

Masco Cottons Ltd

44, Redwan Complex, Gazipura Bustand, Tongi, Gazipur
(23.921111N, 90.392778E)
25 January 2015

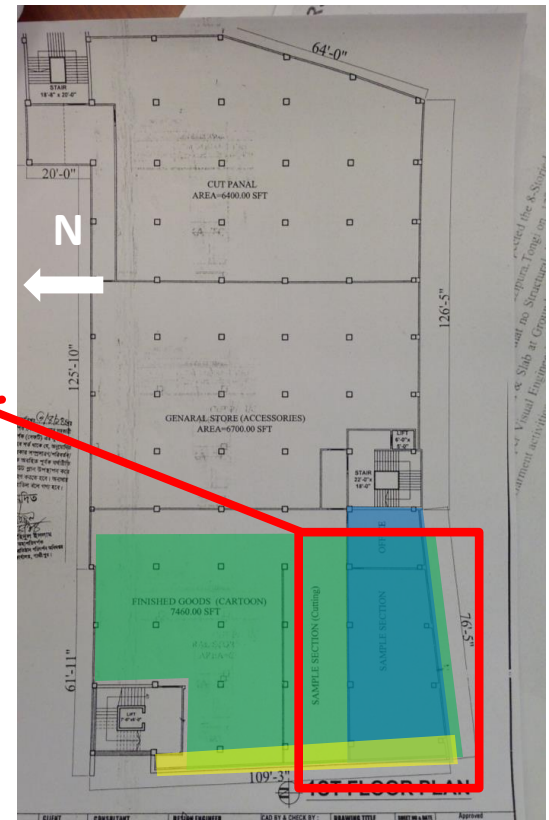
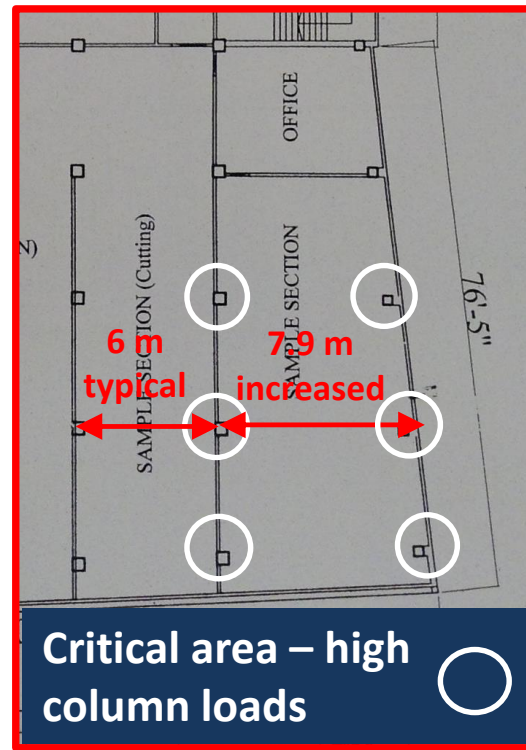


Observations

Heavily-loaded columns in loading bay area

Columns heavily loaded for following reasons:

- Loaded tributary area increased due to larger grid dimension
- Cantilever introduced after design stage
- Loaded columns support storage loads from several floors

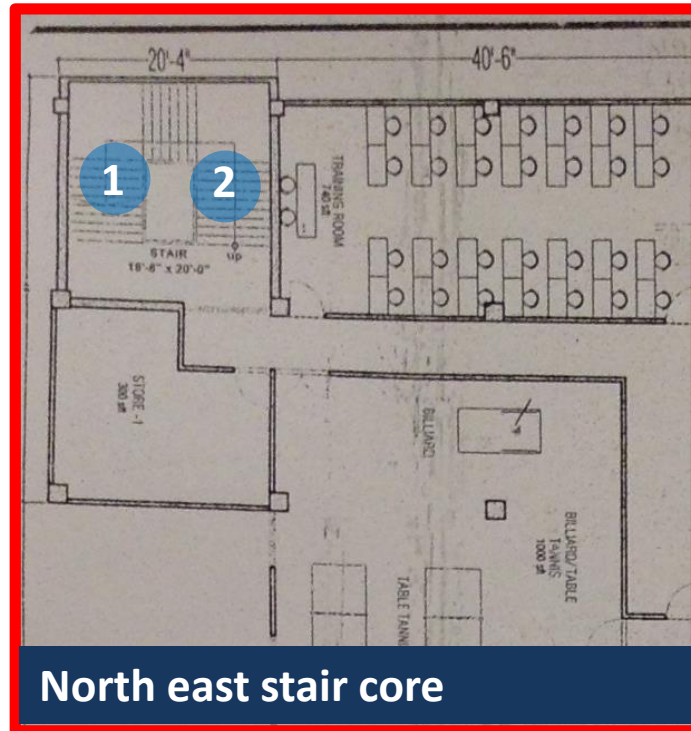
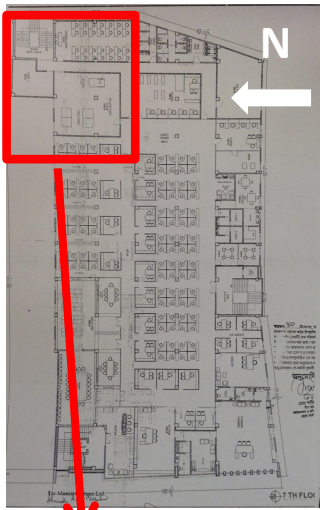


Storage load on several floors;
Note: cardboard on 1st floor

Larger as-built grid dimension
than designed

West façade cantilever

Water storage tanks on roof



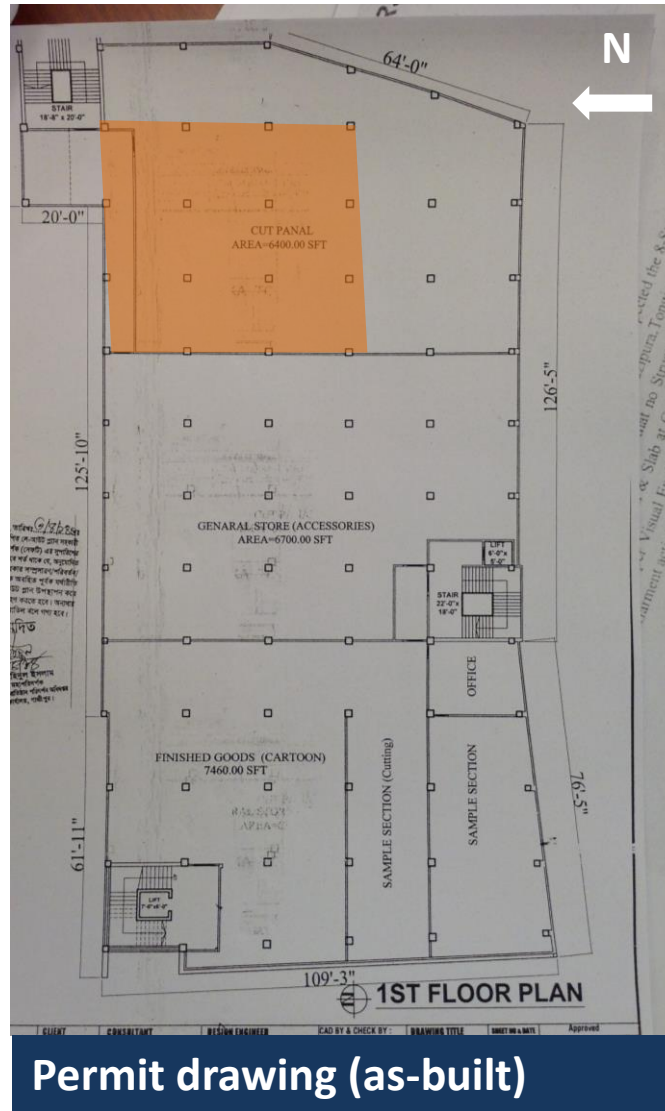
**5000 litre
water tank**

**There are 2 no. water tanks
located above the north east
stair core on the roof. Each
has a capacity of 5000 litres.**

Uncontrolled loading (in excess of loading plan) on 1st floor



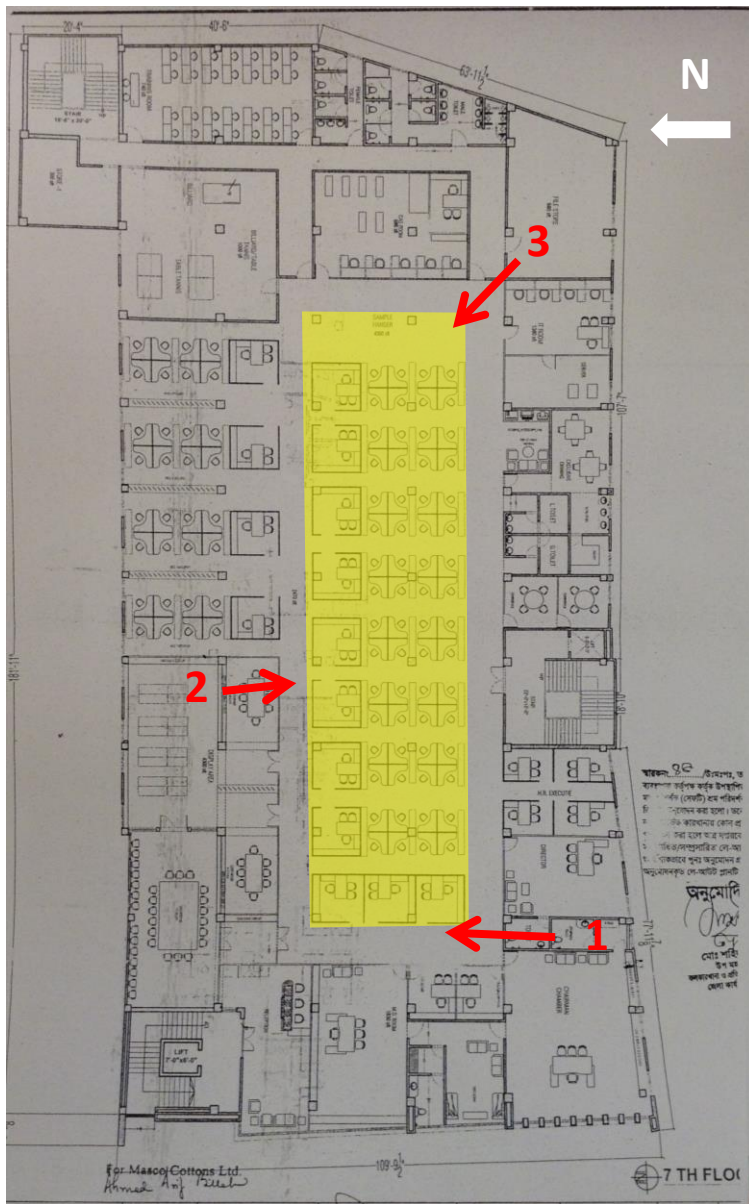
Uncontrolled loading 1st floor



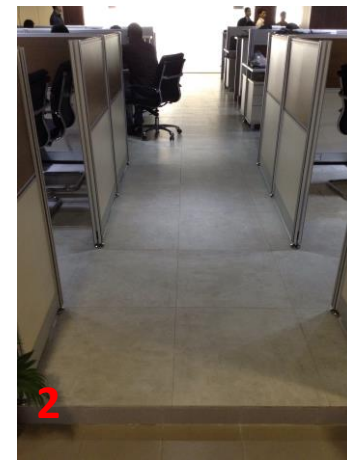
Permit drawing (as-built)

High loading
storage of
cardboard and
fabric on 1st floor

100m thick floor build-up on 7th Floor



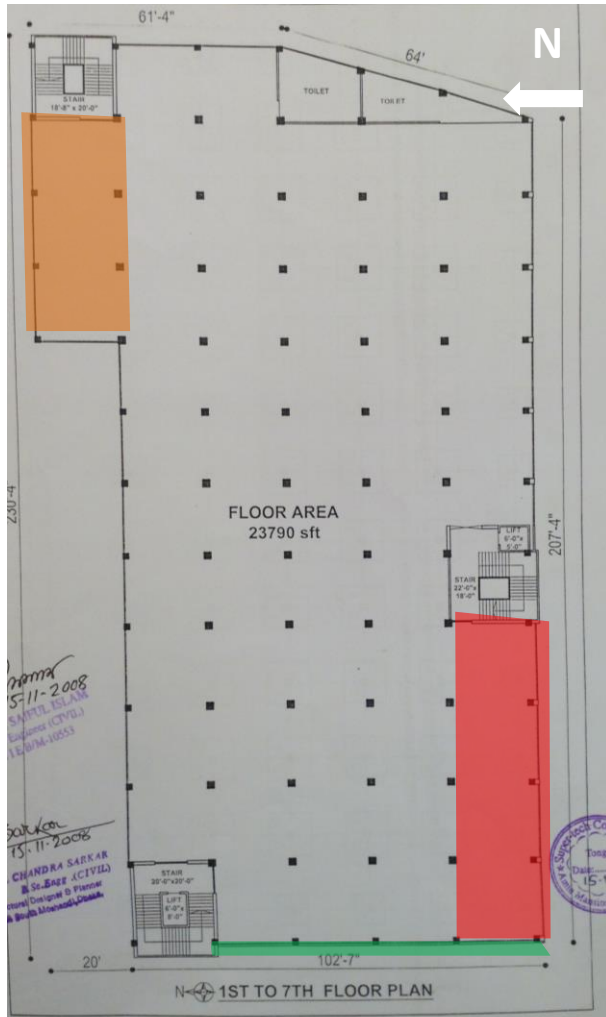
7th floor plan



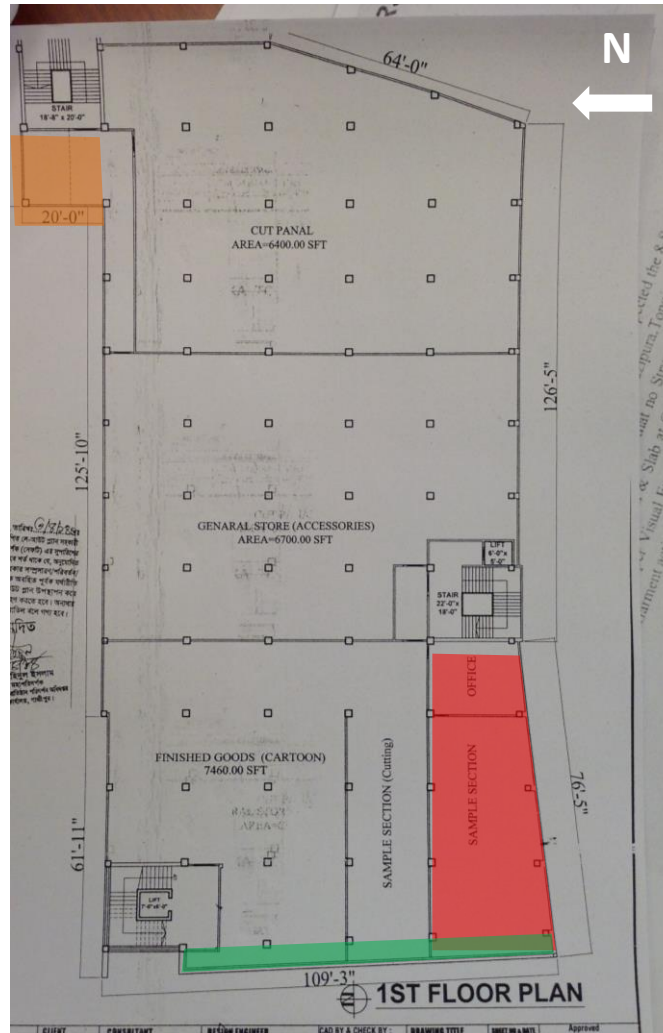
**Raised floor level -
100mm thick
additional concrete
(or similar) under
current office
accounts/admin area
– additional dead
load**

**100mm raised
floor**

Discrepancies between drawings and actual observations



Structural drawing (design)



Permit drawing (and as-built)

Differences observed between designed and as-built structure

- Column grid widens
- Floor plan reduced
- Cantilever added

Problems Observed

ITEM 1: Heavily-loaded columns in loading bay area

ITEM 2: Water tanks on roof of north-east core

ITEM 3: Uncontrolled loading (in excess of loading plan) on 1st floor

ITEM 4: Columns at ground floor level generally appear to be stressed in excess of normal design limits

ITEM 5: 100mm thick solid screed on 7th floor in office area

ITEM 6: Discrepancies between drawings and actual observation

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Heavily-loaded columns in loading bay area	Restrict Live load on 1st to 7th floors to 2 kPa in area over the loading bays.	Immediate - Now
2	Heavily-loaded columns in loading bay area	Factory Engineer to review design, loads and column stresses in all columns.	Immediate - Now
3	Heavily-loaded columns in loading bay area	Verify insitu concrete stress either by 100 dia cores or existing cylinder strength data for min. 4 no. ground floor front area columns.	Immediate - Now
4	Heavily-loaded columns in loading bay area	A Detail Engineering Assessment of the factory to be commenced, see attached scope.	Immediate - Now
5	Heavily-loaded columns in loading bay area	Revise current loading plan for all floor plates within the Factory and actively manage it, giving consideration to floor capacity and column capacity, particularly in the extended bays over the loading dock.	6-weeks
6	Heavily-loaded columns in loading bay area	Detail Engineering Assessment to be completed.	6-weeks
7	Heavily-loaded columns in loading bay area	Building Engineer to analyse and design the building based on verified concrete and rebar strengths (as outlined in the Detail Engineering Assessment) and as-built structural arrangement in the 6-storey section.	6-weeks
8	Heavily-loaded columns in loading bay area	Carry out any remedial works required by the Detail Engineering Assessment.	6-months
9	Heavily-loaded columns in loading bay area	Continue to implement revised load plan.	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 and framing on Plan, Section and Elevational drawings .
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 load plans shall be prepared for each level showing current and potential future loading with all key equipment items shown with associated loads.
6. 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 beams, slabs, floor to floor heights, 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
10	Water tanks on roof of north-east core	As part of the Detail Engineering Assessment (ref. Item 1), the slab supporting water storage tanks to have its design capacity verified by the Building Engineer.	6-weeks
11	Water tanks on roof of north-east core	Remove water tanks if required by Detail Engineering Assessment.	6-weeks
12	Water tanks on roof of north-east core	Carry out any remedial works required by the Detail Engineering Assessment.	6-months
13	Uncontrolled loading (in excess of loading plan) on 1st floor	As part of the Detail Engineering Assessment (ref. Item 1), reduce loading on first floor to conform to revised loading plans.	6-weeks
14	Uncontrolled loading (in excess of loading plan) on 1st floor	Continue to implement revised load plan.	6-months
15	Columns at ground floor level generally appear to be stressed in excess of normal design limits	As part of the Detail Engineering Assessment (ref. Item 1), Building Engineer to review design, loads and columns stresses in area identified above.	6-weeks
16	Columns at ground floor level generally appear to be stressed in excess of normal design limits	Carry out remedial actions arising from Detail Engineering Assessment.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
17	100mm thick solid screed on 7th floor in office area	As part of the Detail Engineering Assessment (ref. Item 1), Building Engineer to carry out an assessment on the slab / column capacity to carry the additional 100m screed applied on the 7th floor.	6-weeks
18	100mm thick solid screed on 7th floor in office area	Carry out remedial actions arising from Detail Engineering Assessment.	6-months
19	Discrepancies between drawings and actual observation	As part of the Detail Engineering Assessment (ref. Item 1), carry out survey to reflect as-built structure.	6-weeks
20	Discrepancies between drawings and actual observation	Revise engineering drawings as part of Detail Engineering Assessment.	6-months