Dekko Designs Ltd.
Dekko Washing Ltd

Purba Naroshinhapur, Ashulia, Savar, Dhaka
(23.92663N, 90.30390E)

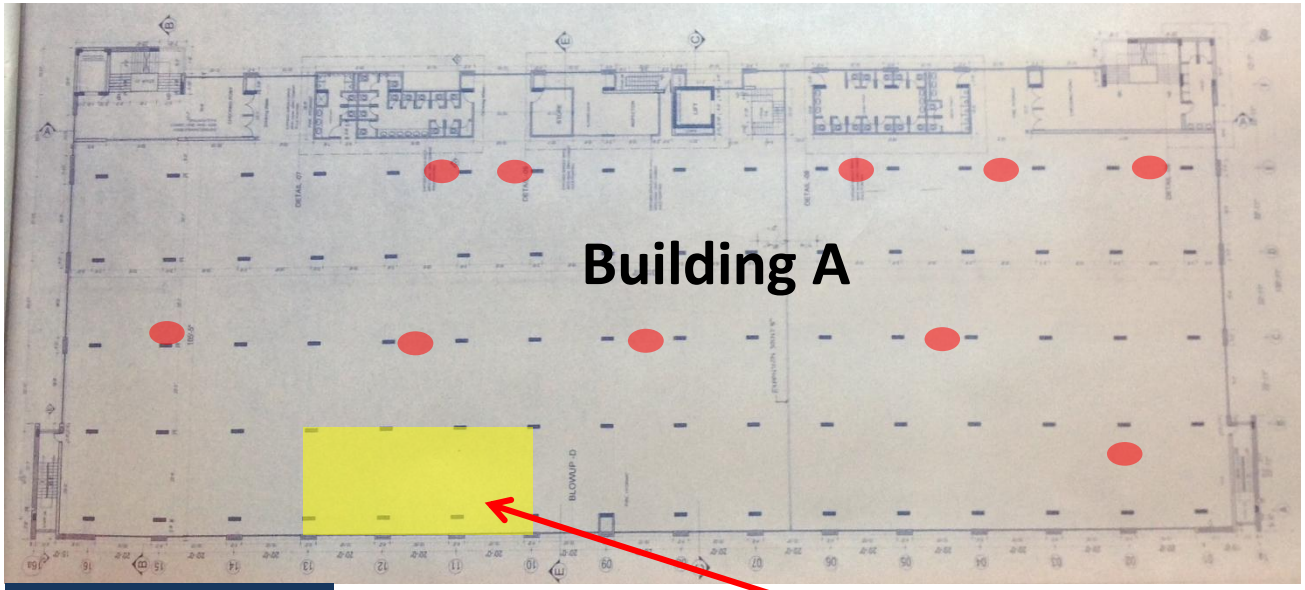
18 March 2014

ACCORD on Fire and Building Safety in Bangladesh

ARUP

Observations

Design check required for the water tanks at present roof level of Building A and the storage area on the mezzanine floor to confirm floor load capacity



Typical Floor Plan

Water Tank

- 10 no. plastic water tanks located on roof slab.
- Building Engineer to check that the slab and beams have been adequately designed to carry loads due to plastic water tanks and plinth.

- Building Engineer to prepare controlled loading plans for all floors which will designate where storage can be placed.

Mezzanine Floor – extent of Storage Area marked yellow

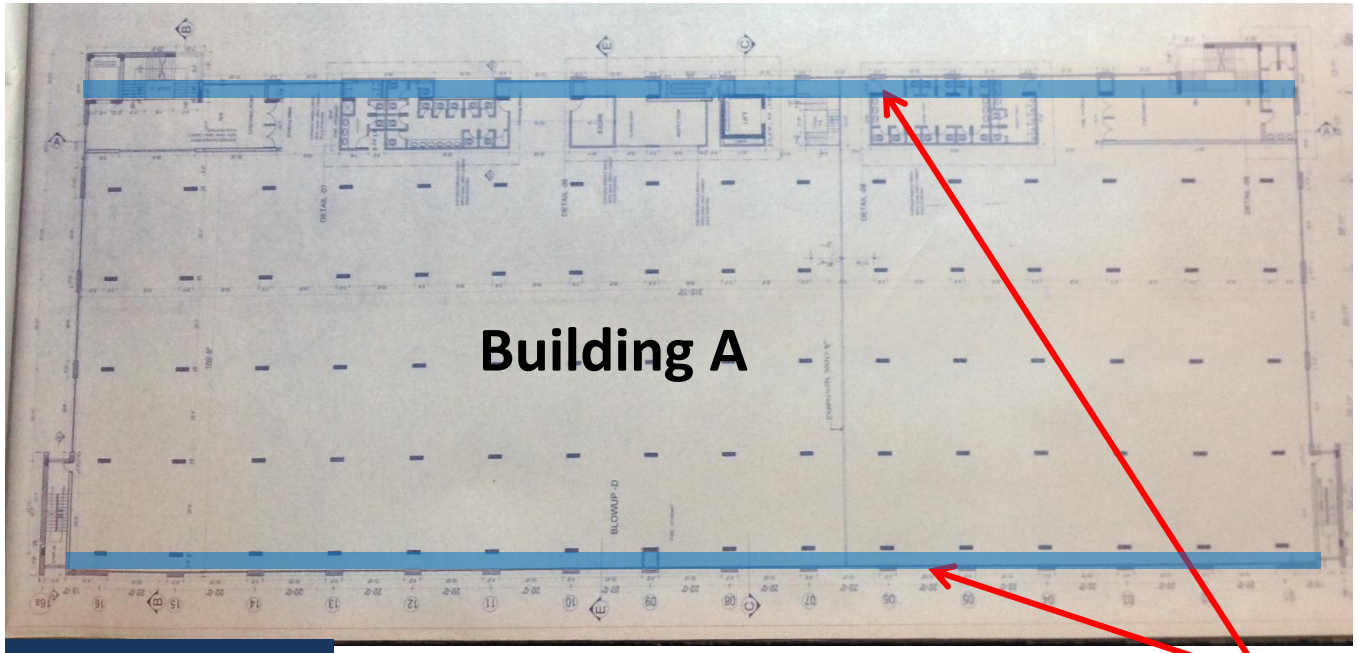
Water Tank Locations

Water Tank Loads / Load Management

ACCORD on Fire and Building Safety in Bangladesh

ARUP

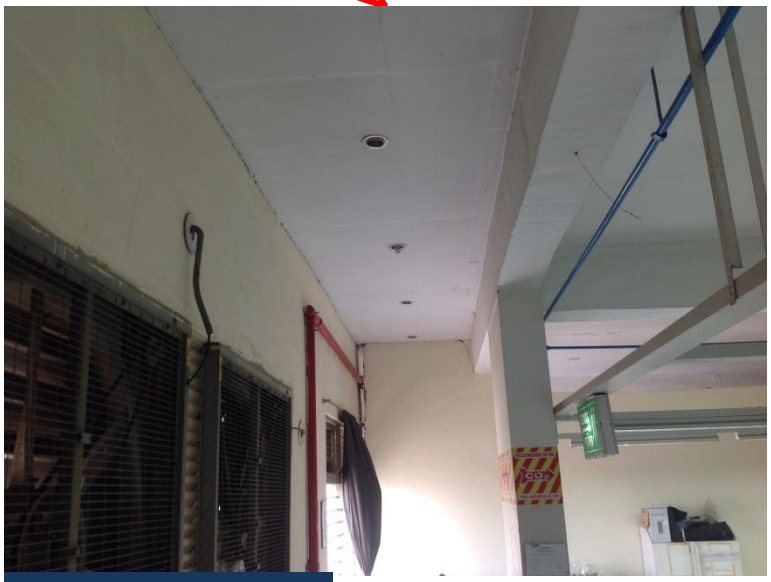
Design check required for the east and west floor cantilevers at the suspended floor levels of Building A to confirm their load capacity to support floor and façade loading



Typical Floor Plan

1.5m (avg) floor slab cantilever (no downstand beams) on west and east side from 1st floor to 4th floor

Building Engineer to check that the slab has been adequately designed to carry loading due to façade and floor loads

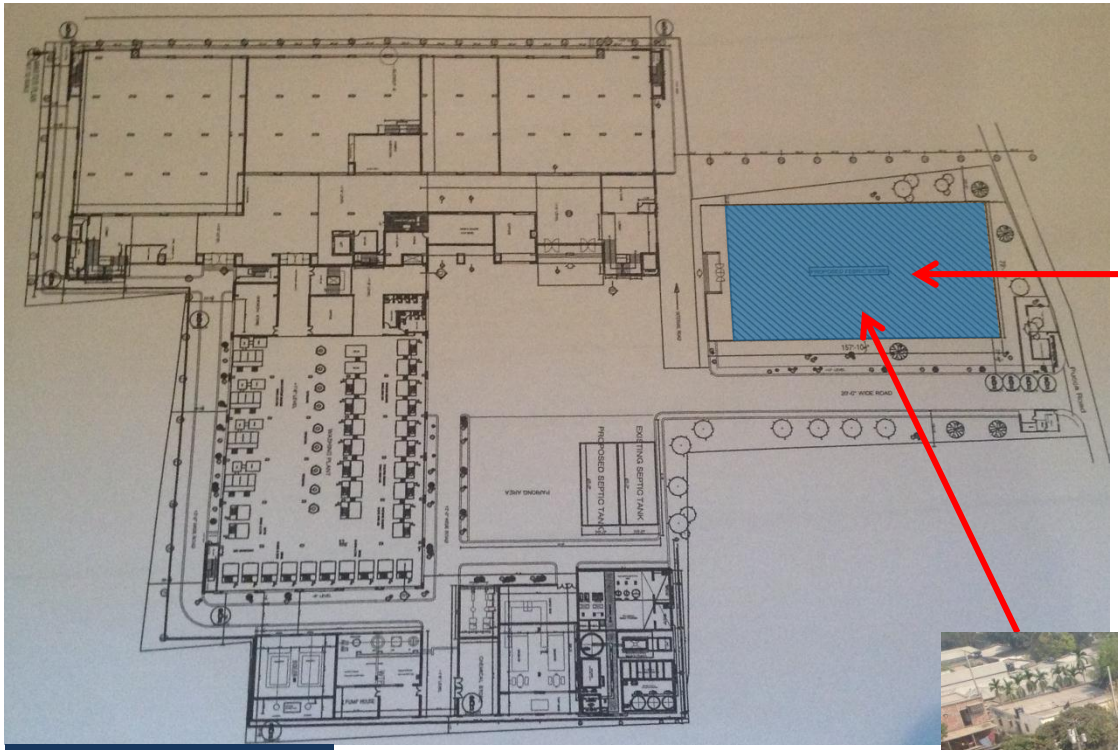


Cantilever slab

Cantilever Floor Slab

ACCORD on Fire and Building Safety in Bangladesh ARUP

Design check required for the single storey storage building (Building E) to confirm its adequacy to support wind loading



Site Plan

Additional steel structure

Additional steel structure

Additional steel storage building constructed on site as shown.

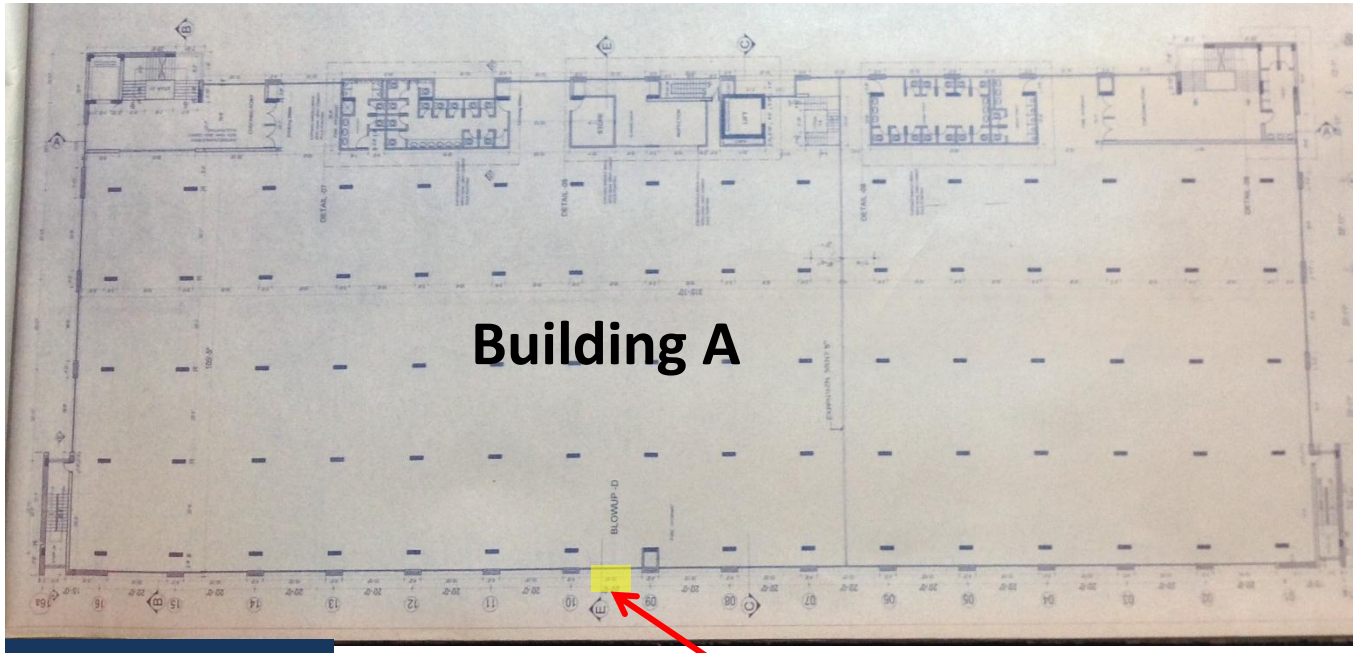
Engineer to check design of steel structure to resist high wind and lateral loads and completeness of connections on site.

Building E (Steel Storage Structure)

ACCORD on Fire and Building Safety in Bangladesh

ARUP

Design check required for the vertical ladder on the west façade of Building A



Roof Plan

External Ladder

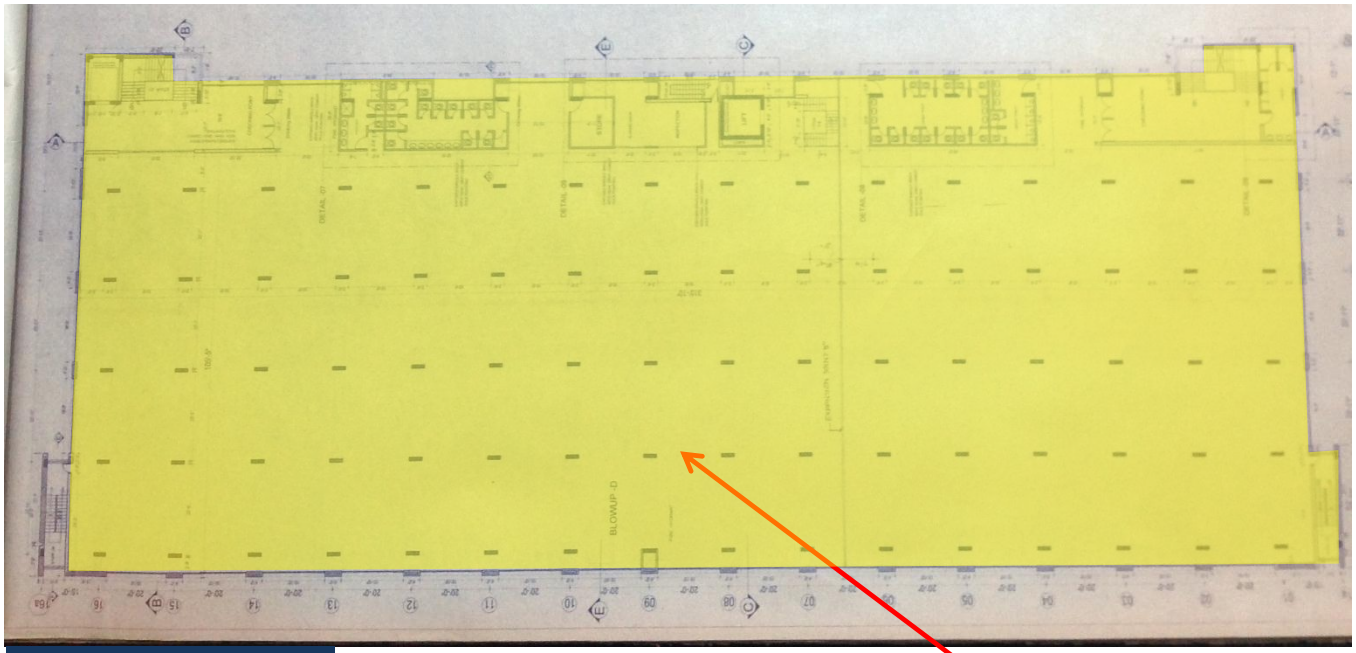
External steel ladder – Design check required to assess structure and load path for full ladder loading.

External steel stairs design check

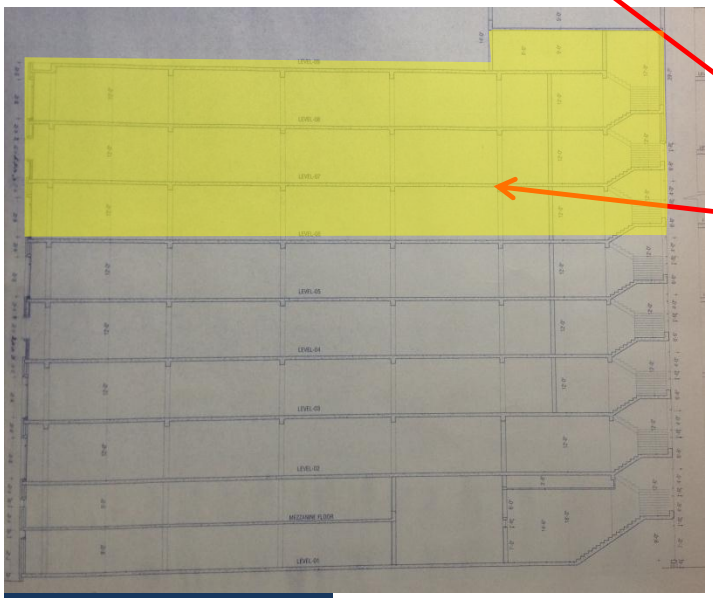
ACCORD on Fire and Building Safety in Bangladesh

ARUP

No further work is to be carried out on Building A without a full engineering submission and approval by Accord.
If this work is intended to proceed, the requirements of the Detailed Engineering Assessment are to be followed.



Plan



Section

Additional storeys should be reviewed by the Building Engineer

Permitted Additional Storeys

ACCORD on Fire and Building Safety in Bangladesh

ARUP

Priority Actions

Problems Observed

ITEM 1: Design check required for the water tanks at current roof level and the storage area on the mezzanine floor to confirm floor load capacity

ITEM 2: Design check required for the east and west floor cantilevers at the suspended floor levels to confirm their load capacity to support floor and façade loading.

ITEM 3: Design check required for the single storey storage building to confirm its adequacy to support wind loading (pressure/ suction and uplift.)

ITEM 4: Design check required for the vertical ladder on the west façade.

ITEM 5: No further work is to be carried out on Building A without a full engineering submission and approval by Accord. If this work is intended to proceed, the requirements of the Detailed Engineering Assessment are to be followed.

Item 1 and actions

Design check required for the water tanks at current roof level and the storage area on the mezzanine floor to confirm floor load capacity

Priority 1 (Immediate - Now)	• None required
Priority 2 (within 6-weeks)	• None Required
Priority 3 (within 6-months)	• Locations of loading noted to be surveyed and capacity of floor structure to be assessed by the Building Engineer to confirm that the floor slab is designed to carry these loads. • Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity including punching shear in flat slabs and column capacity.

Item 2 and actions

Design check required for the east and west floor cantilevers at the suspended floor levels to confirm their load capacity to support floor and façade loading.

Priority 1 (Immediate - Now)	• None required
Priority 2 (within 6-weeks)	• None Required
Priority 3 (within 6-months)	• Building Engineer to confirm the capacity of the slab to support the combination of the floor loading and the façade loading.

Item 3 and actions

Design check required for the single storey storage building to confirm its adequacy to support wind loading (pressure/ suction and uplift.)

Priority 1 (Immediate - Now)	• None required
Priority 2 (within 6-weeks)	• None Required
Priority 3 (within 6-months)	• Steel structure to storage area should be reviewed by the Building Engineer for wind loading and bracing added where required.

Item 4 and actions

Design check required for the vertical ladder on the west façade.

Priority 1 (Immediate - Now)	• None Required.
Priority 2 (within 6-weeks)	• None Required
Priority 3 (within 6-months)	• Building Engineer to do a design check on the ladder, and the need for handrails should also be reviewed

Item 5 and actions

Any proposed additions to the existing building structure, including the proposed additional storeys, should be reviewed by the Building Engineer.

Priority 1 (Immediate - Now)	• None required
Priority 2 (within 6-weeks)	• None required
Priority 3 (within 6-months)	• If any additions to the building structure are proposed, the Building Engineer shall provide calculations showing the structural adequacy of all columns, foundations and lateral stability systems for such work, ensuring that the requirements of the Detailed Engineering assessment are met.

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. T his 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