Hannan Knitwears Limited

555, Rahan Ali Road, North Khailkur Road, National University, Gazipur
(23,945026N, 90,390026E)

17 October 2015

ACCORD on Fire and Building Safety in Bangladesh

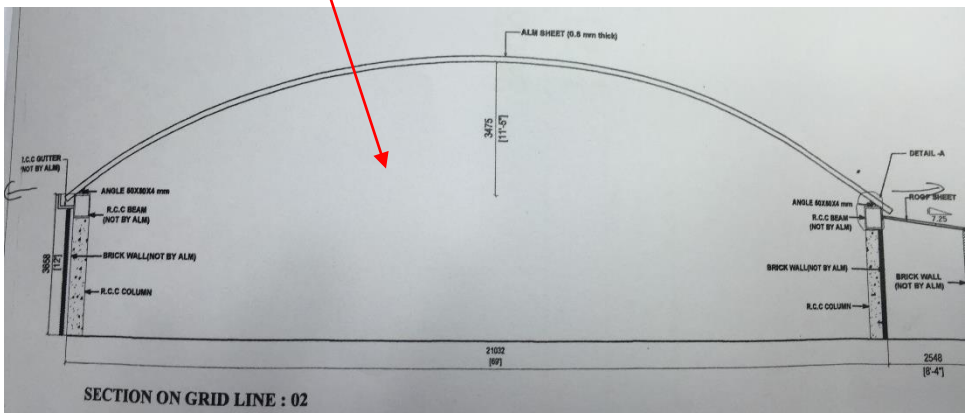
ARUP

Observations

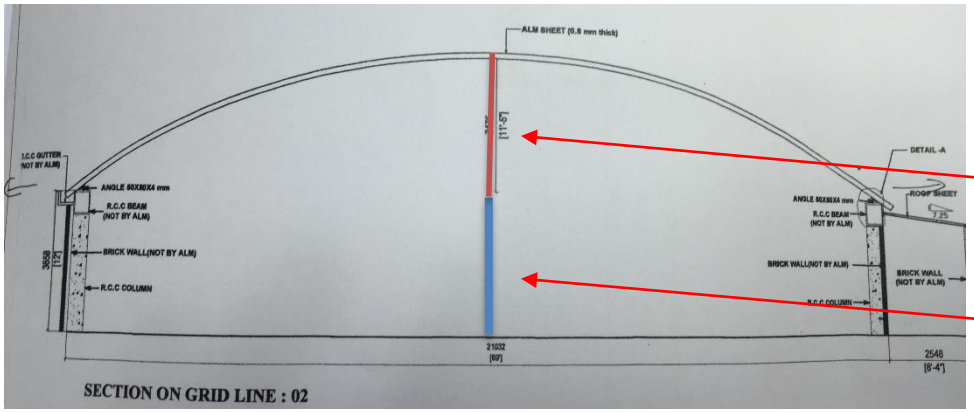
No tie in the arches (21m)

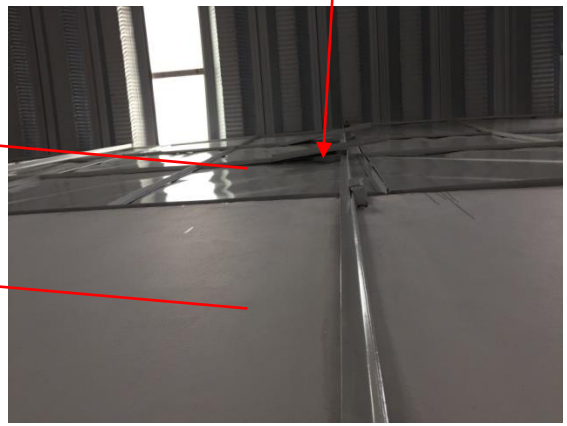
No evidence of calculations of the roof structure

0.8mm metal trapezoidal sheet



Vertical partition that seems to be touching the roof





Observation 1 – Building 4

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Steel Structure

Thickness (flanges and webs):
Main Beam (each floor) - 5mm
Secondary Beams (each floor) - 3mm
Columns (2nd and 3rd floor) - 5mm

It appears that the steel sections could be affected by lateral torsional buckling effects

Observation 2 – Building 1

Discontinuous welds in one side (continuous on the other side)

Observation 3 - Building 1

Other Observations

No Cross Bracing at Ground Floor

Observation 4

Main entrance Canopy structure

Lack of verticality of one of the Steel Columns

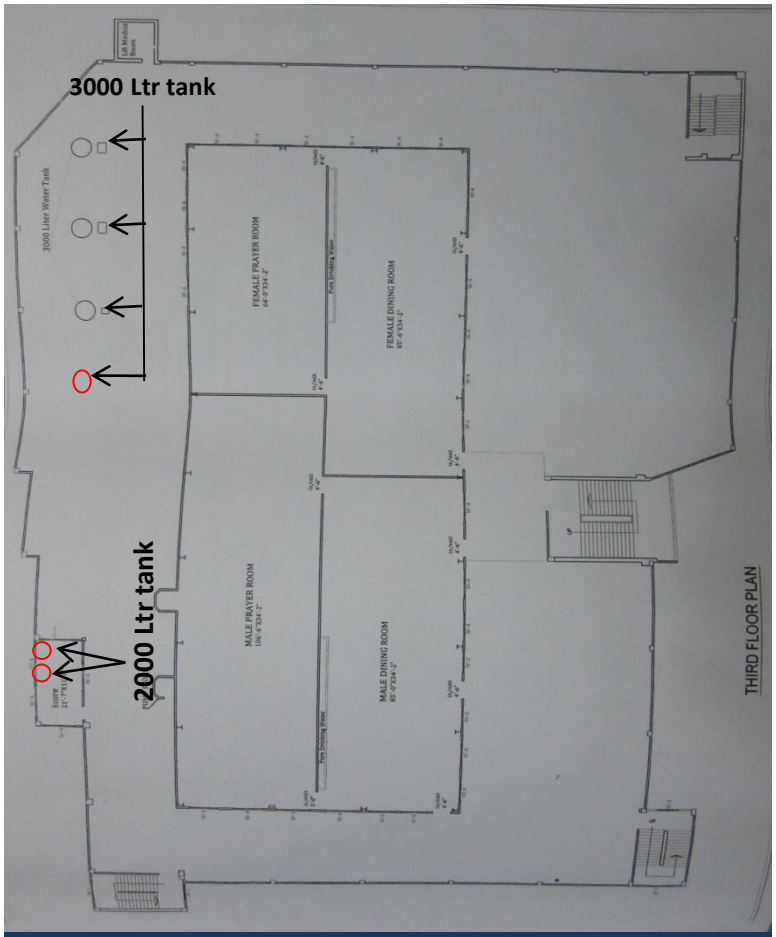
Base connection not well completed

Observation 5 – Entrance Canopy Building 1

Discrepancies between Some Drawings and Actual Observations

4 no. 3000 Ltr Tank

2 no. 2000 Ltr Tank



Roof plan

Observation 6 – Drawing discrepancies

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Priority Actions

Problems Observed

ITEM 1: Non engineered Curved Roof to shed Building (B4)
ITEM 2: Thickness of the flanges and webs appear light (B1)
ITEM 3: Welds Non continuous in some beams and columns (B1)
ITEM 4: Bracing missing (B1)
ITEM 5: Poorly contructed canopy (B1)

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Non engineered Curved Roof to Building (B4)	A Detail Engineering Assessment (DEA) of B4 to be commenced immediately.	**Immediate - Now**
2	Non engineered Curved Roof to Building (B4)	Building to be evacuated temporarily if high winds are forecast within the 6 week period of carrying out the DEA	**Immediate - Now**
3	Non engineered Curved Roof to Building (B4)	Detail Engineering Assessment to be completed.	**6-weeks**
4	Non engineered Curved Roof to Building (B4)	Upgrades as required plus monitoring	**6-months**
5	Thickness of the flanges and webs appear light (B1)	Building Engineer to verify beam/column sizes for critical sections.	**6-weeks**
6	Thickness of the flanges and webs appear light (B1)	Carry out any remedial actions required	**6-months**

Detail Engineering Assessment

This Schedule develops a minimum level of information, Analysis and testing expected as part of a Detail Engineering Assessment.
The Building(s) have been visually assessed and it is deemed necessary that a detailed engineering assessment be carried out by a competent Engineering Team employed by the factory Owner.
This Request should be read in conjunction with the BUET developed Tripartite Guideline document for Assessment of Structural Integrity of Existing RMG Factory Buildings in Bangladesh (Tripartite Document), the latest version of this document should be referenced. This document also gives guidance on required competency of Engineering Team.

We expect that the following will be carried out:

1. Development of Full Engineering As-Built Drawings showing Structure, loading, elements, dimensions , levels, foundations, Section and Elevational drawings. permanent
2. The Engineering team are to carry out supporting calculations with a model based design check to assess the safety and serviceability of the building against loading as set out in BNBC-2006, Lower rate provisions can be applied in accordance with the Tripartite Guidelines following international engineering practice, justification for these lower rate provisions must be made.
3. A geotechnical Report describing ground conditions and commenting on foundation systems used/proposed.
4. A report on Engineering tests carried out to justify material strengths and reinforcement content in all key elements studied.
5. Detailed roof load plans shall be prepared (dead load, wind, maintenance, utilities, etc. showing current and potential future loading with all key equipment items shown with associated loads.
6. Full analysis of the roof structure including global stability analysis;
7. The Engineering team will prepare an assessment report that covers the following:
    - As-Built drawings including
        - Plans at each level calling up and dimensioning all structural components
        - Cross sectional drawings showing structural elements, roof build-ups and Basic design information of the structure
    - Highlight any variation between As-built compared to the designed structure
    - Results of testing for strength and materials
    - Results of geotechnical assessment and testing/investigation
    - Details of loading, inputs and results of computer modelling
    - Commentary on adequacy/inadequacy of elements of the structure
    - Schedule of any required retrofitting required for safety or performance of Structure

Any proposals for Retrofitting to follow guidance developed in the Tripartite Document

Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Welds Non continuous in some beams and columns (B1)	Building Engineer to verify beam/column sizes for critical sections and to check the weld details for the plate girders	**6-weeks**
8	Welds Non continuous in some beams and columns (B1)	Carry out any remedial actions required	**6-months**
9	Bracing missing	Building Engineer to review requirement for bracing and design for installation if necessary	**6-weeks**
10	Bracing missing	Carry out any remedial actions required	**6-months**
11	Poorly contructed canopy	Building engineer to review details at canopy (incomplete baseplate, column constructed out of tolerance) and justify existing by calculation or propose upgrades	**6-weeks**
12	Poorly contructed canopy	Carry out any remedial actions required	**6-months**