



Space Sweater Ltd. (Jogitala)

Shi-145/1, Jogitola, Joydebpur, Gazipur
(23.973670N, 90.405423E)
2nd July 2018

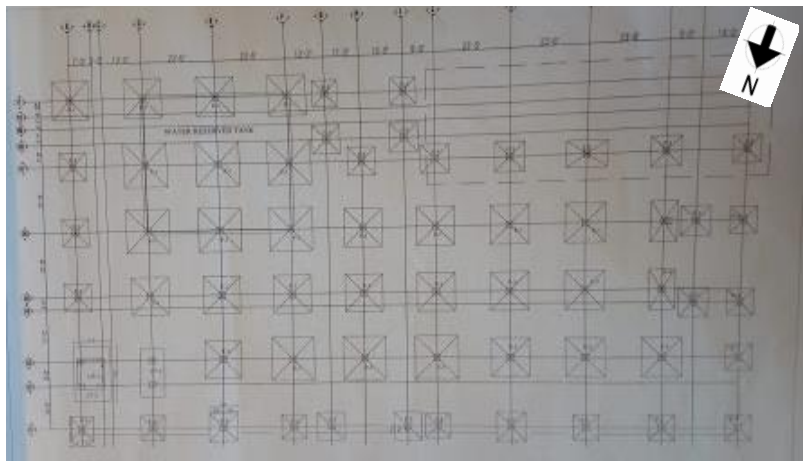




Observations



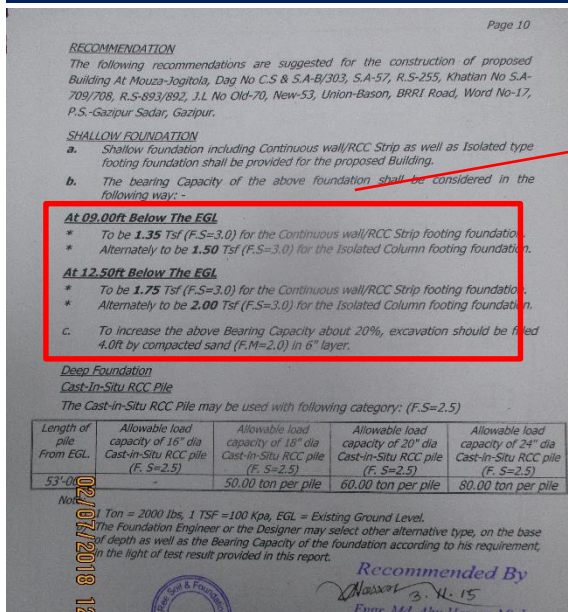
**Foundation to be stressed above normal
design limit**



Foundation layout plan

Casting 1:1.5:3									Foundation Schedule	
ID	CU		DIMENSION						Area (Both direction)	Cost (Both direction)
	L	B	D1	D2	D3	D4	D5			
F-1	12'-6"	12'-6"	10'-0"	10'	10'	10'	10'	1-2086.000	1-2086.000	
F-2	12'-0"	12'-0"	10'-0"	10'	10'	10'	10'	1-1680.000	1-1680.000	
F-3	12'-0"	12'-0"	10'-0"	10'	10'	10'	10'	1-2086.000	1-2086.000	
F-4	12'-6"	12'-6"	10'-0"	10'	10'	10'	10'	1-2086.000	1-2086.000	
F-5	12'-0"	12'-0"	10'-0"	10'	10'	10'	10'	1-1680.000	1-1680.000	
F-6	12'-0"	12'-0"	10'-0"	10'	10'	10'	10'	1-1680.000	1-1680.000	

Foundation Schedule



Recommendation of geotechnical investigation report

At 09.00ft Below The EGL

- * To be **1.35 Tsf** (F.S=3.0) for the Continuous wall/RCC Strip footing foundation.
- * Alternately to be **1.50 Tsf** (F.S=3.0) for the Isolated Column footing foundation.

At 12.50ft Below The EGL

- * To be **1.75 Tsf** (F.S=3.0) for the Continuous wall/RCC Strip footing foundation.
- * Alternately to be **2.00 Tsf** (F.S=3.0) for the Isolated Column footing foundation.
- c. To increase the above Bearing Capacity about 20%, excavation should be filled 4.0ft by compacted sand (F.M=2.0) in 6" layer.

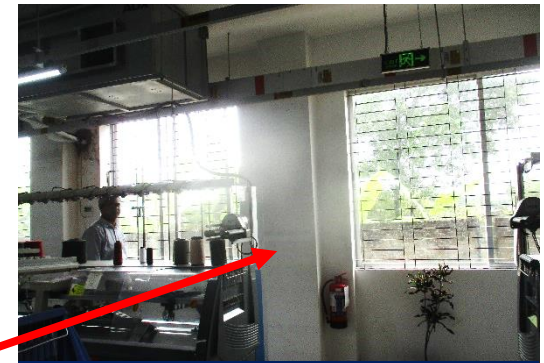
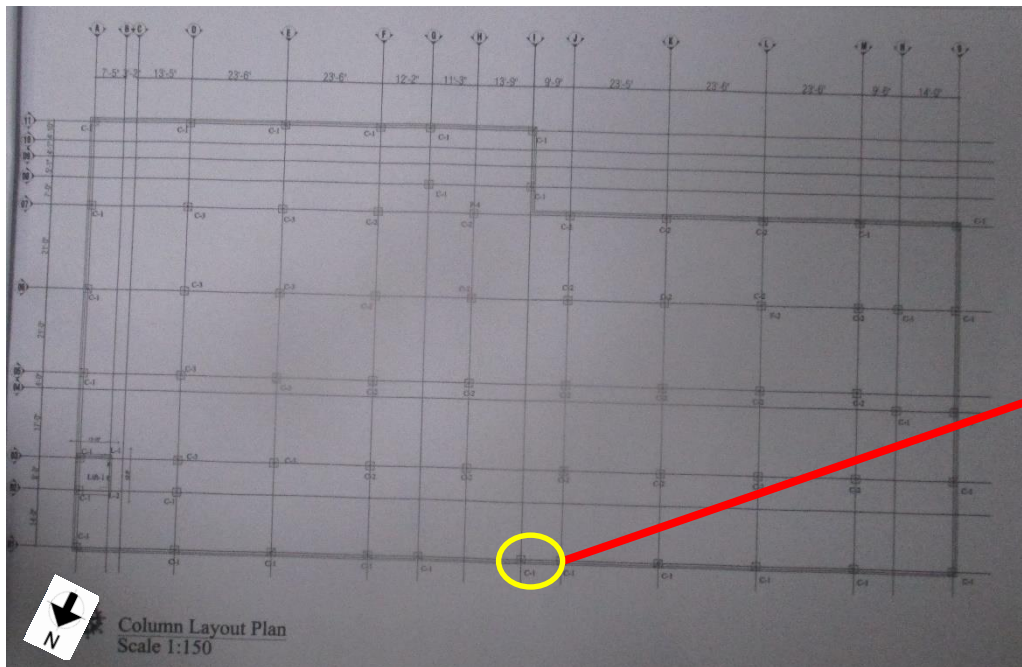
Recommended soil bearing capacity 1.5 Tsf for 9 ft. (2.74 m) depth, Considering FoS = 3

Cursory calculation indicates that foundation appears to be stressed above normal design limits. Factor of safety (FoS) is less than the minimum requirement of BNBC. Factory engineer is required to review the adequacy of foundations considering actual depth and bearing capacity of footing and comply with BNBC.

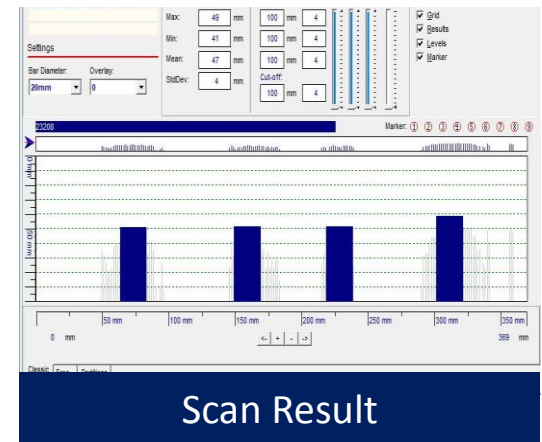


Discrepancies between provided drawings and on site condition

Observations: Production Building



C-1 type column



Casting 1:1.5:3

COLUMN SCHEDULE				
TYPE	BASE	GROUND FLOOR	1ST TO 2ND FLOOR	3RD TO TOP FLOOR
C-1	4-25mm# 10mm# @4 c/c 12-20mm#	4-25mm# 10mm# @5x7 c/c 12-20mm#	4-25mm# 10mm# @5x7 c/c 12-20mm#	16-20mm# 10mm# @5x7 c/c
C-2	4-25mm# 16-20mm# 10mm# @4 c/c	4-25mm# 16-20mm# 10mm# @5x7 c/c	4-25mm# 16-20mm# 10mm# @5x7 c/c	20-20mm# 10mm# @5x7 c/c
C-3	4-25mm# 10mm# @4 c/c 20-20mm#	4-25mm# 10mm# @5x7 c/c 20-20mm#	4-25mm# 10mm# @5x7 c/c 20-20mm#	24-20mm# 10mm# @5x7 c/c
L-1	20-20mm# 10mm# @4 c/c	20-25mm# 10mm# @5x7 c/c	20-25mm# 10mm# @5x7 c/c	20-25mm# 10mm# @5x7 c/c
L-2	14-25mm# 10mm# @4 c/c	14-25mm# 10mm# @5x7 c/c	14-25mm# 10mm# @5x7 c/c	14-25mm# 10mm# @5x7 c/c

Number of rebar for C-1 column does not match with column schedule. 12 nos. of rebar were found by ferro scan whereas 16 nos. of rebars are shown in column schedule.



Water ponding on roof

Observation : Production Building



Stagnant water on roof



Improper Drainage

Water ponding was found at roof of the production building. Factory is required to improve water drainage system to avoid water clogging.



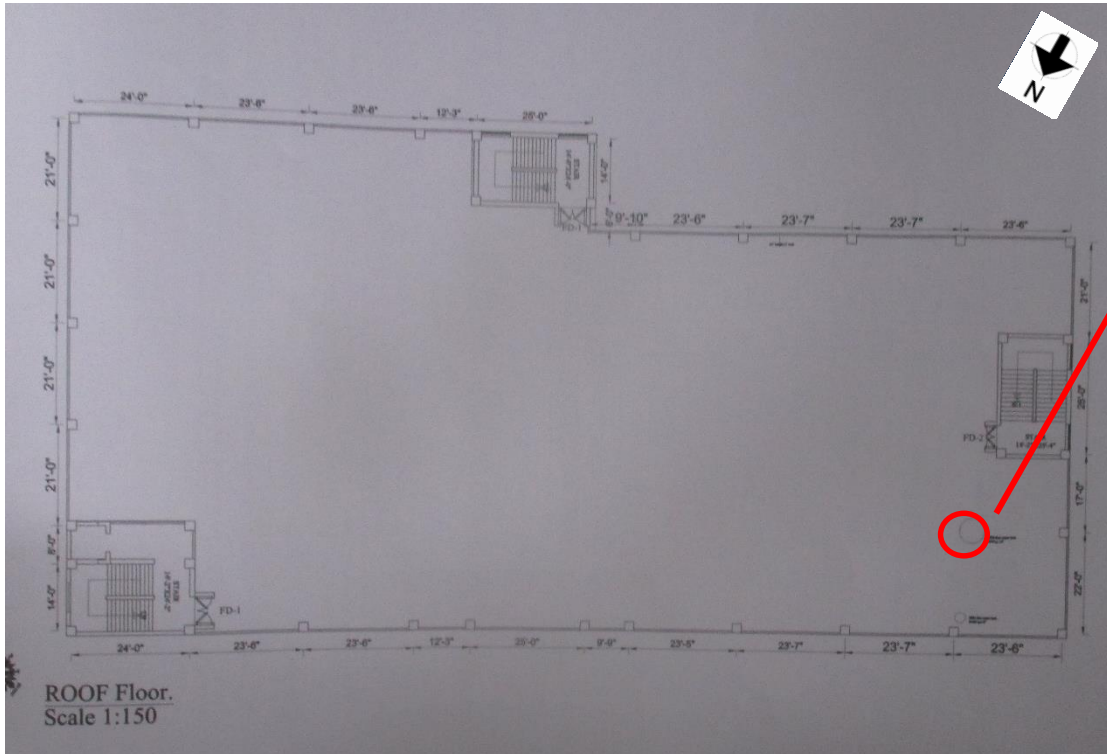
Stagnant water on roof

Observation : Production Building



Heavy water tank on roof

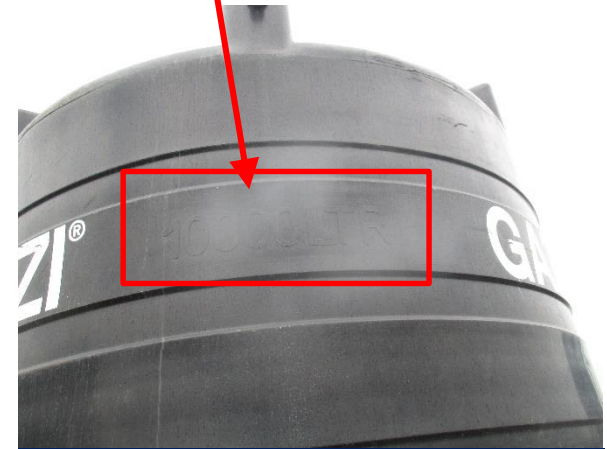
Observation : Factory Building



Roof Plan



Roof Plan



Having 10,000 liters capacity

Over head plastic water tank having 10,000 & 5000 liters capacity was found at west side of roof

Observation : Factory Building



No structural drawings for ancillary buildings

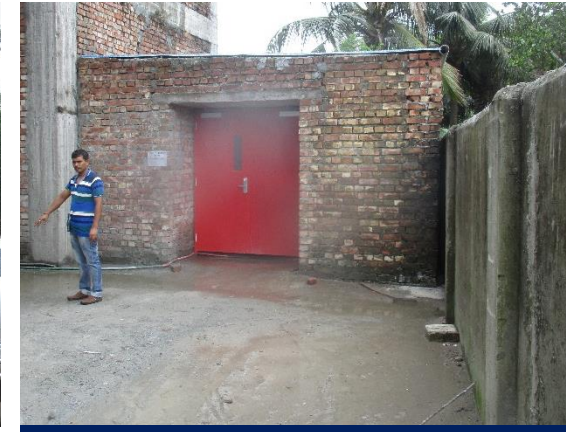
**Observations: Utility Building, Fire Pump Room
Medical & Day Care Building and Gas Cylinder Room**



Utility Building



Fire pump room



Gas Cylinder room



Medical & Day care building

Structural drawings are not prepared for ancillary structures.

**Observations: Utility Building, Fire Pump Room
Medical & Day Care Building and Gas Cylinder Room**



Exposed rebar and Falling hazards on the roof



All exposed reinforcement must have adequate protection from the elements. Currently the exposed reinforcement is prone to corrosion. Also, falling hazards due to unprotected edge of under construction utility building.



Expose rebar



Unprotected edge



Lack of water proofing

Observation : Utility Building



Water ponding was found at roof of the Utility building. Stagnant of water was seen during inspection. Factory is required to improve water drainage system to avoid water clogging.



Stagnant water on roof



Stagnant water due to improper drainage system

Observation : Utility Building



Problems Observed

Production Building:

- Item-1:** Foundation to be stressed above normal design limit.
- Item-2:** Discrepancies between provided drawings and on site condition.
- Item-3:** Water ponding on roof.
- Item-4:** Heavy water tank on roof.

Utility Building, Fire Pump Room, Medical & Day Care Building and Gas Cylinder Room:

- Item-5:** No structural drawings for ancillary buildings.

Utility Building:

- Item-6:** Expose rebar and falling hazard risk at roof.
- Item-7:** Lack of water proofing.



Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	(Production Building) Foundation to be stressed above normal design limit	Maintain 3kPa live load on typical floor and 2kPa on toilet zone.	6-weeks
2	(Production Building) Foundation to be stressed above normal design limit	Factory Engineer to review design, loads and footings stresses and a Detail Engineering Assessment to be completed.	6-weeks
3	(Production Building) Foundation to be stressed above normal design limit	Produce and actively manage a loading plan for all floor plates within the factory, giving consideration to floor, column and foundation capacity.	6-weeks
4	(Production Building) Foundation to be stressed above normal design limit	Complete implementation of remedial works deemed necessary by the review design.	6-months
5	(Production Building) Foundation to be stressed above normal design limit	Continue to implement loading plan.	6-months
6	(Production Building) Discrepancies between provided drawings and on site condition	Building Engineer to confirm the number of rebar in columns and prepare accurate as-built survey information for the building.	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
7	(Production Building) Water ponding on roof	Factory is required to provide water proofing layer and improve water drainage system to avoid water clogging.	6-weeks
8	(Production Building) Heavy water tank on roof	Verify that supporting structures have adequate capacity to support heavy loading such as (10,000 liters) plastic water tank.	6-weeks
9	(Production Building) Heavy water tank on roof	Remedial works to be carried out if required.	6-months
10	(All ancillary buildings) No structural drawings for ancillary buildings	Prepare an “as constructed” drawings which reflect the actual site dimensions with complete structural information.	6-weeks
11	(Utility Building) Expose rebar and falling hazard risk at roof	All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete.	6-weeks
12	(Utility Building) Expose rebar and falling hazard risk at roof	Provide periphery railing/parapet wall to avoid possible falling hazard.	6-weeks
13	(Utility Building) Lack of water proofing	Factory is required to provide water proofing layer and improve water drainage system to avoid water clogging.	6-weeks