

A Plus Sweater LTD.

Sarifpur Road,(Maleker Bari) P.O. National University, Gazipur Sadar, Gazipur
(23.966094N,90.377113E)
22th September 2016

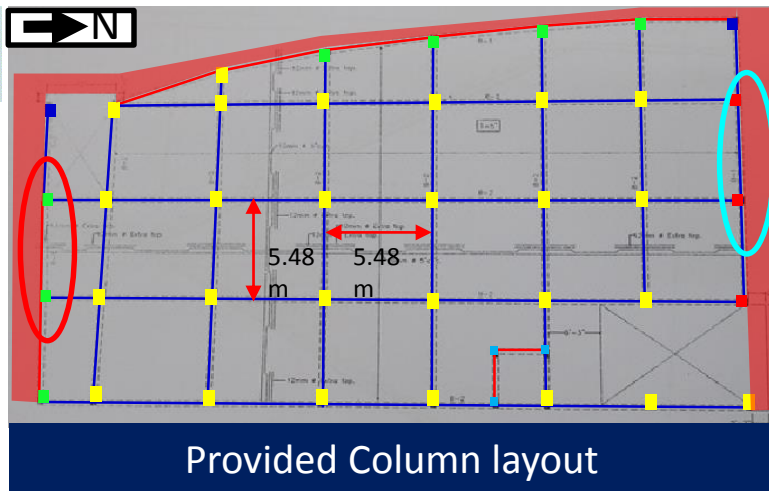




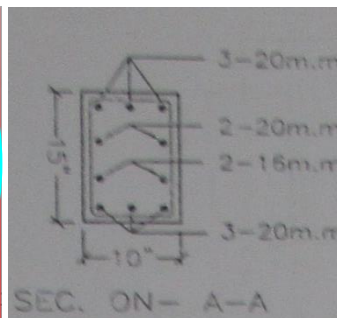
Observation



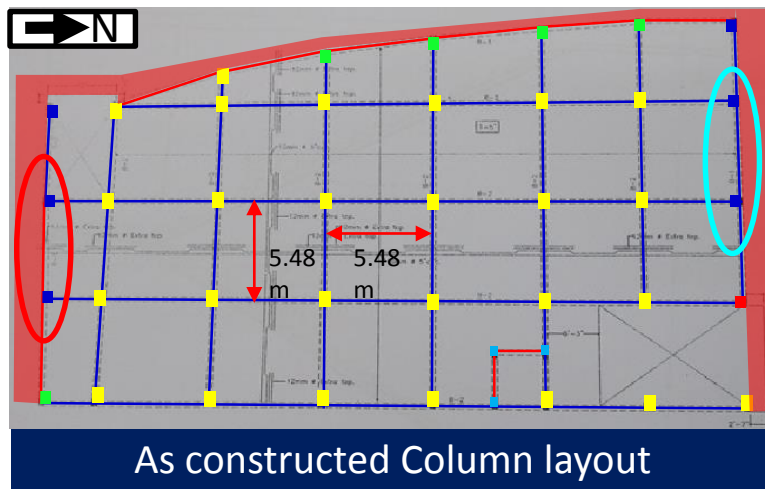
Discrepancies between provided drawing and as built condition



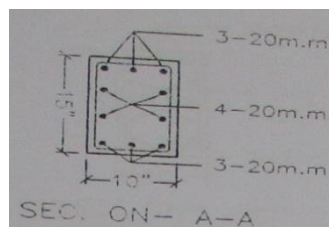
Provided Column layout



Column schedule for "Red" colour circle column



As constructed Column layout

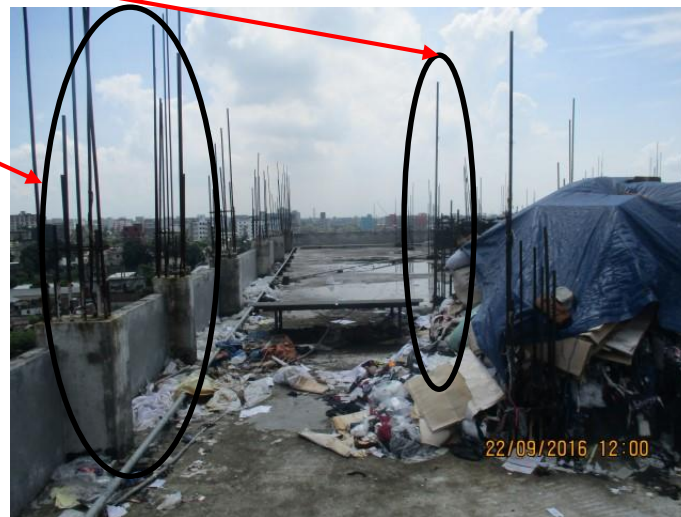
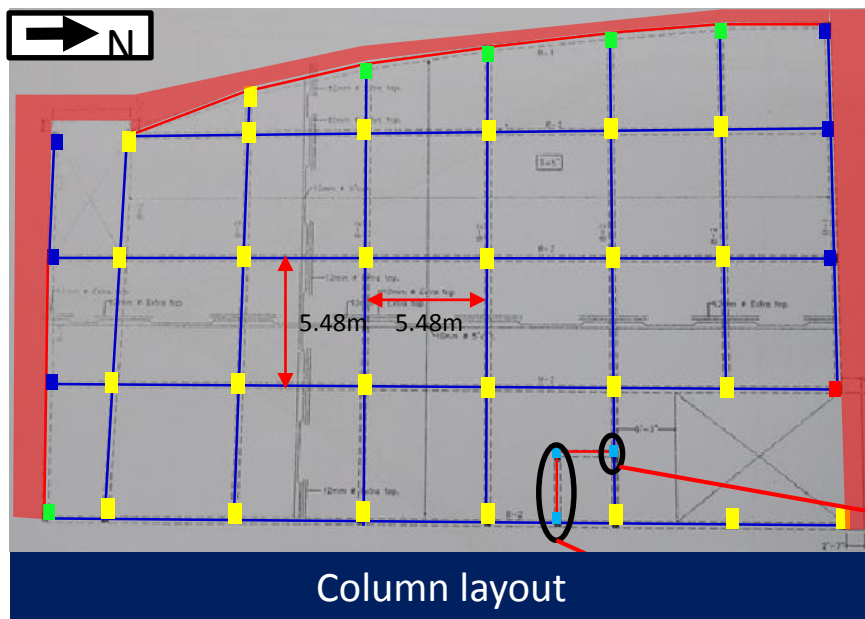


Column schedule for "Aqua" colour circle column



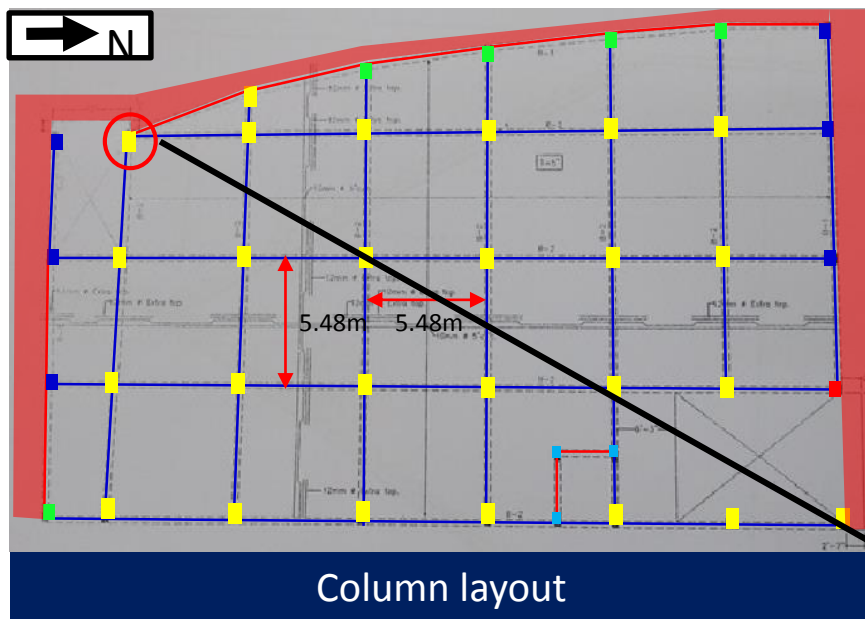
Column reinforcement did not match with schedule for the marked column

Observation:



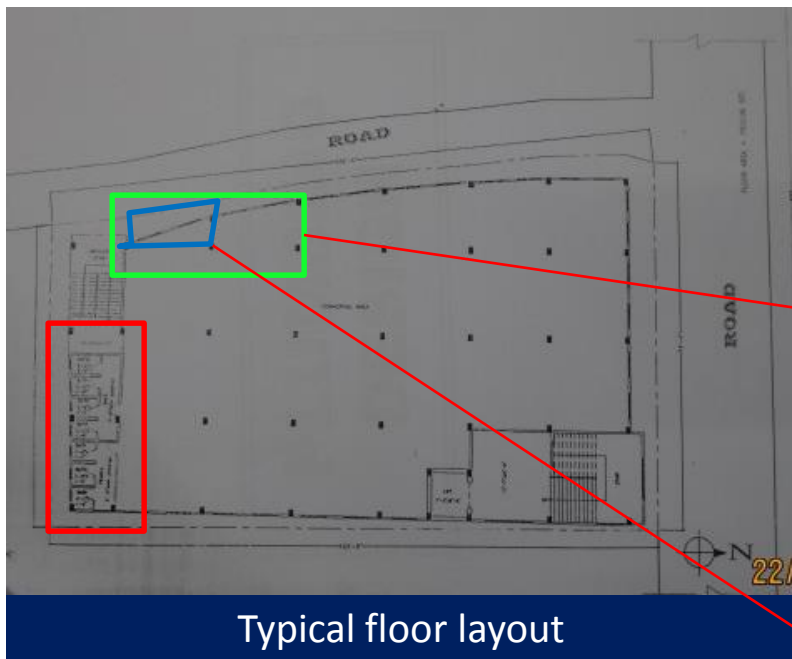
In structural drawing, no column or beam schedule were present for the marked column and beam. Also the cantilever was absent in provided drawing.

Observation:



Eccentric beam column joint found adjacent with south stair side

Observation:



Typical floor layout



Toilet area on 3rd floor



Mezzanine floor beside south stair case

In floor layout plan, the toilet area did not match with provided drawing, also a small mezzanine floor was found over ground floor just beside the south side stair case

Observation



Excessive column stresses in fully completed building (6 storeys)

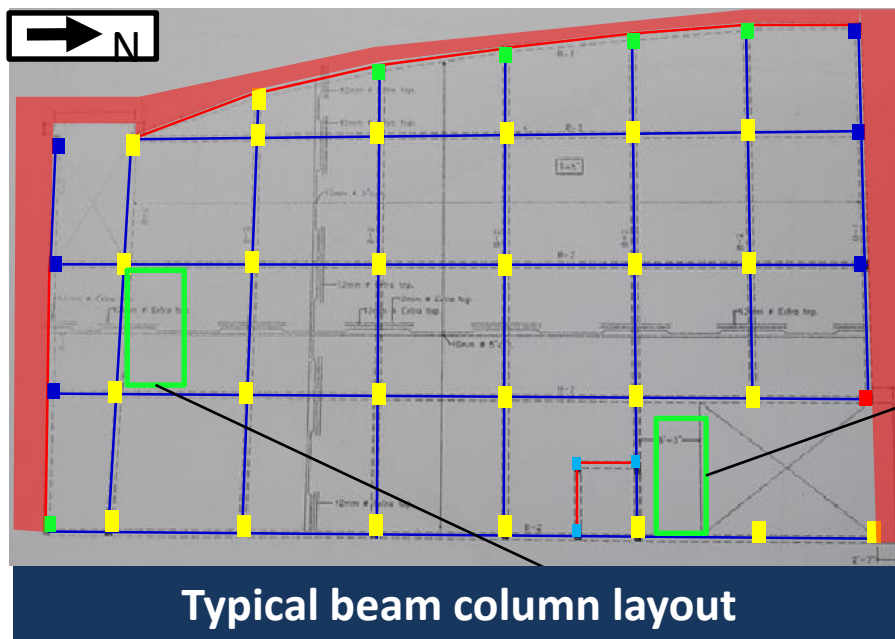


Exposed reinforcement on roof top and building permission for 6 storey indicate a sign of further extension of the building. For any future extension it may cause a significant increase in column stresses which would be required to be carried out Detail Engineering assessment.

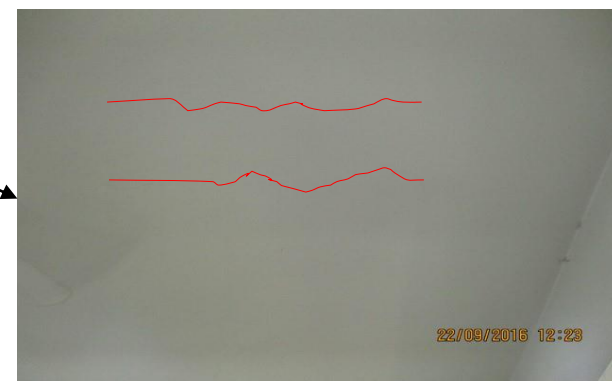
Observation:



Cracks on 3rd floor Slab



Cracks under the slab
beside north side
stair case



Cracks on slab below the
water tank

Observation:



Overloaded storage areas



Over loaded area on 4th floor



Over loaded area on 2nd floor



Over loaded area on 2nd floor



Over loaded area on roof top

Observation:



Water ponding on roof slab

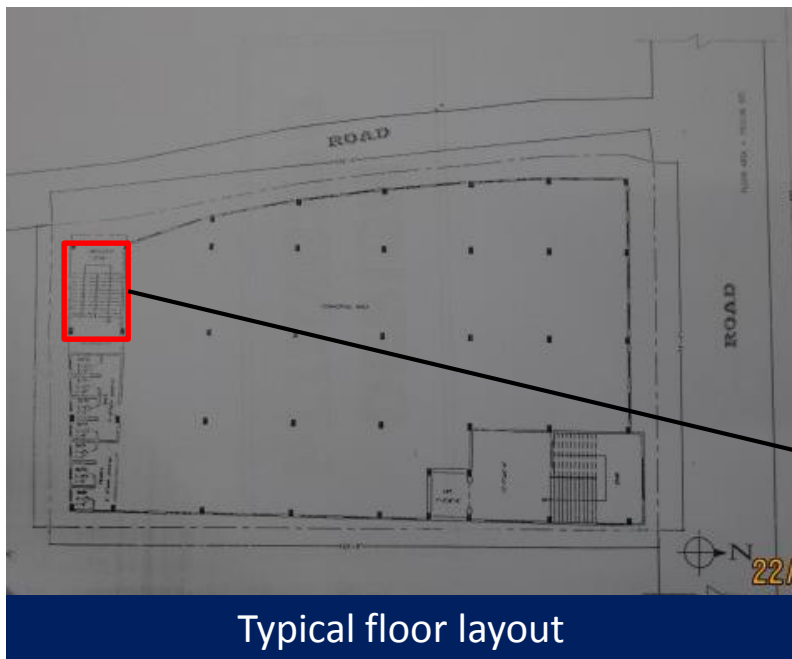


Water ponding was found in almost all over the roof area

Observation:



Lack of edge protection of Stair Case



Typical floor layout



No edge protection was found on south side stair case

Observation:



Dampness and water ingress through slab and walls



Side wall of south side stair case



Water ingress through the crack of slab
beside the north side stair case on 4th
floor.

Observation:



Discrepancy between value of boring log and value used in bearing capacity calculation of soil



6.0 BEARING CAPACITY OF SOIL:

Hole No.	Depth ft.	N field	q _u psf	Net allowable bearing capacity of soil for square footing in ksf (F.S. used 3)
1	5	4	1000	1.24
	7	8	2000	2.49
	10	12	3000	4.69
	12	12	3000	4.69
2	5	4	1000	1.24
	7	6	1500	1.85
	10	7	1750	2.16
	12	9	2250	2.78
3	5	4	1000	1.24
	7	7	1750	2.16
	10	8	2000	2.49
	12	10	2500	3.09
4	5	4	1000	1.24
	7	8	2000	2.49
	10	9	2250	2.78
	12	12	3000	4.69
5	5	4	1000	1.24
	7	8	2000	2.49
	10	9	2250	2.78
	12	11	2750	3.40

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Table of Bearing capacity of soil

CLASSIC BORING & FOUNDATION ENGINEERS BORING LOG

PROJECT : CONSTRUCTION OF RESIDENTIAL BUILDING
LOCATION : House No.- 87 Shantinagar, Durgam, P.O. C.S.- 911, R.S.- 872, P.S.- Jayashree, Dist.- Durgam
BORE HOLE : 1
GROUND LEVEL :
GROUND WATER LEVEL : 12'-0"
DATE : 16-01-2005 TIME :
BLOWN IN SPOKE PER 8 IN PEN-ETRATION
STANDARD PENETRATION RESISTANCE
BLOW PER FOOT OF PENETRATION
HOLE SIZE
HOLE DEPTH
HOLE DIAMETER

DATE	TIME	DEPTH OF BORE HOLE IN FEET	DESCRIPTION OF MATERIALS	BLows IN SPOKE PER 8 IN PEN-ETRATION	STANDARD PENETRATION RESISTANCE	BLOW PER FOOT OF PENETRATION	HOLE SIZE	HOLE DEPTH	HOLE DIAMETER
01		1.5'-0"	Brownish gray very soft CLAY medium plastic.	8	8	1	8"	1'-0"	8"
02		1.5'-0"		8	8	1	8"	1'-0"	8"
03		1.5'-0"	Brownish gray medium stiff SILT, trace sand, medium compressible.	1	1	1	8"	1'-0"	8"
04		1.5'-0"		2	2	2	8"	1'-0"	8"
05		1.5'-0"	Brownish gray medium stiff clay, trace sand, silt, medium plastic.	1	1	1	8"	1'-0"	8"
06		1.5'-0"		2	2	2	8"	1'-0"	8"
07		1.5'-0"		2	2	2	8"	1'-0"	8"
08		1.5'-0"	Gray stiff CLAY, trace sand, medium plastic.	2	2	2	8"	1'-0"	8"
09		1.5'-0"		3	3	3	8"	1'-0"	8"
10		1.5'-0"	Light brown very stiff SILT, trace sand, medium plastic.	4	4	4	8"	1'-0"	8"
11		1.5'-0"		5	5	5	8"	1'-0"	8"
12		1.5'-0"	Light brown very stiff CLAY (gray sand), trace sand, medium compressible.	6	6	6	8"	1'-0"	8"

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Boring log

The Standard Penetration Test (SPT) value (N value) of boring log didn't match with the value used in bearing capacity calculation which may change the existing bearing capacity of soil. Factory engineer shall revise the soil test report considering the actual value of Boring log.

Observation:



Problems Observed

Main Factory Building:

- Item 1: Discrepancies between provided drawing and as built condition
- Item 2: Excessive column stresses in fully completed building (6 storeys)
- Item 3: Cracks on 3rd floor slab.
- Item 4: Overloaded storage areas
- Item 5: Water ponding on roof slab.
- Item 6: Lack of edge protection of stair case
- Item 7: Dampness and water ingress through slab and walls
- Item 8: Discrepancy between value of boring log and value used in bearing capacity calculation of soil.



Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Discrepancies between provided drawing and as built condition	Factory Engineer to update the drawings to “as-constructed” status.	6-weeks
2	Discrepancies between provided drawing and as built condition	Building engineer to investigate the whole building and Conduct Engineering Assessment (EA) especially for foundation.	6-weeks
3	Discrepancies between provided drawing and as built condition	Implement remedial work if necessary.	6-months
4	Excessive column stresses in fully completed building (6 storeys)	Any extensions or modifications of the existing building needs to be carryout Details Engineering assessment by a Structural Engineer and in full compliance with the BNBC provision.	6-months
5	Cracks on 3rd floor slab	Building engineer to check the crack and analyze the slab capacity considering the crack.	6-weeks
6	Cracks on 3rd floor slab	Carry out remedial works resulting from engineering assessment .	6-months



Item No.	Observation	Recommended Action Plan	Recommended Timeline
7	Overloaded storage areas	The quantity of the stored materials must be reduced up to 2KPa.	6-weeks
8	Overloaded storage areas	Building Engineer to prepare a Load Plan for each level	6-weeks
9	Overloaded storage areas	Reduce loading to the recommendations of the loading plans	6-months
10	Water ponding on roof slab	Provide proper drainage and water proofing layer with appropriate water proofing materials	6-weeks
11	Lack of edge protection at roof level	Provide edge protection as per suggestion of building engineer	6-weeks
12	Dampness and water ingress through slab and walls	Factory Engineer to inspect water damaged structures and repair with a suitable methods.	6-months
13	Discrepancy between value of boring log and value used in bearing capacity calculation of soil	Factory engineer to revise the soil test report and assess the adequacy of all foundations considering the corrected bearing capacity.	6-weeks
14	Discrepancy between value of boring log and value used in bearing capacity calculation of soil	Implement remedial work if necessary	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 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/>).