Soultex Fashion Ltd

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1. Building Information

Main Building: A two-storied pre-fabricated steel structure. An extension of the Main building (loading-unloading shed) at the east side.

RC Building: This is a five-storied (G+4) RC building including a steel shed on the roof.

Sub-Station Building: This is single storied masonry structure with a RC roof slab.

Boiler Shed: This is single storied light weight steel shed supported by masonry wall and steel pipe column.

Winding Shed: This is a single storied masonry structure with light weight steel roof shed.

2. Observation

Observation-01: Lack of lateral stability system (Main Building).

Main Building

Description: The compression member was absent in the bracing system which may cause inactive lateral stability of the roof. Also, for the ground floor, pin connection is provided along east-west direction, but no vertical bracing or resisting system is provided along that direction.

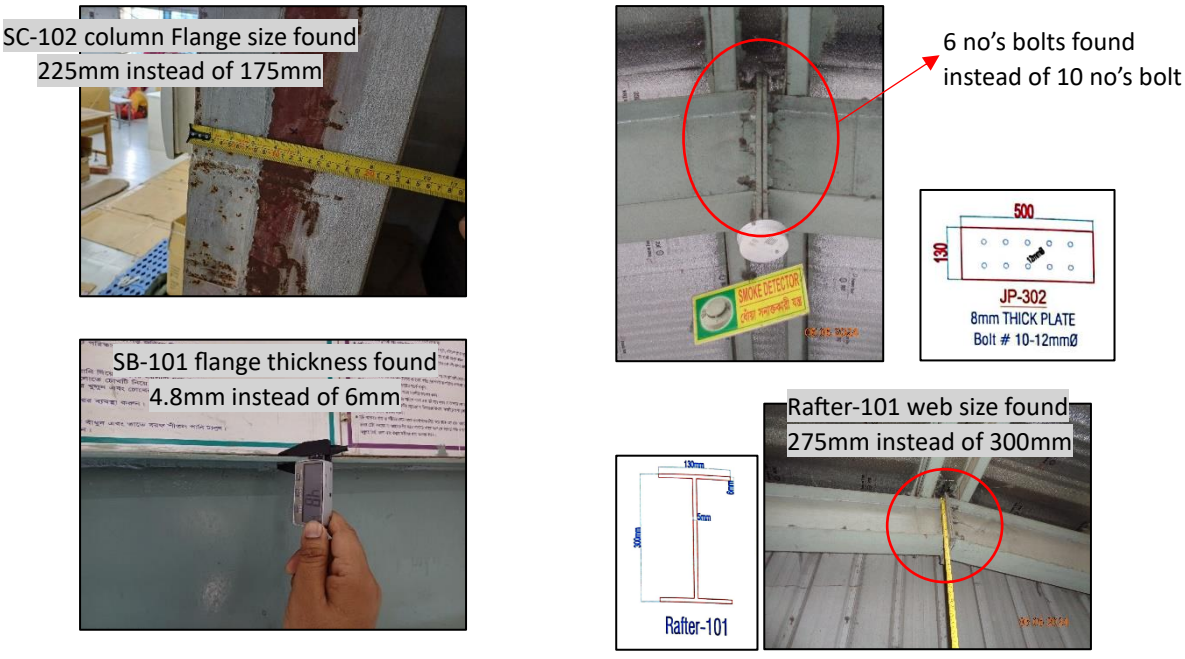
During inspection, geotechnical investigation report was not available. Also load plan was not found for the Main building.

The building engineer is required to check the lateral stability system of the structure, perform geotechnical investigation & check foundation adequacy for the structure, Produce & actively manage a loading plan for all floor plates within the factory based on floor, column & foundation capacity and suggest necessary remedial action accordingly.

Observation-02: Marginally Stress in column exceeds normal design limit for the extension part of Main building (loading-unloading shed).

Description: During inspection an undocumented and non-engineered horizontal extension (loading-unloading shed) was observed at the front of Main building**.** The cursory calculation indicates that stress in the marked column exceeds the normal design limit considering provided floor live load of 6 kPa for 1st floor floor, roof live load of 1 kPa considering minimum steel strength (248 Mpa). The building engineer is required to review the design, loads, and column stresses for the marked columns based on in-situ material strength. The factory engineer is also required to Produce and actively manage a loading plan for all floor plates within the factory based on floor, column & foundation capacity.

Observation-03: Mismatch found in structural drawings (Main Building).



Description: Mismatch was observed in beam, rafter and column of Main building's drawings. Also, the drawings for the sub-structure were not available.

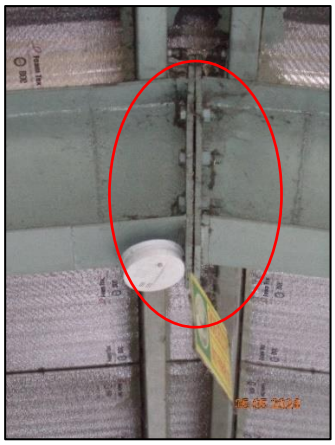
The building Engineer is required to survey the whole structure and prepare the as built drawings as per site condition.

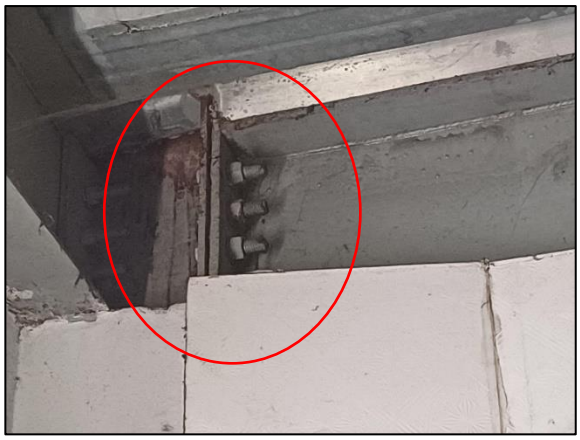
Observation-04: Corrosion found on steel members at different locations (Main Building).

Main Building

Description: Corrosion was found on steel members at different locations of Main building. The factory is required to identify the locations, remove corrosion and provide rust-proof coating on all steel members to protect them from rusting.

Observation-05: Connection gap at different locations (Main Building).





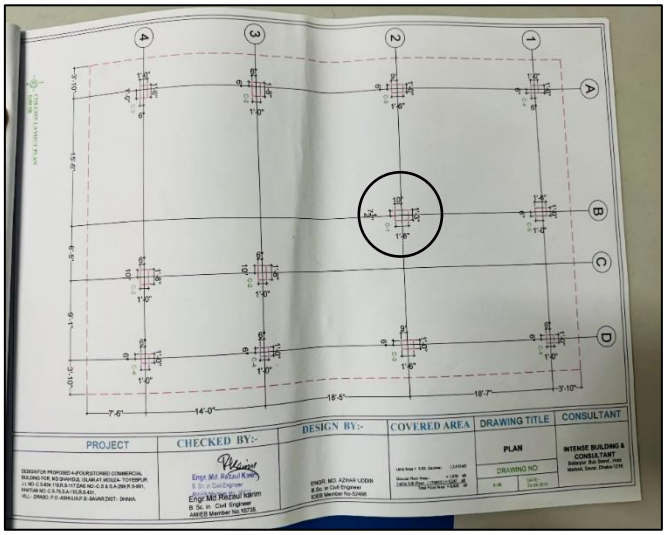
Main Building

Description: During inspection, connection gap was observed at different location of Main building. The factory is required to fill the connection gap as per adequate techniques.

Observation-06: Non-structural elements are not anchored or braced (Main Building).

Description: Racks on ground are not adequately anchored or braced to resist lateral (earthquake) forces. Factory is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.

Observation-07: Stress in column exceeds normal design limit (RC Building).



Description: The cursory calculation indicates that stress in the marked column exceeds the normal design limit considering provided floor live load of 6 kPa for typical floor, roof live load of 1 kpa and minimum concrete strength of 14.1 MPa.
During inspection, the geotechnical report was not available to check the foundation capacity of the structure. Also, no material test report was available.
The building engineer is required to review the design, loads, and column stresses for the marked columns based on in-situ material strength, perform geotechnical investigation to check foundation capacity. The building engineer is also required to produce and actively manage a loading plan for all floor plates based on floor, column and foundation capacity.

Observation-08: Lack of lateral stability of undocumented non-engineered steel shed on roof (RC Building).

RC Building

Description: Lack of stability against the lateral load and apparent inadequate members and non-engineered connection were observed at the roof of RC Building. The building engineer is required to check the member, connection & stability system of the structure and suggest proper alternatives accordingly.

Observation-09: Inadequate expansion gap between RC building and Main building (RC Building).

Description: The expansion gap between Main Building and RC Building seems to be inadequate. The Building Engineer is required to check the expansion gap requirements for the two-building structural separation and suggest proper alternatives accordingly.

Observation-10: Falling hazard in stairs and at roof (RC Building).

Description: Railing was not found on the 4th floor of the RC building. Also, the parapet wall was missing at partial roof.
The factory is required to provide railing at stairs and parapet wall at roof to avoid falling hazard.

Observation-11: Dampness and water ponding found on roof slab (RC Building).

Description: Dampness and water ponding were found on roof slab. The factory is required to repair the damp areas. Also, improve the drainage system on roof slab.

Observation-12: Exposed rebar found on roof and staircase (RC Building).

Description: During inspection, exposed & corroded re-bar was found on the roof of RC Building and staircase area. Factory is required to take necessary action (remove corrosion and apply ant-rusting coating) to protect exposed re-bar from corrosion.

Observation-13: Non-engineered light weight roof on staircase (RC Building).

Description: During inspection, a lightweight roof was observed at staircase roof of main building. The building engineer is required to check the connection adequacy of light weight roof of the staircase against the uplift forces and suggest proper alternatives accordingly.

Observation-14: Non-structural elements not anchored or braced (RC Building).

Description: Racks on different floors and plastic water tank on roof are not adequately anchored or braced to resist lateral (earthquake) forces. Factory is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.

Observation-15: Lack of permit drawings from local authority (Main Building, RC Building, Sub-station Building, Boiler Shed, Winding Shed).






Description: During inspection, no permit drawings were available for Main Building, RC Building, Sub-station Building, Boiler Shed & Winding Shed. The factory is required to collect the permit drawings from the government approved local authority.

Observation-16: Lack of as-built drawings (Sub-station Building, Boiler Shed, Winding Shed).

Sub-station Building

Sub-station Building

Boiler Shed

Boiler Shed

Winding Shed

Winding Shed

Description: During inspection, there is no drawings were available for the above-mentioned structures. The building engineer is required to survey those structures and prepare accurate as built drawings for each structure separately.

Observation-17: Crack on brick wall (Sub-station Building).

Description: Crack was observed on the brick wall of Sub-station Building. The building engineer is required to investigate the reason for the crack and carry out remedial works accordingly.

Observation-18: Lack of anchorage and lateral bracing for the plastic water tank/platform (Sub-station Building).

Description: A plastic water tank supported by single steel member was found above sub-station building. Factory is required to adequately anchor and brace the plastic water tank/ platform to resist earthquake forces to comply with the BNBC.

Observation-19: Apparently non-engineered lightweight roof shed (Boiler Shed, Winding Shed).

Boiler Shed

Boiler Shed

Winding Shed

Winding Shed

Description: Lack of lateral stability system, apparent inadequate members and non-engineered connection were observed at the roof. The building engineer is required to check the member, connection & stability system of the structure and suggest proper alternatives accordingly.

Observation-20: Lack of construction safety at factory premises.

Description: During inspection, construction of a multi-storied factory building was found ongoing in the factory premises. But no construction safety measures have been taken. Garment workers are passing through the construction site as no safety signage has been provided. Also, construction workers did not wear any PPE.

The factory management and building engineer is required to take necessary measures immediately to ensure the construction safety as per BNBC guideline.

3. Action Plan:

Item No.	Observation	Action Plan	Timeline
		Main Building	
1	Lack of lateral stability (Main Building).	The building engineer is required to check the lateral stability system of the structure.	within 6 weeks
2	Lack of lateral stability (Main Building).	Perform geotechnical investigation & check foundation adequacy for the structure.	within 6 weeks
3	Lack of lateral stability (Main Building).	Produce & actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	within 6 weeks
4	Lack of lateral stability (Main Building).	Implement remediation work if required.	within 6 months
5	Lack of lateral stability (Main Building).	Continue to implement floor loading plan.	within 6 months
6	Marginally Stress in column exceeds normal design limit for the extension part of Main building (loading-unloading shed).	The building engineer is required to review the design, loads, and column stresses for the marked columns based on in-situ material strength.	within 6 weeks
7	Marginally Stress in column exceeds normal design limit for the extension part of Main building (loading-unloading shed).	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	within 6 weeks
8	Marginally Stress in column exceeds normal design limit for the extension part of Main building (loading-unloading shed).	Implement remediation work if required.	within 6 months
9	Mismatch found in structural drawings (Main Building).	The building Engineer is required to survey the whole structure and prepare the as built drawings as per site condition.	within 6 weeks
10	Mismatch found in structural drawings (Main Building).	Implement remediation work if required.	within 6 months
11	Corrosion found on steel members at different locations (Main Building).	The factory is required to identify the locations, remove corrosion and provide rust-proof paint on all steel members to protect them from rusting.	within 6 weeks
12	Connection gap at different locations (Main Building).	The factory is required to fill the connection gap as per adequate techniques.	within 6 months
13	Non-structural elements are not anchored or braced (Main Building).	Building engineer is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.	within 6 months

RC Building			
14	Stress in column exceeds normal design limit (RC Building).	The building engineer is required to review the design, loads, and column stresses for the marked columns based on in-situ material strength.	within 6 weeks
15	Stress in column exceeds normal design limit (RC Building).	Verify in-situ concrete stresses by 100mm dia. cores from minimum of 4 columns and beam & slab.	within 6 weeks
16	Stress in column exceeds normal design limit (RC Building).	Perform geotechnical investigation to check the adequacy of the foundation of the structure.	within 6 weeks
17	Stress in column exceeds normal design limit (RC Building).	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	within 6 weeks
18	Stress in column exceeds normal design limit (RC Building).	Implement remediation work if required.	within 6 months
19	Stress in column exceeds normal design limit (RC Building).	Continue to implement floor loading plan.	within 6 months
20	Lack of lateral stability of undocumented non-engineered steel shed on roof (RC Building).	The building engineer is required to check the member, connection & stability system of the structure	within 6 weeks
21	Lack of lateral stability of undocumented non-engineered steel shed on roof (RC Building).	Implement remediation work if required.	within 6 months
22	Inadequate expansion gap between RC building and Main building (RC Building).	The Building Engineer is required to check the expansion gap requirements for the two-building structural separation	within 6 weeks
23	Inadequate expansion gap between RC building and Main building (RC Building).	Implement remediation work if required.	within 6 months
24	Falling hazard in stairs and at roof. (RC Building).	The factory is required to provide railing/barrier at stairs/roof to avoid falling hazard.	within 6 weeks
25	Dampness and water ponding found on roof slab (RC Building).	The factory is required to seal the source of water leakage and repair the damp areas. Also, improve the drainage system on roof slab.	within 6 months
26	Exposed rebar found on roof and staircase (RC Building).	Remove the corrosion & apply anti-rusting coating to protect exposed re-bar from corrosion.	within 6 months
27	Non-engineered light weight roof on staircase (RC Building).	The building engineer is required to check the connection adequacy of light weight roof of the staircase against the uplift forces.	within 6 weeks
28	Non-engineered light weight roof on staircase (RC Building).	Implement remediation work if required.	within 6 months

29	Non-structural elements not anchored or braced (RC Building).	Factory is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC	within 6 months
Main Building, RC Building, Sub-station Building, Boiler Shed, Winding Shed			
30	Lack of permit drawings from local authority (Main Building, RC Building, Sub-station Building, Boiler Shed, Winding Shed).	The factory is required to collect the permit drawings from government approved local authority.	within 6 months
Sub-station Building			
31	Lack of as-built drawings (Sub-station Building)	The building engineer is required to survey the structures and prepare accurate as-built drawings.	within 6 weeks
32	Crack on brick wall (Sub-station Building).	The building engineer is required to investigate the reason for the crack and carry out remedial works accordingly.	within 6 weeks
33	Lack of anchorage of plastic water tank (Sub-station Building).	Factory is required to adequately anchor and brace the plastic water tank to resist earthquake forces to comply with the BNBC	within 6 months
Boiler Shed			
34	Lack of as-built drawings (Boiler Shed)	The building engineer is required to survey the whole structures and prepare accurate as built drawings as per site condition	within 6 weeks
35	Apparently non-engineered lightweight roof shed (Boiler Shed)	The building engineer is required to check the member, connection & stability system of the structure and suggest necessary alternation.	within 6 weeks
36	Apparently non-engineered lightweight roof shed (Boiler Shed)	Implement remediation work if required.	within 6 months
Winding Shed			
37	Lack of as-built drawings (Winding Shed)	The building engineer is required to survey the whole structures and prepare accurate as built drawings as per site condition	within 6 weeks
38	Apparently non-engineered lightweight roof shed (Winding Shed)	The building engineer is required to check the member, connection & stability system of the structure and suggest necessary alternation.	within 6 weeks
39	Apparently non-engineered lightweight roof shed (Winding Shed)	Implement remediation work if required.	within 6 months
40	Lack of construction safety at factory premises.	The factory management and building engineer is required to take necessary measures immediately to ensure the construction safety as per BNBC guidelines.	Immediate