



Meek Sweater & Fashions Ltd.

Plot No: 1693, Bashon Sarak; Gazipur
(23.973789N, 90.374398E)
13th May 2018



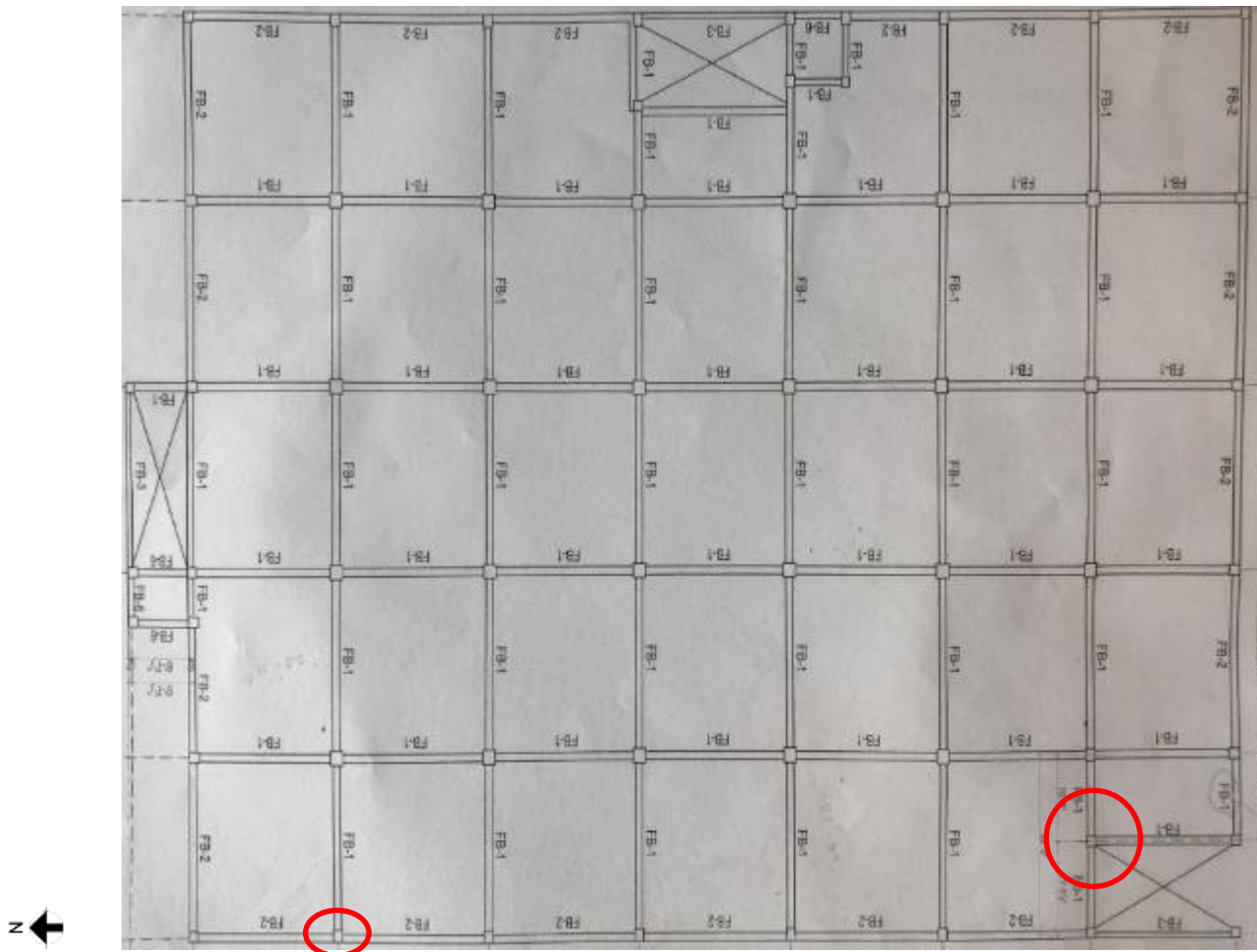


Observations



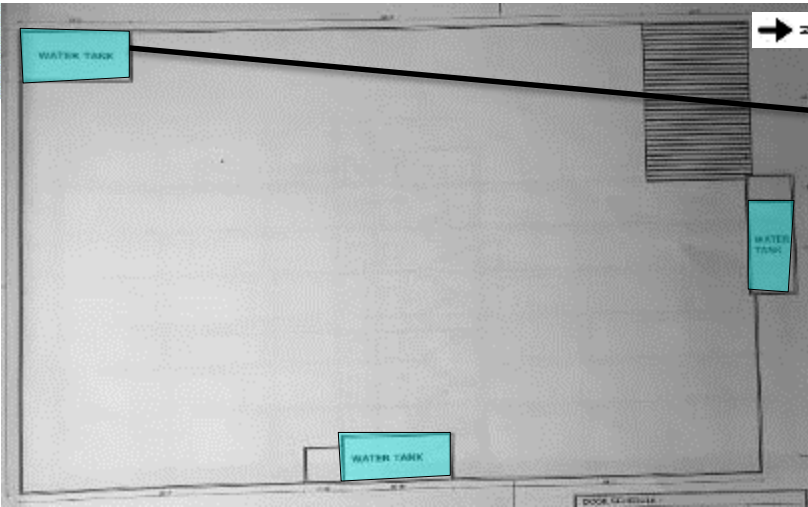
Columns and foundations appeared to be stressed above normal design limits

Observation: Production building



Cursory calculation indicates that highlighted columns appear to be stressed above normal design limits due to over head water tank and brick wall & floor built-up of toilet area. Factory engineer needs to check column stress as a part of Detail Engineering Assessment(DEA) . Factory should take necessary action according to report.

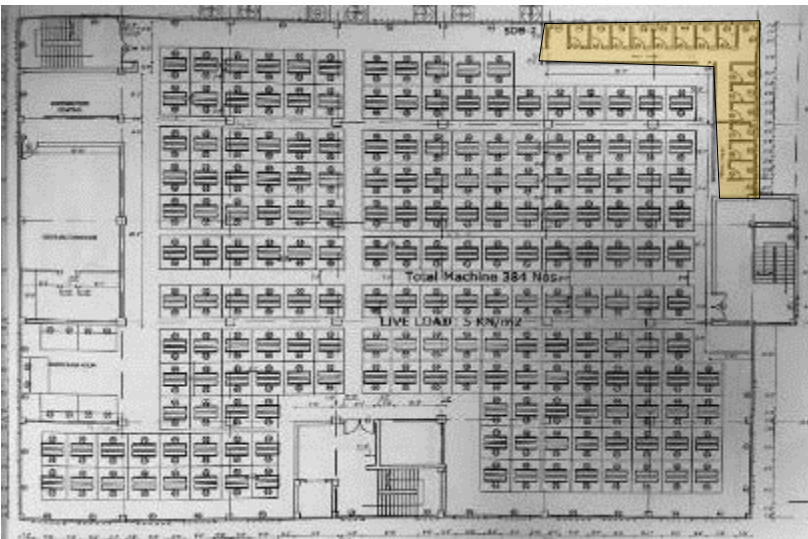
Observation: Production building



Roof Layout



Water tank (6.8mx3.1mx1.4m)

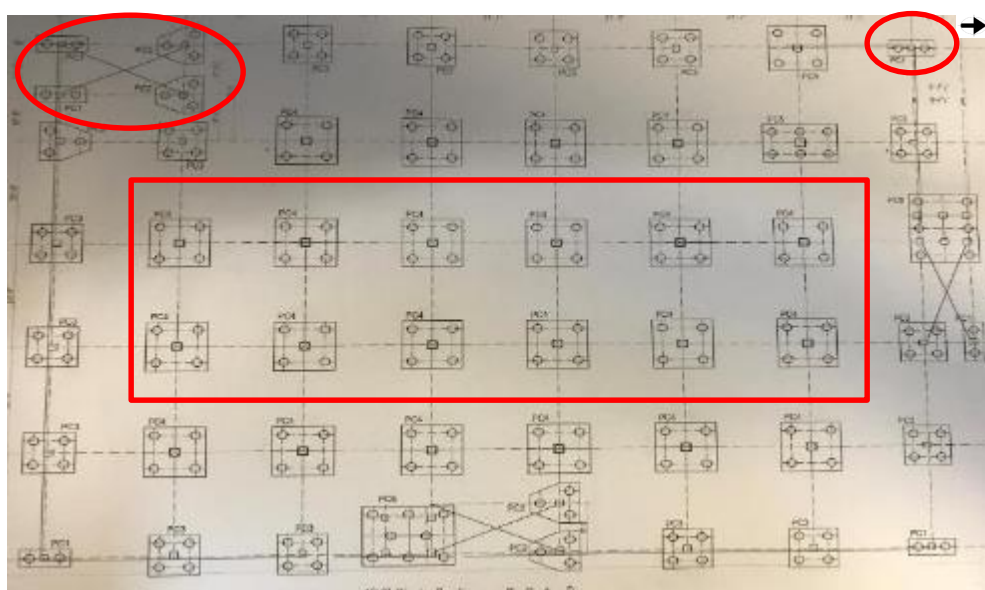


Typical floor layout

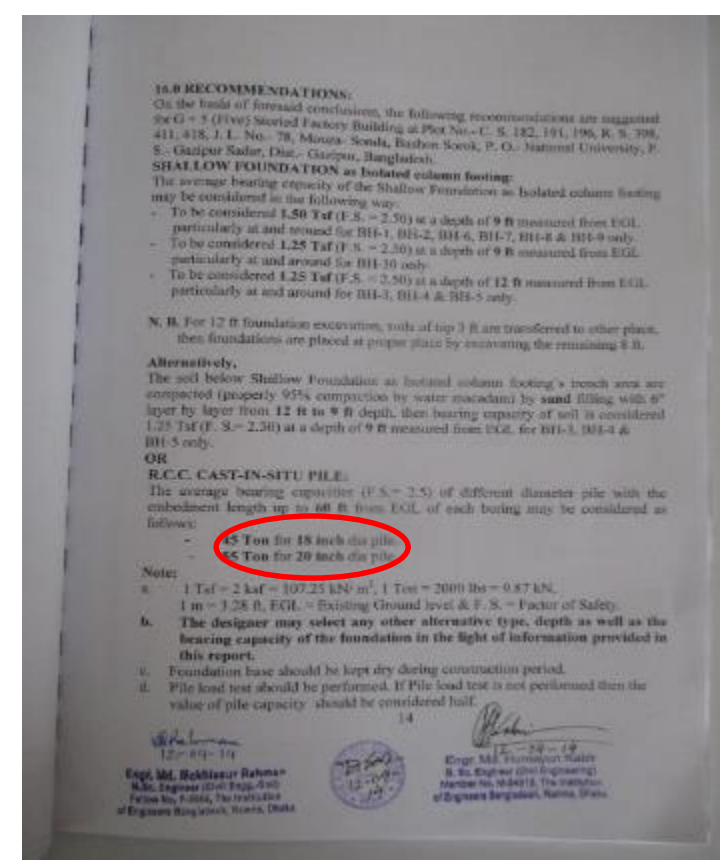


200mm built-up and 125mm thick outer brick wall on toilet area

Observation: Production building



Foundation layout plan



Recommendation of geotechnical investigation report

Cursory calculation considering the pile capacity based on soil test report indicates that pile appears to be stressed above normal design limits at marked zone. Factor of safety (FoS) is less than the minimum requirement of BNBC. Factory engineer is required to review the adequacy of pile considering actual bearing capacity of soil and comply with BNBC.

Observation: Production building



Water ingress on beam to wall joint

7 **Observation: Production building**



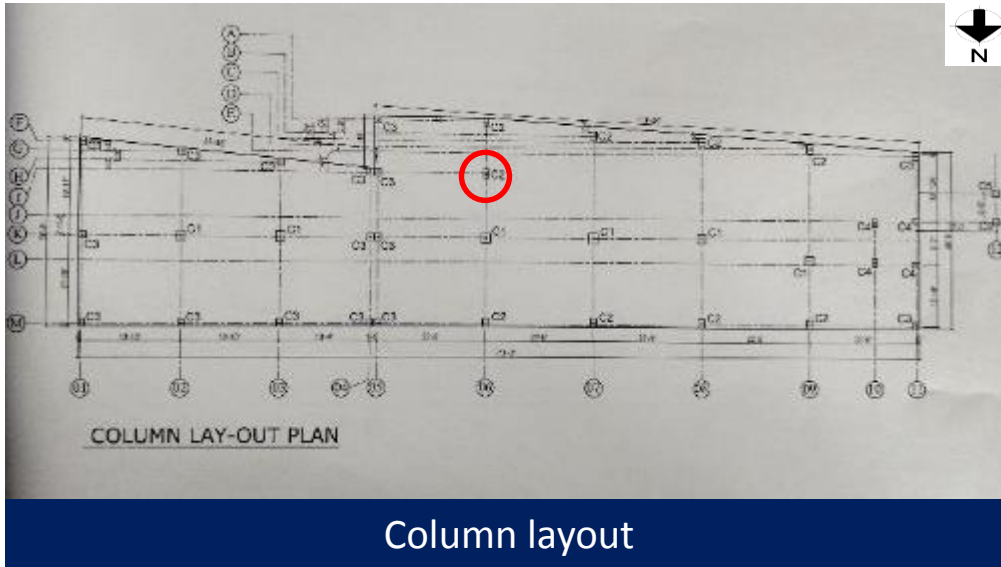
Water ingress was found on 5th floor at joint of beam and wall on south side.



Water ingress was found in several locations along with the beam to wall joint on south side. Factory engineer is required to take proper remediation for preventing further water ingress.



**Columns appeared to be stressed above
normal design limits**



Column layout

Cursory calculation indicates that highlighted columns appear to be stressed above normal design limits due to loads of water tanks and brick walls of toilet areas. Factory engineer need to check column stress as a part of Detail Engineering Assessment (DEA) and factory should be take necessary action according to report.

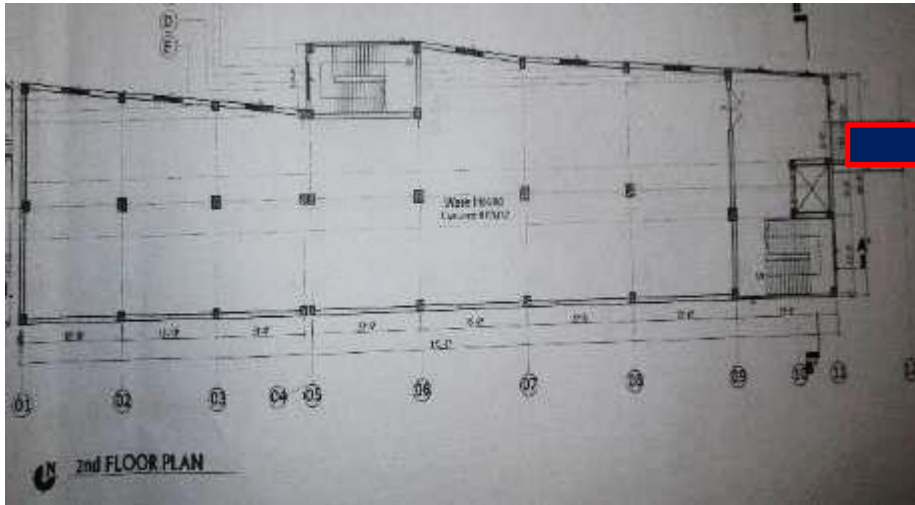


Observation: Ware House Building



Beam Adequacy check for link bridge

Observation: Ware House Building



2nd floor Plan (Ware-House Building)



Link Bridge



Connection of link bridge
(at ware house portion)



Connection of link bridge
(production portion)

Two adjacent buildings (production building & ware house building) are connected by a link bridge. Link bridge rests on floor beam, which may not be adequate to carry the load from the link bridge. Factory Engineer is required to carry out adequacy check of the beam as a part of DEA report.

Observation: Ware House Building

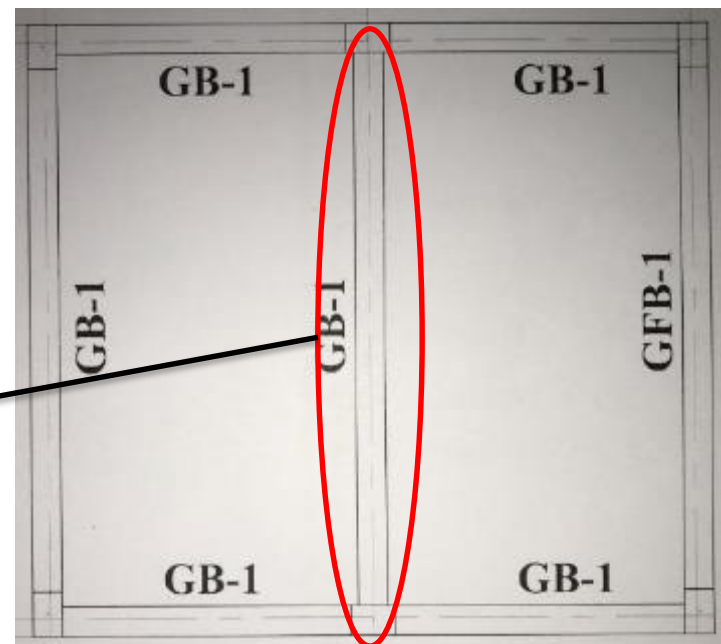


Discrepancy between as-built drawings and on site condition

Observation: Utility building (Fire hydrant pump room)



The marked grade beam was not found on site



Grade beam Layout

Factory is required to revise as-built drawings as per actual condition

Observation: Utility building (Fire hydrant pump room)



Lack of as-built documentation

**Observation: Canteen shed, Wastage store and
Washing Chemical store shed**



Canteen Shed



Wastage Shed



Washing Chemical store shed

No drawing documents was observed for the mentioned sheds. Factory is required to produce As Built documentations of those sheds.

Observation: Canteen shed, Wastage store and Washing Chemical store shed



Non-engineered steel stair beside generator room and canteen shed



Steel stair beside generator room and canteen shed

During inspection, non-engineered steel stair observed between generator room and canteen shed. Factory engineer is required to check the stair to carry superimposed loads.

Observation: Steel Stair



Bolted connection observed with brick wall to support the stair.



Stair end resting on generator room slab



Exposed rebar from slab prone to corrosion



Exposed rebar from slab of ware house building



Exposed rebar from slab of generator room

During inspection, exposed rebar was observed from slab of ware house building and generator room. Factory is required to provide anti corrosive paint on the exposed rebar to avoid corrosion.

Observation: Ware House Building and Generator Building



Problems Observed

Production building

Item 1: Columns and foundations appeared to be stressed above normal design limits

Item 2: Water ingress on beam to wall joint

Ware House Building

Item 3: Columns appeared to be stressed above normal design limits

Item 4: Beam Adequacy check of ware house building for link bridge

Utility building (Fire hydrant pump room)

Item 5: Discrepancy between as-built drawings and on site condition

Canteen & Compressor Shed, Wastage store and Washing Chemical store shed

Item 6: Lack of as-built documentation

Steel Stair beside Canteen Shed and Generator Room

Item 7: Non-engineered steel stair beside generator room and canteen shed

Ware House Building and Generator Room

Item 8: Exposed rebar from slab prone to corrosion



Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Production building Columns and foundations appeared to be stressed above normal design limits	Factory Engineer to review design, loads and columns stresses in all columns and foundation.	6-weeks
2	Production building Columns and foundations appeared to be stressed above normal design limits	Verify in-situ concrete stresses by taking 100mm diameter cores from a minimum of 4 columns. Verify grade of steel reinforcement used.	6-weeks
3	Production building Columns and foundations appeared to be stressed above normal design limits	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
4	Production building Columns and foundations appeared to be stressed above normal design limits	Detail Engineering Assessment to be completed.	6-weeks
5	Production building Columns and foundations appeared to be stressed above normal design limits	Make structural alterations as advised by Engineer.	6-months
6	Production building Columns and foundations appeared to be stressed above normal design limits	Continue to implement load plan	6-months
7	Production building Water ingress on beam to wall joint	Factory engineer is required to provide proper remedial method for preventing water ingress.	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 ACCORD DEA guideline , ACCORD standard for Assessment of Structural Integrity of Existing RMG Factory Buildings in Bangladesh (Tripartite Document), the latest version of these document should be referenced. These 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 ACCORD DEA guideline , ACCORD standard 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 see ACCORD DEA guideline & ACCORD standard more details.
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 ACCORD DEA guideline & ACCORD standard (<http://bangladeshaccord.org/factories/resource-centre/>).

Item No.	Observation	Recommended Action Plan	Recommended Timeline
8	Ware House Building Columns appeared to be stressed above normal design limits	Factory Engineer to review design, loads and columns stresses in all columns.	6-weeks
9	Ware House Building Columns appeared to be stressed above normal design limits	Verify in-situ concrete stresses by taking 100mm diameter cores from a minimum of 4 columns. Verify grade of steel reinforcement used.	6-weeks
10	Ware House Building Columns appeared to be stressed above normal design limits	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	6-weeks
11	Ware House Building Columns appeared to be stressed above normal design limits	Detail Engineering Assessment to be completed.	6-weeks
12	Ware House Building Columns appeared to be stressed above normal design limits	Make structural alterations as advised by Engineer.	6-months
13	Ware House Building Columns appeared to be stressed above normal design limits	Continue to implement load plan	6-months



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Item No.	Observation	Recommended Action Plan	Recommended Timeline
14	Ware House Building Beam Adequacy check of ware house building for link bridge	Factory Engineer is required to carry out adequacy check of link bridge supported beam as a part of DEA.	6-weeks
15	Ware House Building Beam Adequacy check of ware house building for link bridge	Carry out remedial works arise from design review(if requires).	6-months
16	Utility building (Fire hydrant pump room) Discrepancy between as-built drawings and on site condition	Factory engineer to survey the building and produce as-built documentation reflecting the as constructed condition.	6-weeks
17	Wastage store and Washing Chemical store shed Lack of as-built documentation	Factory engineer to survey the building and produce as-built documentation reflecting the as constructed condition.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
18	(Steel Stair beside Canteen Shed and Generator Room) Non-engineered steel stair beside generator room and canteen shed	Factory Engineer to review the stability of the steel stair to carry superimposed loads.	6-weeks
19	(Steel Stair beside Canteen Shed and Generator Room) Non-engineered steel stair beside generator room and canteen shed	Carry out remedial works as per assessment.	6-months
20	(Ware House Building and Generator Room) Exposed rebar from slab prone to corrosion	Factory is required to provide anti corrosive paint on the exposed rebar to avoid corrosion.	6-weeks