

# Jeans 2000 Ltd

Plot #67, Sector #07, Export Processing Zone, Chittagong  
(+22.299113N, 91.777006E)

04 November 2013



# Building Observations

# Limit density of loading in storage areas

## 5<sup>th</sup> Floor



Material stacked to ceiling in a continuous 8 x 16m area

Engineering calculations indicate a design load of  $3\text{kN/m}^2$  for 4<sup>th</sup> to 6<sup>th</sup> floor. The encountered loading is over the design loading.



Plan and height restrictions to be introduced to prevent future overloading. Columns appear to be highly stressed, therefore loading to be limited to  $2\text{kN/m}^2$  on all levels.

Engineer to produce loading plans.  
Load management set in place.

## 2<sup>nd</sup> Floor



**Material stacked to ceiling**

**Engineering calculations indicate a design load of 5kN/m<sup>2</sup> for 1<sup>st</sup> to 3<sup>rd</sup> floor.**

**The encountered loading appears over the design loading.**

**Plan and height restrictions to be introduced to prevent future overloading. Columns appear to be highly stressed, therefore loading to be limited to 2 kN/m<sup>2</sup> on all levels.**

**Engineer to produce loading plans.**

**Load management set in place.**

**Check column design required**



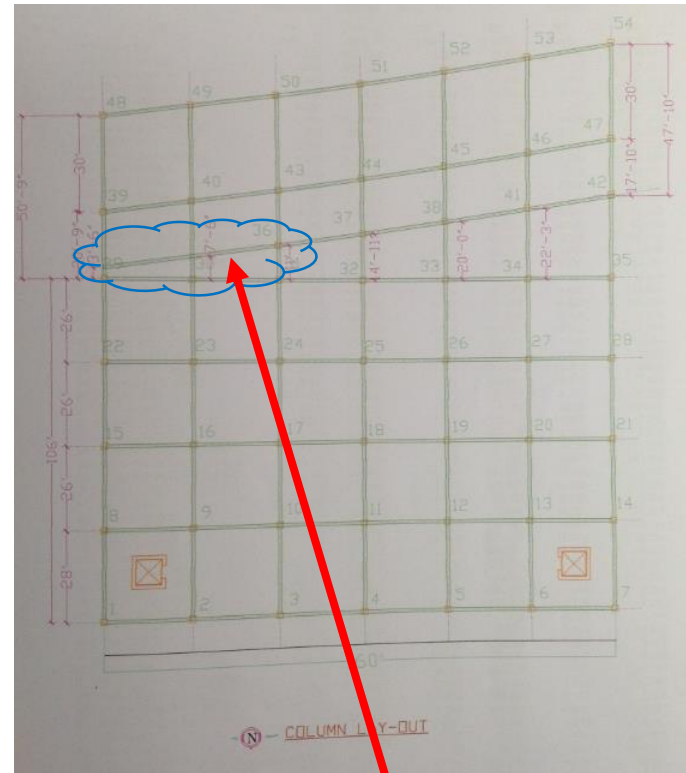
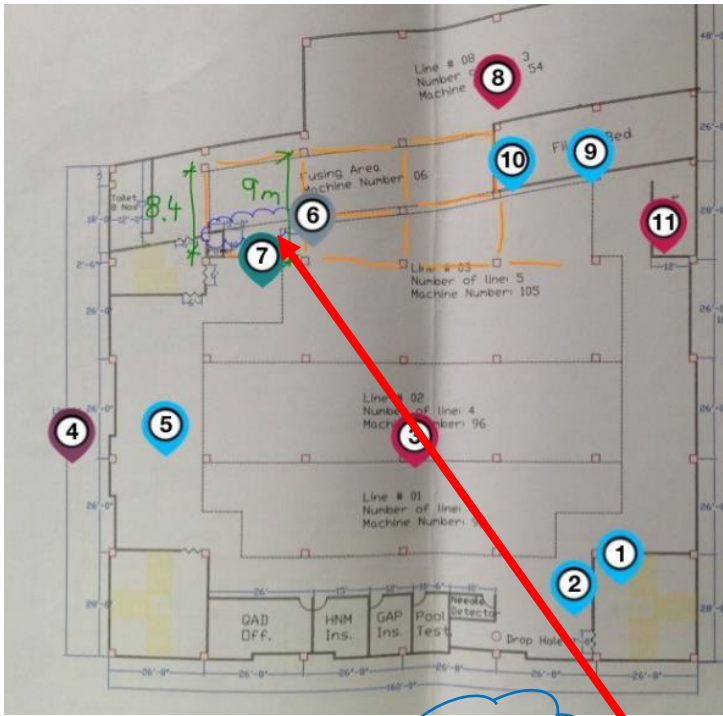
Cursory calculations indicate column working stress is at high level (valid for all columns)

Engineer is to perform detailed calculations and concrete tests to prove column size and confirm maximum floor loadings. Load management plans to be produced and implemented.



**Check slab design required**





Calculation assume beams at in all column bays.

As built condition shows no beam at this location (all floors)

Check on slab design required

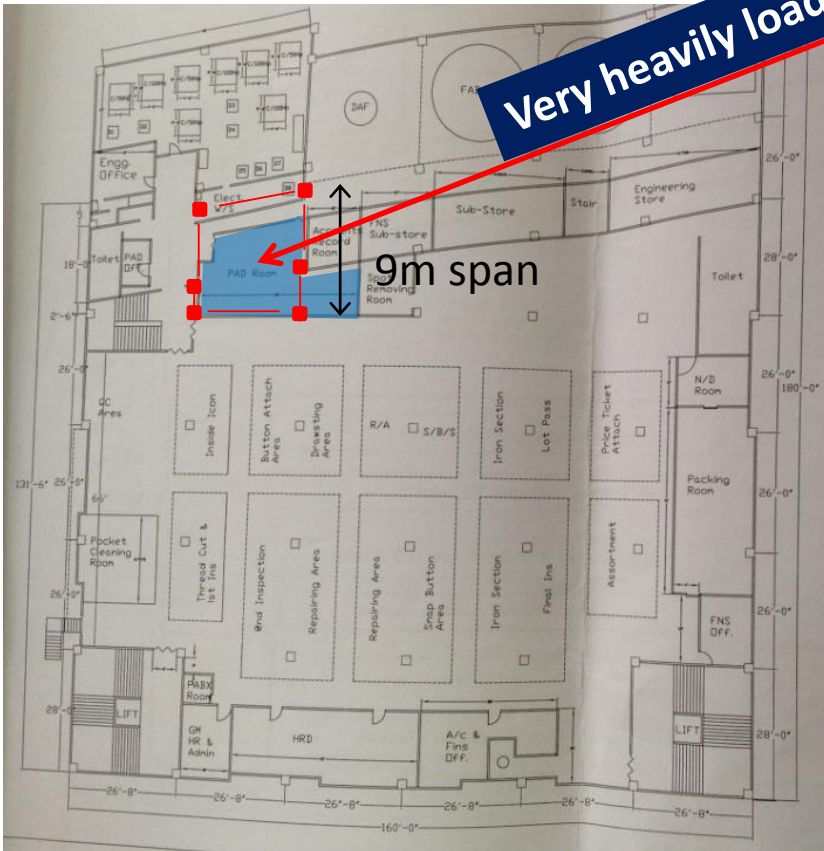
## 1<sup>st</sup> Floor



Very heavily loaded area

**Material stacked to ceiling within this room**

**9m span without intermediate beam in this area.**  
**Typical max span is 8.6m everywhere else.**



## Check on slab design required

# **Cracking in column due to corroded reinforcement**



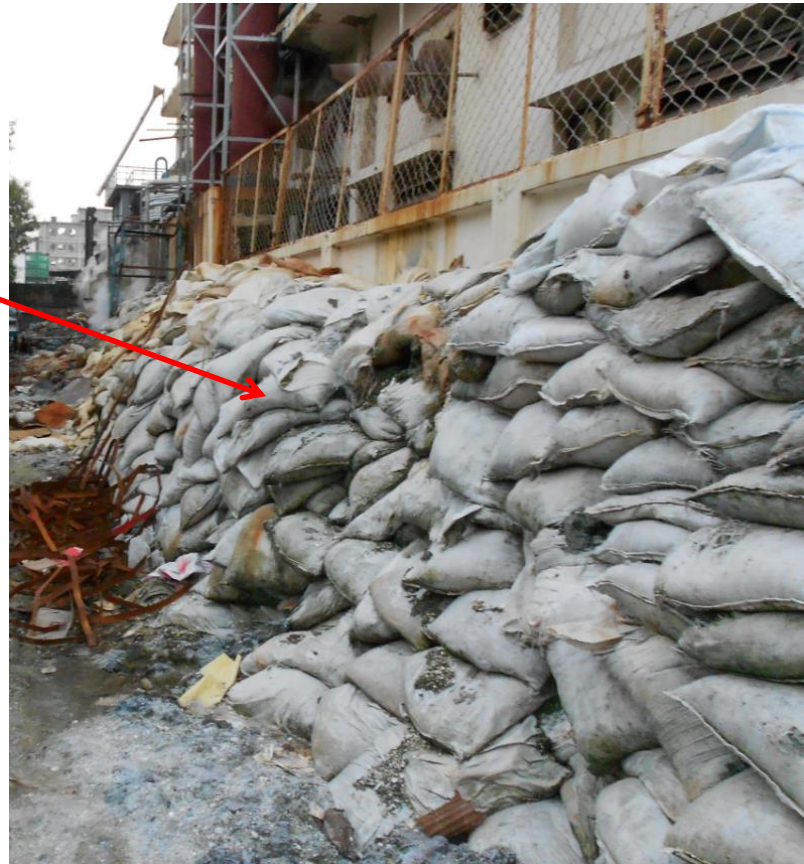
**Water damage in water treatment plant support structure has rusted steel reinforcement, causing spalling of concrete.**

**Cracking in column due to corroded reinforcement**

# Waste pile loading perimeter wall



**Waste pile is loading the  
perimeter wall.  
Risk of overloading due to  
lateral pressure on perimeter  
wall.**



**Loading**

# **Emergency Exit (non structural observation)**





Keep fire door unlocked

**Emergency Exit is locked**

# Priority Actions

# Problems Observed

**Item 1:** Check on column loads and design required

**Item 2:** Beam shown in on calculations is missing in the as built condition

**Item 3:** Strengthen/repair water treatment plant support structure

**Item 4:** Waste bags loading perimeter wall

| Item No. | Observation                                                                          | Recommended Action Plan                                                                                                 | Recommended Timeline |
|----------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|----------------------|
| 1        | Check on column loads and design required - Verify concrete strengths in all columns | Redistribute heavy storage loads, in order not to exceed a floor loading of 40 psf (2kN/m <sup>2</sup> ) on all floors. | Immediate - Now      |
| 2        | Check on column loads and design required - Verify concrete strengths in all columns | Remove storage loading on column areas that also support water tanks on the levels below of above                       | Immediate - Now      |
| 3        | Check on column loads and design required - Verify concrete strengths in all columns | A Detail Engineering Assessment of Factory to be commenced, see attached Scope                                          | Immediate - Now      |

| Item No. | Observation                                                                          | Recommended Action Plan                                                             | Recommended Timeline |
|----------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------|
| 4        | Check on column loads and design required - Verify concrete strengths in all columns | Factory Engineer to review design, loads and columns stresses in all columns.       | 6-weeks              |
| 5        | Check on column loads and design required - Verify concrete strengths in all columns | Verify insitu concrete stresses either by cores or existing cylinder strength data. | 6-weeks              |
| 6        | Check on column loads and design required - Verify concrete strengths in all columns | Detail Engineering Assessment to be completed                                       | 6-weeks              |

# 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 |
|----------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 7        | Check on column loads and design required - 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-months             |
| 8        | Beam shown in on calculations is missing in the as built condition - Verify slab and column capacity in the 9m span location | Reduce load in the 9m span area to 2kN/m <sup>2</sup>                                                                                          | 6-weeks              |
| 9        | Beam shown in on calculations is missing in the as built condition - Verify slab and column capacity in the 9m span location | Factory Engineer to review design and loads in slab with 9m span.                                                                              | 6-weeks              |

| Item No. | Observation                                                                                                                  | Recommended Action Plan                                                                                                                        | Recommended Timeline |
|----------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|
| 10       | Beam shown in on calculations is missing in the as built condition - Verify slab and column capacity in the 9m span location | Verify insitu concrete stresses either by cores or existing cylinder strength data.                                                            | 6-weeks              |
| 11       | Beam shown in on calculations is missing in the as built condition - Verify slab and column capacity in the 9m span location | Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. | 6-months             |
| 12       | Strengthen/repair water treatment plant support structure - Cracking in column due to corroded reinforcement                 | Building engineer to inspect all columns in the water treatment plant area for corrosion damage and spalling risk                              | 6-weeks              |

| Item No. | Observation                                                                                                  | Recommended Action Plan                               | Recommended Timeline |
|----------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------|
| 13       | Strengthen/repair water treatment plant support structure - Cracking in column due to corroded reinforcement | If necessary, remove loading on the damaged columns   | 6-weeks              |
| 14       | Strengthen/repair water treatment plant support structure - Cracking in column due to corroded reinforcement | Strengthen spalled column                             | 6-months             |
| 15       | Strengthen/repair water treatment plant support structure - Cracking in column due to corroded reinforcement | If required, specify a treatment system for corrosion | 6-months             |

| Item No. | Observation                  | Recommended Action Plan                                                                                         | Recommended Timeline |
|----------|------------------------------|-----------------------------------------------------------------------------------------------------------------|----------------------|
| 16       | Waste bags at perimeter wall | Verify that perimeter wall has sufficient capacity to support lateral load. Limit height of stacked waste bags. | 6-months             |