

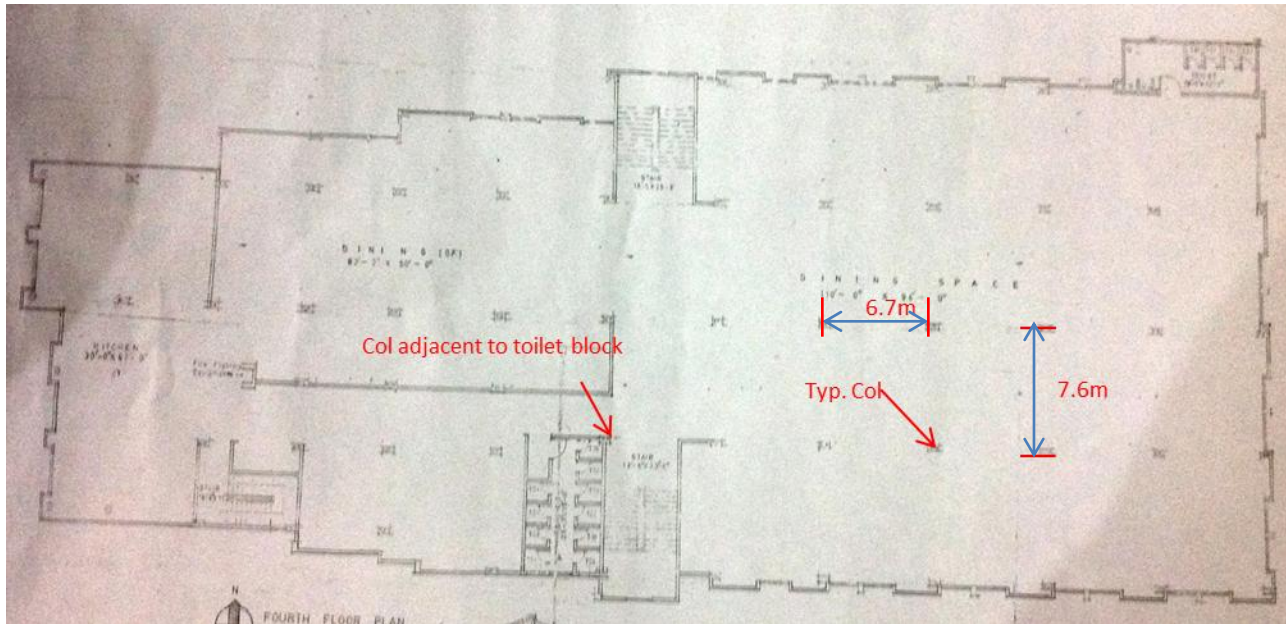
Doreen Garments Ltd

50-60, Dakkhin Panishail, NK Link Road, Kashimpur, Gazipur, Dhaka
(23.987086, 90.260215)
2nd April 2014



Observations

Main Building: High Column Loads- Detailed Engineering Assessment Required



REINFORCEMENT DETAILS				
COL. NO.	Below E.O.L.	Ground to 2nd Floor	3rd Floor	4th & 5th Floor
C1				
C2				
C2A				
C2B				
C3				
C3A				
C4				
C5				
C6				
C7				
C8				

Preliminary calculations indicate that column working stress is at a high level in the main building. For columns adjacent to toilet areas, considerable loading was observed arising from numerous masonry partitions, plinths and reinforced concrete slab ceilings.

A Detailed Engineering Assessment of the building is required (see attached scope). The engineer is to perform detailed calculations based on the 'as constructed' structural arrangement, material properties and loading to verify column size suitability. If required, column loading shall be reduced, and columns possibly strengthened.

Main Building: High Column Loads

Main Building: Cracking in Beams and Slabs



Images are indicative of typical cracking to soffit of beams. Some cracking observed to slab soffits.

Cracking observed to top of Level 4 slab adjacent to Grid G/12, as well as in a number of locations to cantilever slabs on Grids A and K at Levels 1 and 2.



Main Building: Beam and Slab Cracking

Assumed Non-Engineered Structures



Electric room structure appears to be 'non-engineered'.

Electric room roof purlin supported off column exposed link bar reinforcement.



Assumed Non-Engineered Structures: Electric Room



The stair core roof structures appear to be non-engineered, with concrete blocks or bricks used for ballast to hold roof sheeting in place.

Assumed Non-Engineered Structures: Stair Core Roofs

Priority Actions

Problems Observed

ITEM 1: Stress levels in Columns

ITEM 2: Cracking in beams and slabs at numerous floor levels.

ITEM 3: Apparently non-engineered steelwork to roofs.

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Verify concrete strengths in all columns	Maintain current use of the floors and don't change use or increase occupation, either of which could increase loading.	Immediate - Now
2	Verify concrete strengths in all columns	Factory Engineer to review design, loads and columns stresses in all columns.	Immediate - Now
3	Verify concrete strengths in all columns	Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.	Immediate - Now
4	Verify concrete strengths in all columns	A Detail Engineering Assessment of Factory to be commenced, see attached Scope	Immediate - Now
5	Verify concrete strengths in all columns	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
6	Verify concrete strengths in all columns	Detail Engineering Assessment to be completed	6-weeks
7	Verify concrete strengths in all columns	Continue to implement 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 Elevation 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
8	Cracking in beams and slabs at numerous floor levels	Engineer to investigate if cracks are only in the nominal render finish, in conjunction with the DEA	6-weeks
9	Cracking in beams and slabs at numerous floor levels	If cracks are structurally significant, remove all items above the slab and close working areas below the affected areas . Engage an engineer to specify repairs and strengthening if necessary.	6-weeks
10	Apparently non-engineered steelwork to roofs	Building engineer to check the capacity of the steel roofs to stair cores and electrical substation and make any necessary alterations	6-months