

Revision: Issue 1
Date: 9th February 2015

Category Green

Lida Textile & Dyeing Ltd.

Holding No. 100/2, Block-B, East Chandura, Ward-8, Shafipur, Kaliakair, Gazipur.

(24.036527, 90.272019)

4th February 2015

Structural Inspection Report

Observations & Actions

Authors: Hugh Griffin, Connor McGrath

Checked by: Hugh Griffin

Approved by: Hugh Griffin



Executive Summary

On 4th February 2015, Mr Hugh Griffin (lead) and Mr Connor McGrath of Arup carried out a visual structural survey of the **Lida Textile & Dyeing Ltd** complex at the address and co-ordinates given on the cover page of this report.

We met with Mr. Saiful Millat, Director, Mr S. M. Jecrul Islam, General Manager, and Mr. Kader Siddique, Manager (Construction) of Lida Textile & Dyeing Ltd.

Lida Textile & Dyeing Ltd is owned by Mr. Zhuang Lifeng who also owns other factories in the area. Mr. Lifeng owns the building complex.

The factory comprises a single 7-storey production building. We inspected all areas of the buildings. Other buildings are currently being constructed within the complex for Lida Textile & Dyeing Ltd. These were not inspected.

Ground Floor level is currently being used as a store for construction materials. The ground floor slab has not been constructed. First Floor is used for sewing and finishing. Second and Third Floors are used for storage, although currently there are sections of each floor that are empty. Part of Fourth Floor is being used as a dining area while a new Canteen Building is being constructed. The remainder of the floor is unoccupied. Fifth Floor is used for cutting. Sixth Floor used is mainly open roof area with offices at the West end and offices under construction at the East. Lift Motor Rooms extend above the roof to the office areas. Large sectional water tanks are located in numerous locations, mainly over stairs areas.

The building is a reinforced concrete beam and slab structure with piled foundations. A ground bearing ground floor slab will be constructed in the short term. There is an expansion joint at mid point along the length of the building.

The building construction commenced in 2013. Permit approval was obtained from the Local Authority in 2014 for a 7 storey building. The permit drawings were presented.

Executive Summary (Continued)

A comprehensive set of structural drawings were prepared by Dezhou Minyi Building Design Co Ltd. who are based in China. There is good agreement between these drawings and the site observations. Test results for concrete cylinders (tested in Bangladesh) and for concrete cubes (tested in China) were made available.

A Site Investigation Report was prepared in May 2013 for an 8 storey building by Delta Soil Engineers. This consisted of 66 boreholes and recommended piled foundations.

Based on our visual inspection the following high level and non exhaustive list of key concerns are:

ITEM 1: Floor Loading

We also have concerns regarding the lack of guarding/edge protection at the highest roof levels (roof to offices). **Appropriate edge protection should be provided immediately.**

We see no reason to suspend operations in the Building due to structural concerns (subject to the required actions noted at the end of this report).

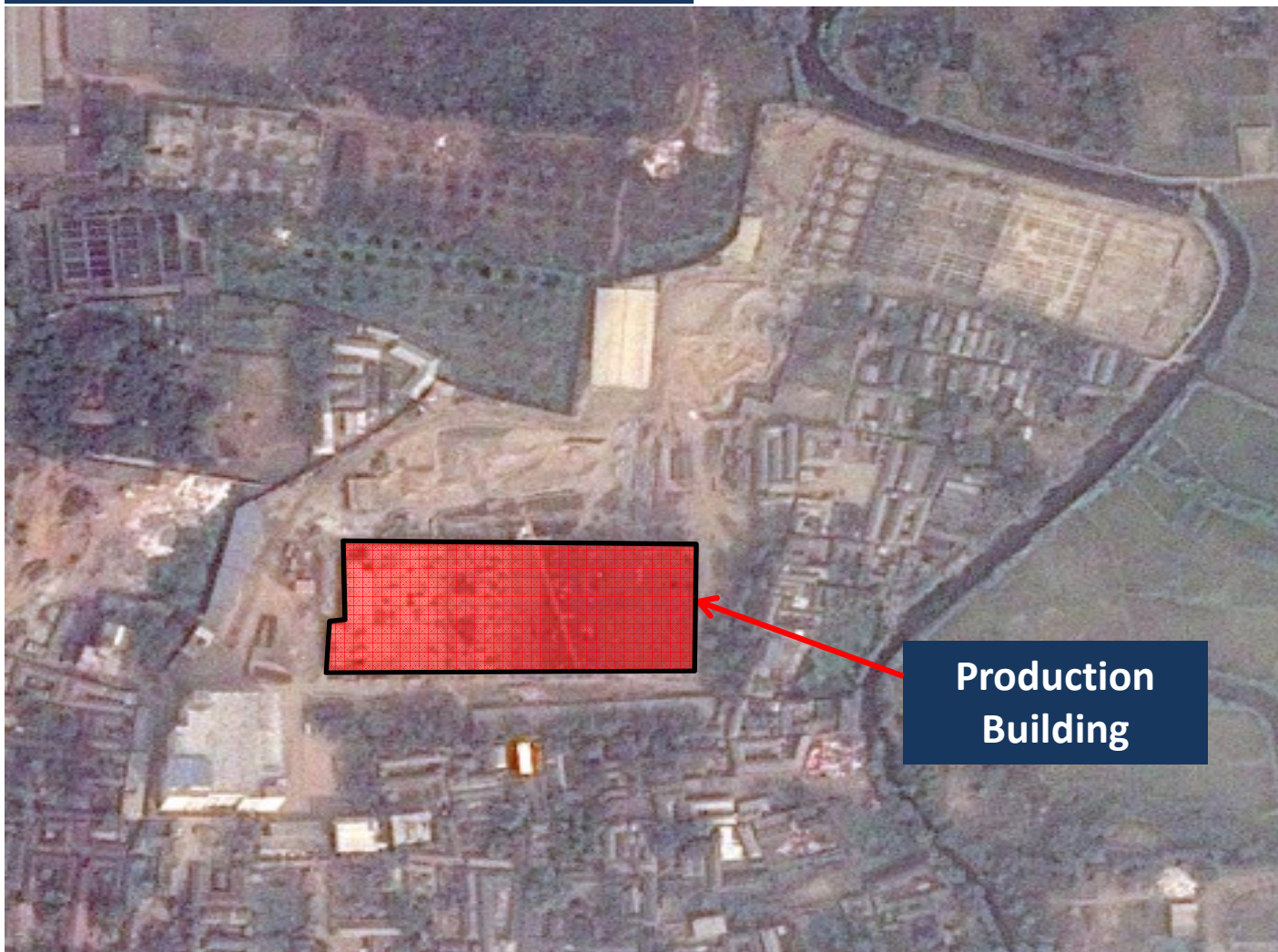
Further actions with associated priorities and timeframes are given at the end of this report. Please note that these actions should be completed as soon as practically possible and certainly within the time frame noted.

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 be at significant risk in a major Seismic event.

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

Building Extents

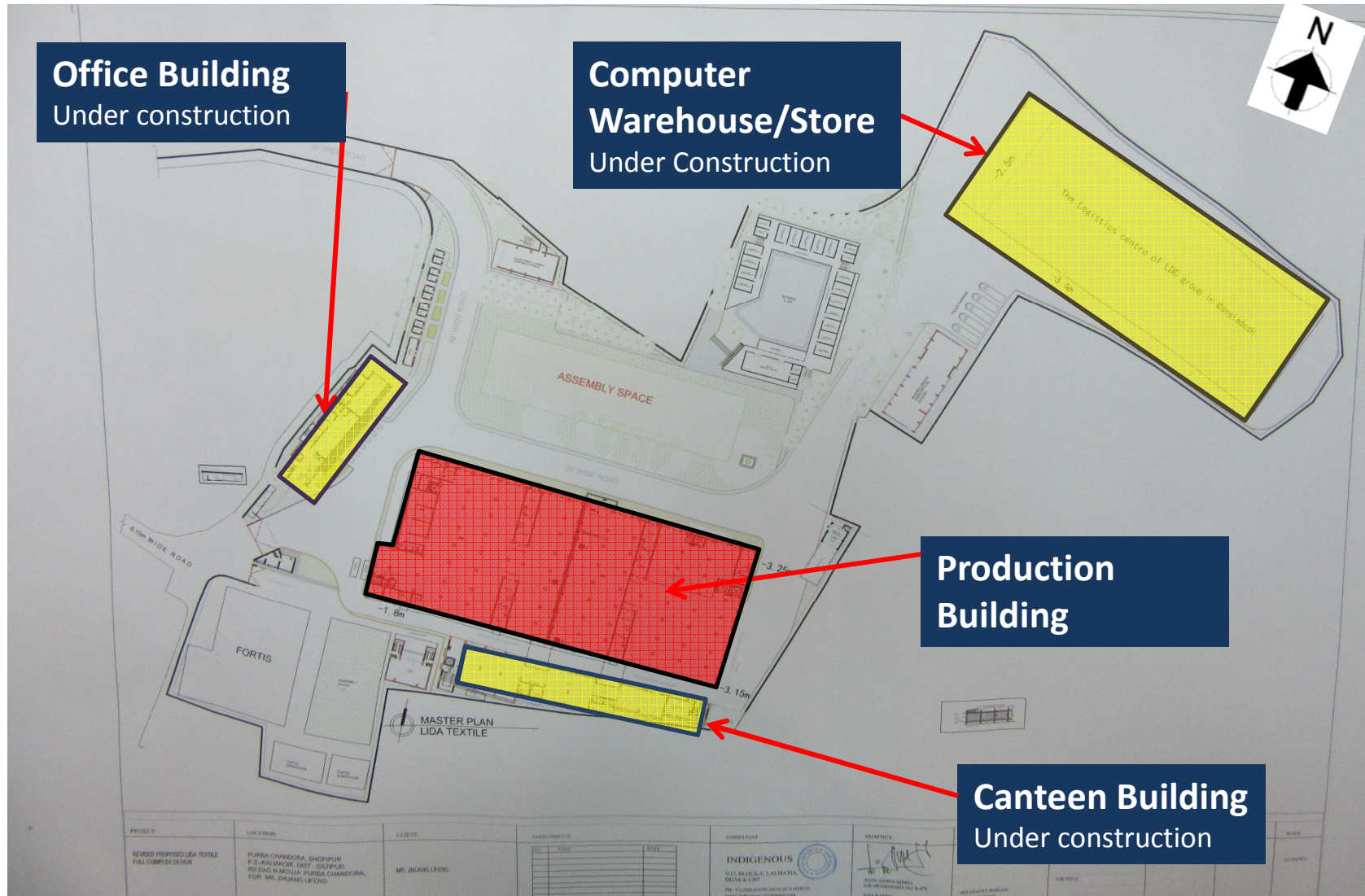
Coordinates 24.036527, 90.272019



Production
Building

Site Location

Building Extents



Location of Buildings within Lida Textile & Dyeing Complex.



West Elevation



North Elevation

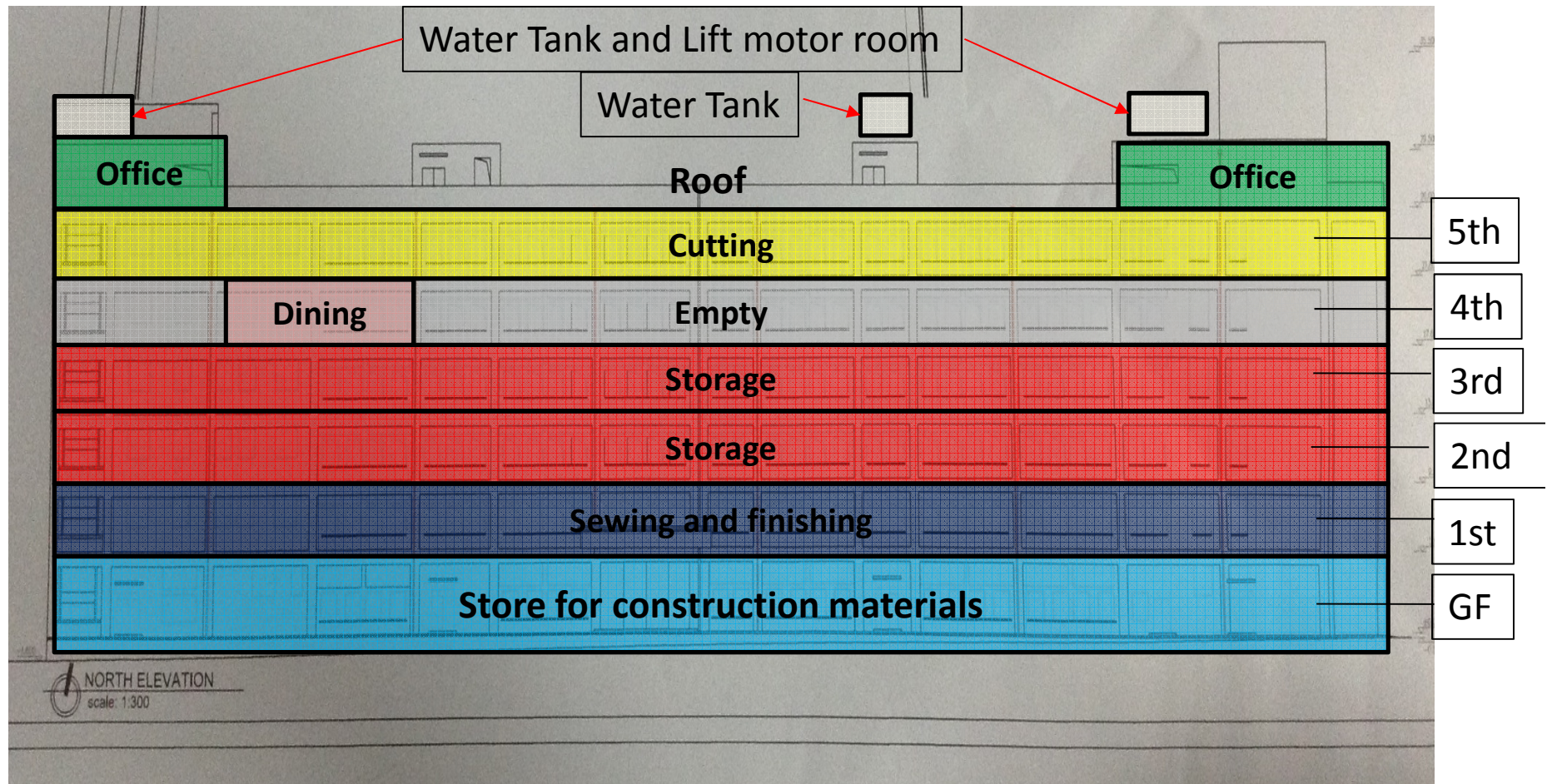


East Elevation



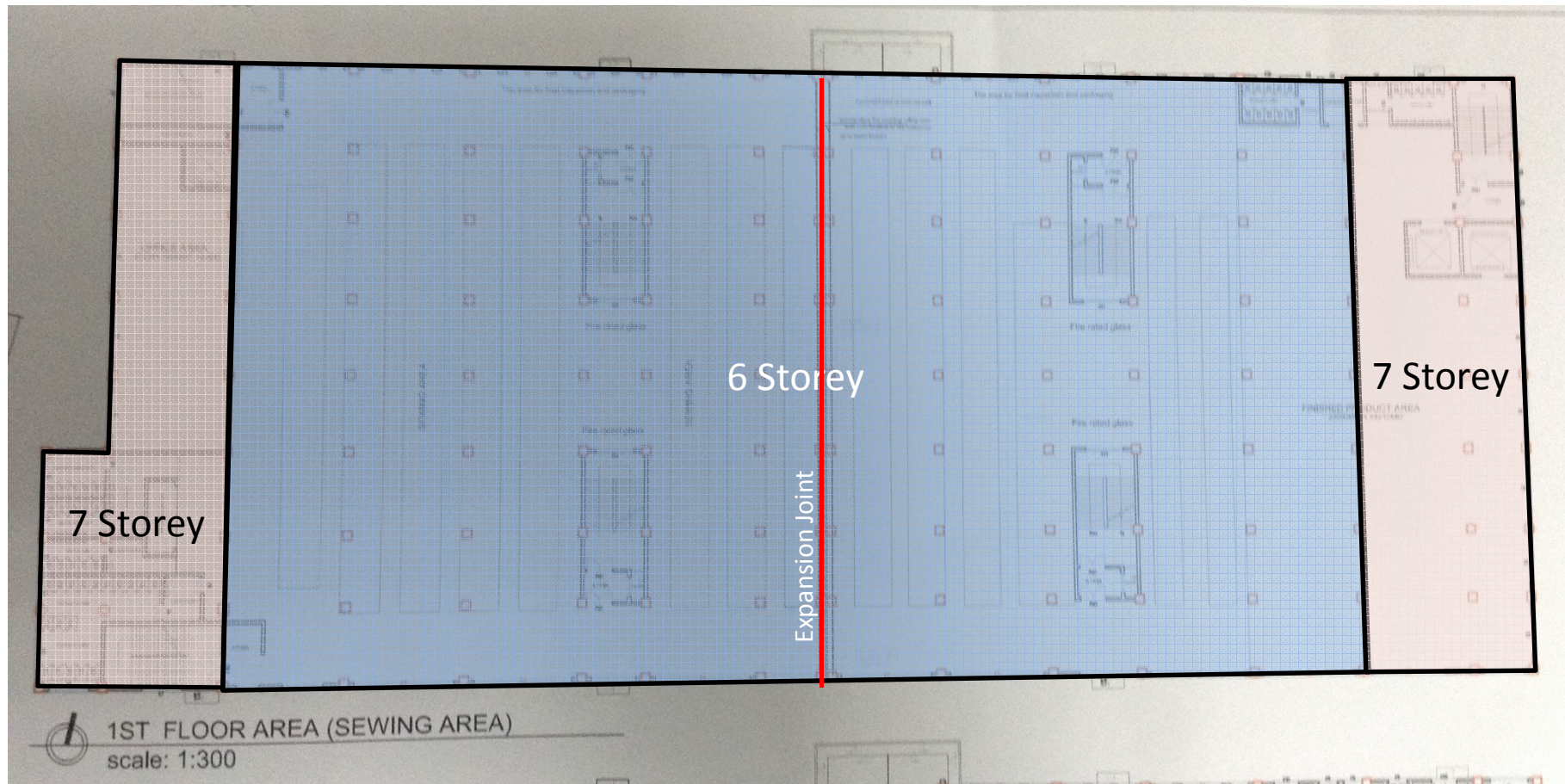
South Elevation (part)

Building Extents



Current Use of Factory Floors

Building Extents



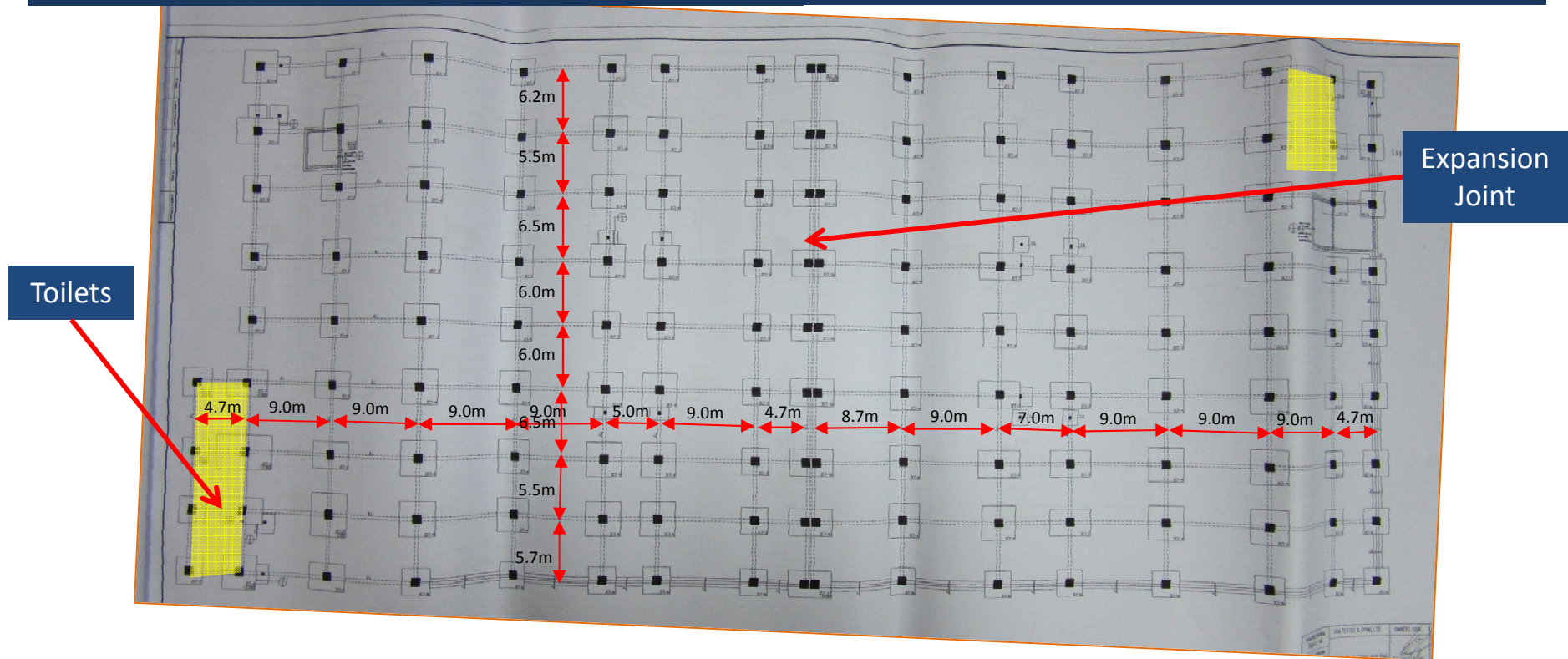
Number of storeys

Building Extents

Structural System

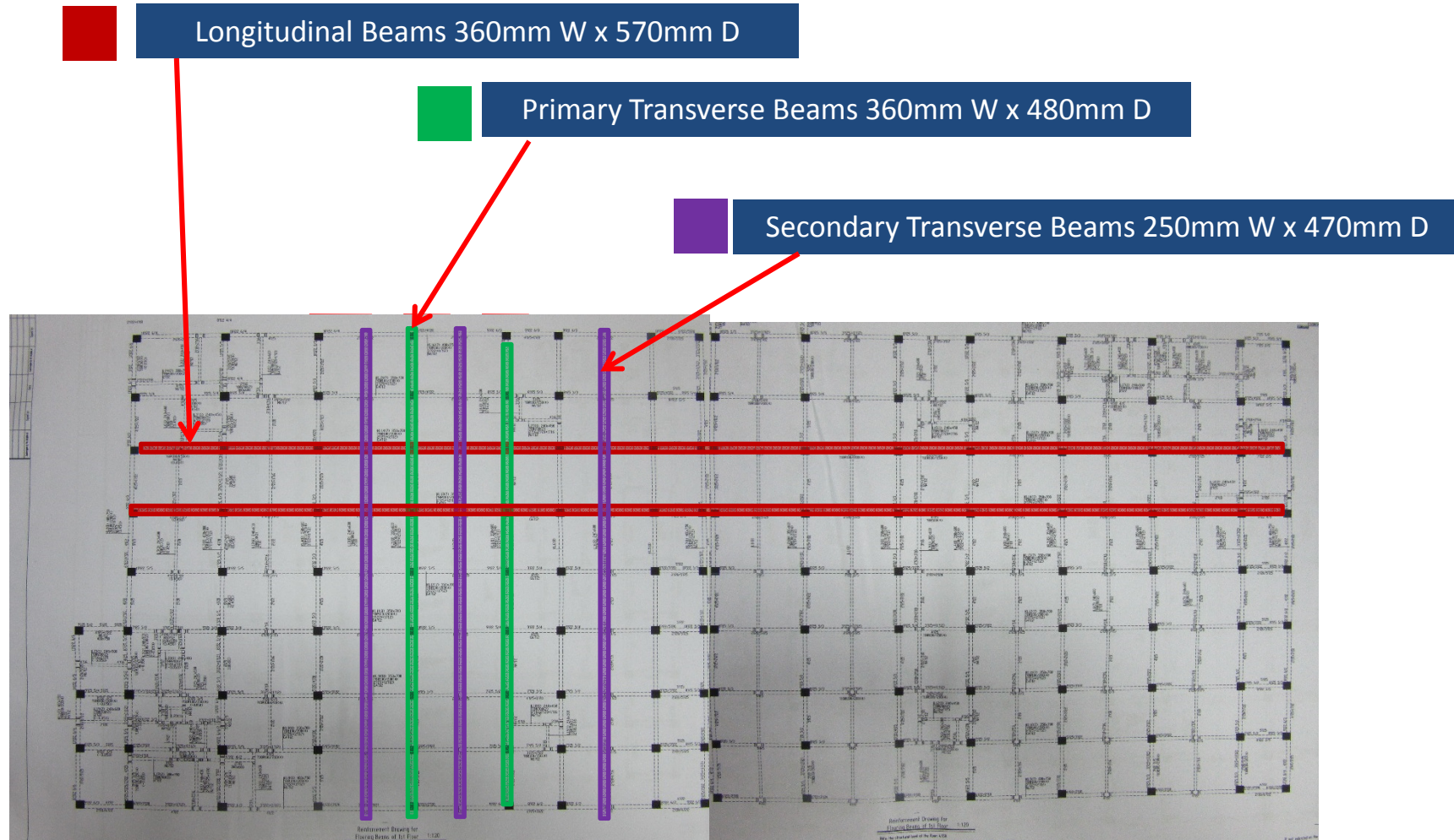
Structural System:

- RC beams with two-way spanning slabs.
- Lateral stability is assumed to be provided by a moment frame system .
- **Columns:**
G Fl. 800mm x 800mm RC (Typ)
F Fl. to 4th Fl. 700mm x 700mm
- **Grid: see plan**
- **Beams: see plan**
- **Floor Slab:** 130mm thick avg. (excluding floor 60mm avg. finishes)
- **Floor to Ceiling:** 4.15m
- **Foundation:** Piled Foundation



Structural System

Structural System:



Structural System



Typical column beam frame structure

Structural System

Non Structural Observation

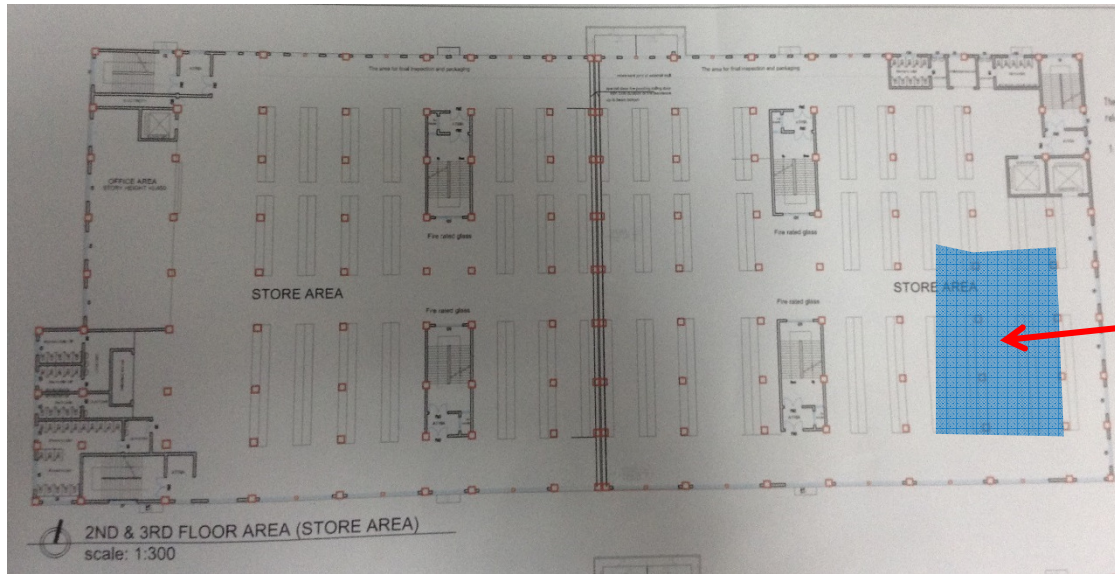


**No edge protection was provided on the roof
over office areas**

Lack of edge protection

Observations

Floor Loading



Observed loading varied up to 3.6kPa on 2nd and 3rd floors



Area of localised 5.5kPa loading at 2nd floor

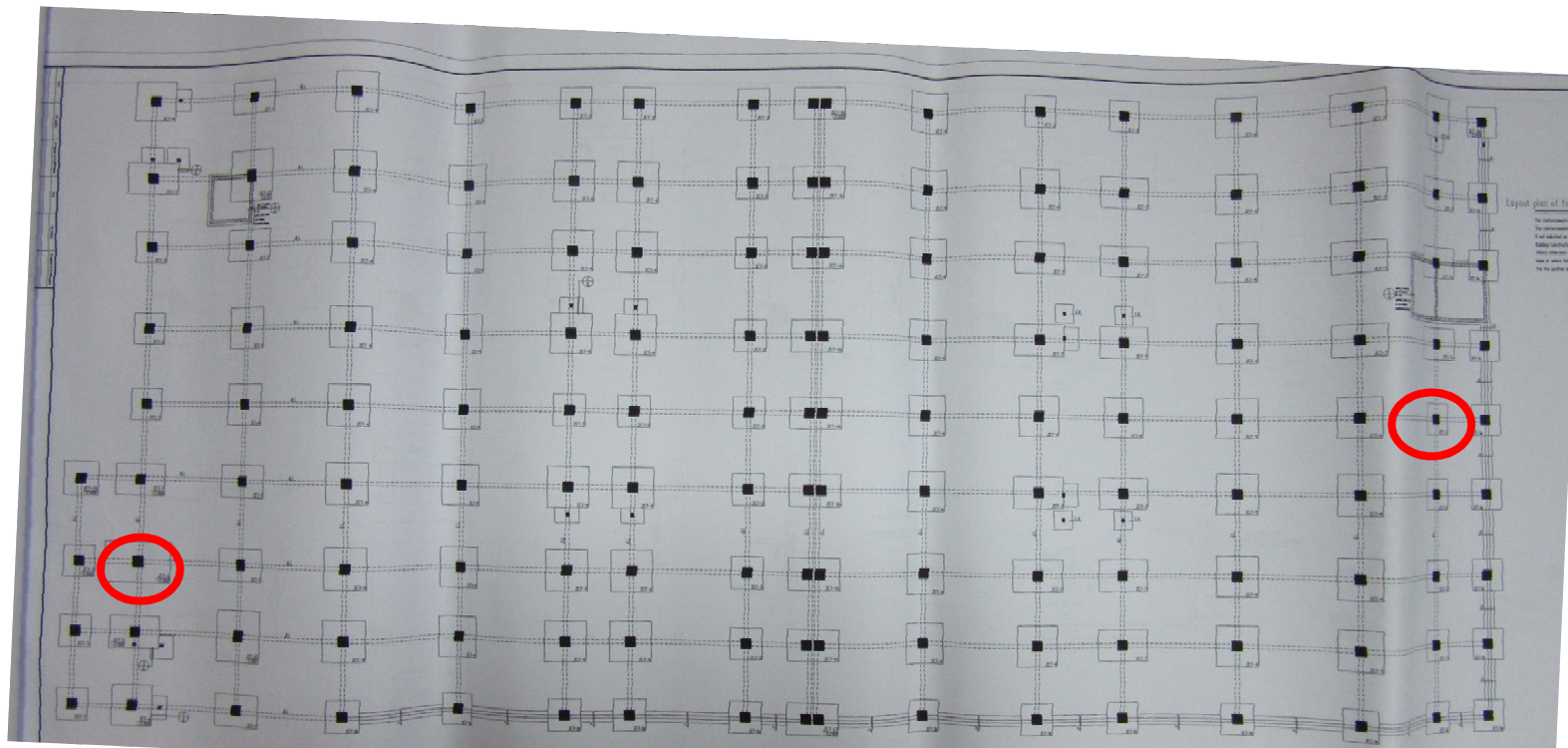
Load Information Board for this Building

SL NO	Item Name	Item Quantity	Item Wise Load	Item Wise Total Load	Total Actual Load of Floor	Maximum Load Capacity of the floor	Compare Result
1	Man Load	860	55 Kg (Average)	47300Kg			
2	Machine Load	850	56 Kg (Average)	46751kg	104050 kg	3534000 kg	Load is NOT Cross Limit
3	Materials Load	20000	.5 Kg (Average)	10000 "			

Maximum imposed floor loading shown as 6.15kPa on wall at First Floor.

Floor Loading

Column testing

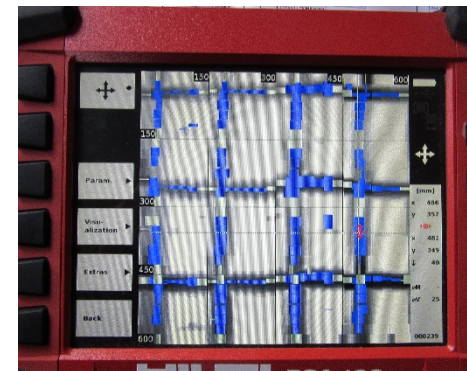


Columns tested



Stone aggregates

Site measurements and observations correspond to drawings.



Detailed scan result

Observations

Priority Actions

Problems Observed

ITEM 1: Floor Loading

Item 1 and actions

Floor Loading

Priority 1

(Immediate - Now)

- None required.

Priority 2

(within 6-weeks)

- None required.

Priority 3

(within 6-months)

- Building Engineer to prepare Loading Plans for each floor of the building based on column capacity and beam/slab capacity.
- Comply with the loading on each floor as specified in the loading plans

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 Arup.

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 a 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 us 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 alteration or additional work by the building owner will void this report.