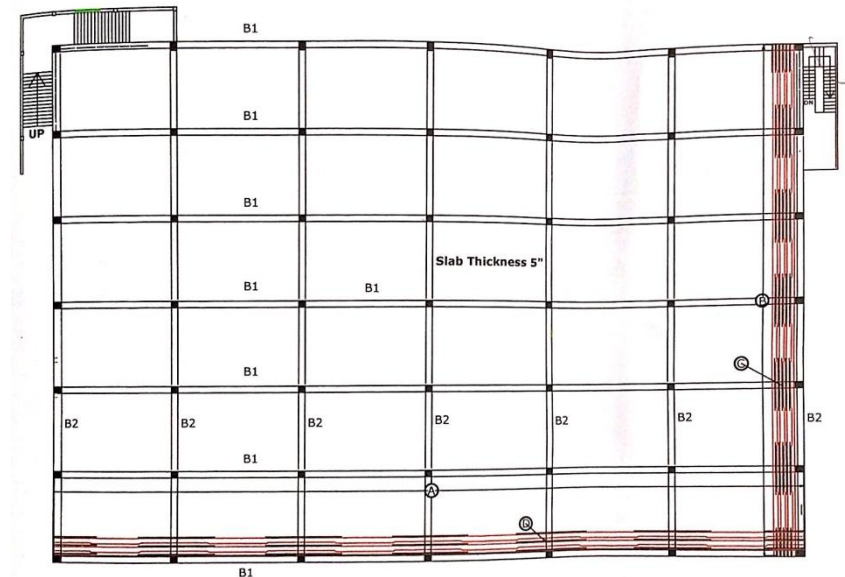
Structural “as built” drawings show information based on back calculations, the plan drawings are not dimensioned and some drawings are incorrectly titled.

1st Priority 3 Concern



COLUMN SCHEDULE

INDEX	BELOW G.L.	Up to G.Floor.	Up to 1st Floor.	Stirrups
C3	 6-20mm Ø	 6-20mm Ø	 6-16mm Ø	
C2	 8-16mm Ø	 8-16mm Ø	 8-16mm Ø	
C1	 8-20 mm Ø	 8-20 mm Ø	 8-16mm Ø	



Load calculation

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1.	Dead load of slab	1	180	120	0.42	9072	70 kg /cft	635040	Kgs
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						Total =		1924440	Kgs

So Imposed Load per sft = 90 kgs

Design Load

Sino	Description of Component	nos	Load carring per column	Total		
1.	C1	4	83000 kg/column	332000	Kgs	
2.	C2	20	100000 kg/column	2000000	Kgs	
3.	C3	25	68000 kg/column	1700000	Kgs	
				Total =	4032000	Kgs

So Load Carried per sft = 186 kgs

Design Load > Imposed Load . So The Structure is Safe.

Note : Design Load Calculate to considering Factor of Safety.

Engr. Zillur Rahman Khan
Chairman
Wonders Design & Development Ltd.,

No loading plans exist for the structure.

3rd Priority 3 Concern



Cracks observed in one beam and slab.

4th Priority 3 Concern

No fireproofing material was noted on any structural steel elements.



5th Priority 3 Concern

The plastic water tanks on the roof appear to be leaking.



Overall Stability System



The lateral loading resistance for this 2-storey building is provided by moment frame action without any shear walls and the façade brickwork walls lack moment capacity due to their poor connections with the surrounding columns and beams.

We require that the stability of this building is investigated as part of an Engineering Assessment.



Priority Actions

Problems Observed Summary

ITEM 1:	(Priority 2)	Unknown stability system to the structure.
ITEM 2:	(Priority 2)	Inadequate steel detailing on the, rafter connections to concrete columns, steel roofs over staircases & the dining shed.
ITEM 3	(Priority 3)	Structural “as built” drawings show information based on back calculations, the plan drawings are not dimensioned and some drawings are incorrectly titled.
ITEM 4:	(Priority 3)	No loading plans exist for the structure.
ITEM 5:	(Priority 3)	Cracks observed in one beam and slab.
ITEM 6:	(Priority 3)	No fireproofing material was noted on structural steel elements.
ITEM 7:	(Priority 3)	The plastic water tanks on the roof appear to be leaking.

Item 1 and actions

Unknown stability system to the structure.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Carry out an Engineering Assessment on the building to verify that it is stable under lateral loading.

Priority 3 (within 6 – months)

- Carry out all recommendations of the Engineering Assessment.

Item 2 and actions

Inadequate steel detailing on the, rafter connections to concrete columns, steel roofs over staircases & the dining shed.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Carry out Engineering Assessment on steel roof to determine if any strengthening works are required.

Priority 3 (within 6 – months)

- Carry out recommendations highlighted in Engineering Assessment.

Item 3 and actions

Structural “as built” drawings show information based on back calculations, the plan drawings are not dimensioned and some drawings are incorrectly titled.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Building Engineer to survey the as built condition and update the structural drawings, paying close attention to the column and beam size.

Priority 3 (within 6 – months)

- Not applicable.

Item 4 and actions

No loading plans exist for the structure.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Ensure the load on the 1st floor does not exceed 42psf (2.0 kPa)
- Carry out an Engineering Assessment to establish the safe working load for each level.
- Produce loading plans for each level.

Priority 3 (within 6 – months)

- Ensure loading plans are displayed and actively managed at each level.

Item 5 and actions

Cracks observed in one beam and slab.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Building Engineer to survey the beams, removing plaster, to establish the extent of the cracks in the beams.

Priority 3 (within 6 – months)

- Monitor the cracks over a period no less than 6 months to establish if there is further movement.

Item 6 and actions

No fireproofing material applied for structural steel elements.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Not applicable.

Priority 3 (within 6 – months)

- Fireproofing material for structural steel element is recommended as suggested in BNBC Codes.
- Maintain standard of quality control and protection of the fire protection.

Item 7 and actions

The plastic tanks on the roof appear to be leaking.

Priority 1 (immediate – now)

- Not applicable.

Priority 2 (within 6 – weeks)

- Not applicable.

Priority 3 (within 6 – months)

- Building Engineer to investigate the exact cause of the leak and repair the tanks / pipes accordingly.

Survey Limitations and Assumptions

This report is for the private and confidential use of Accord for whom it was prepared together with their professional advisors as appropriate. It should not be reproduced in whole or in part or relied upon by third parties for any use without the express written permission of WSP.

This report can be used in discussion with the supplier or factory owner as a means to rectify or address any observations made. The report is not comprehensive and is limited to what could be observed during a visual inspection of the building.

This report is not intended to be treated as a generalised inspection and does not cover the deterioration of structural members through dampness, fungal or insect attack, nor does it deal with problems and defects of non-structural nature. Other non structural aspects of the building such as fire safety have not been assessed in this survey.

Except as otherwise noted, drains and other services were not viewed or tested during our inspection and are therefore similarly excluded from this report. We have not inspected any parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect.

External inspection of the façade walls has generally been carried out from ground level only by visual sighting. No opening up works were carried out (except as noted) and we rely on the Architects and Engineers drawings provided to use for our views on concealed parts of the structure and in particular foundations. Strengths of materials and components are untested and we recommend that the factory owners Building Engineer carries out insitu testing over and above those suggested to satisfy themselves with the material strengths and component details.

Recommendations, where given, are for the purpose of providing indicative advice only, are not exhaustive, relate solely to identifying key and obvious structural defects as identified in this presentation, and do not take the form of or constitute a specification for works. We take no responsibility for the works as constructed. This report does not interfere with the factory owners Building Engineers responsibility for the structural performance of this building. The Building Engineer remains fully responsible for the structural adequacy of the building.

This report does not comment in detail on the future seismic performance of the building and only highlights the fact that the building may experience significant damage or collapse in a seismic event along with many others in the Dhaka region.

The observations in this report are based on the Engineering Judgement of the lead surveyor/engineer at the time of the survey. We assume in making these observations that no covering up of faults defects, filling or plastering over cracking or significant repair work has been carried out by the building owner. Any future alterations or additional work by the building owner will void this report.