SM Sourcing

Baimail, Konabari, Joydevpur , Gazipur
(24.008134, 90.334115)
23 July 2023

RSC RMG SUSTAINABILITY COUNCIL

Building information:

Building-1: Three storied (G+2) building.

Shed-1: Single storied shed.

Shed-2: Single storied shed.

Shed-3: Single storied shed.

Shed-4: Single storied shed.

Shed-5: Single storied shed.

Shed-6: Two storied (G+1) building.

Shed-7: Single storied shed.

Shed-8 & 12: Single storied shed.

Shed-9: Single storied shed.

Shed-10: Single storied shed.

Shed-11: Single storied shed.

Observations

Lack of building permit

Observation: All structures except Building-1



Shed-1,2,3




Shed-4,5,6, 7




Shed-8&12,9, 10,11

Building permit drawing was not available for the mentioned structure. The factory is required to collect building permit fro m BNBC prescribed local building permit authority.

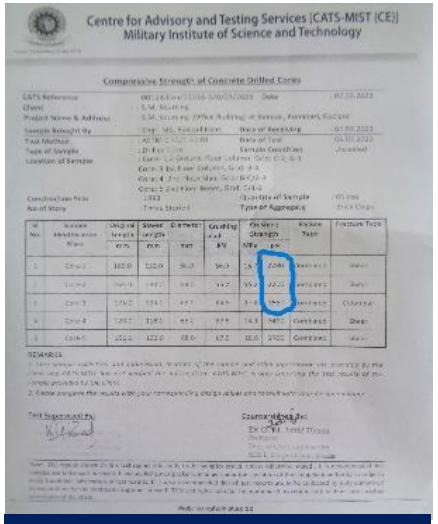
Observation: All Structures except Building-1

High stressed column & foundation

Observation: Building-1

Column layout

Foundation layout

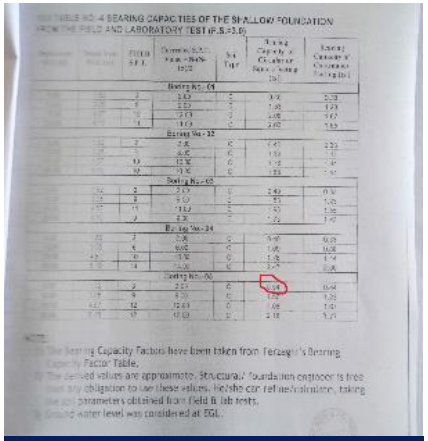


Core test report

Cursory calculation indicates that the Stresses in the columns and foundations of the building are above the design limit, and the factor of safety is below 1.5 considering 2 kPa floor live load and equivalent material strength 13.1 MPa from concrete core test reports and ultimate bearing capacity 3.24 ksf from soil test report. The columns and foundations are highly loaded from peripheral brick walls and rooftop water tanks. Also, the concrete strength and soil bearing capacities are very low.

The factory is required to reduce floor live load to 1 kPa and maintain until completion of Detail Engineering Assessment (DEA) as well as suggested remedial works. Verify in-situ soil bearing capacity by further testing and incorporate the test result in DEA.

Source of Loads: Brick walls and water tanks



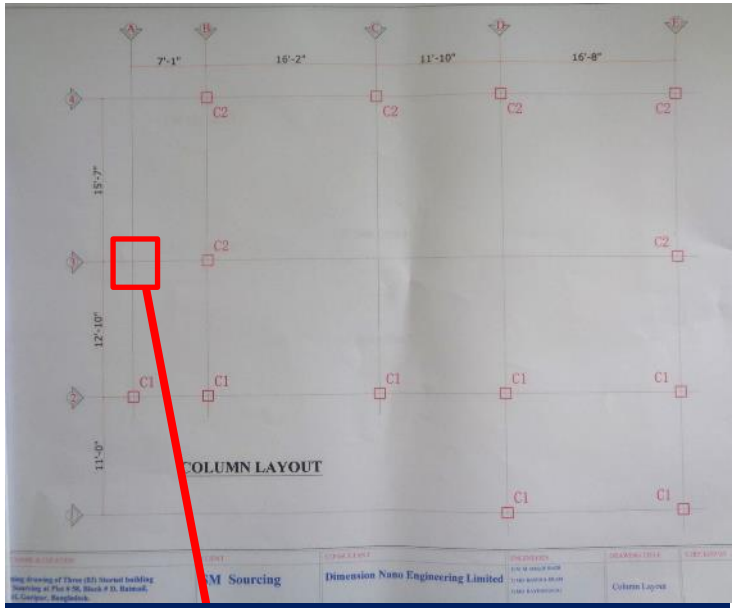
Soil test report

Observation: Building-1

RSC RMG SUSTAINABILITY COUNCIL

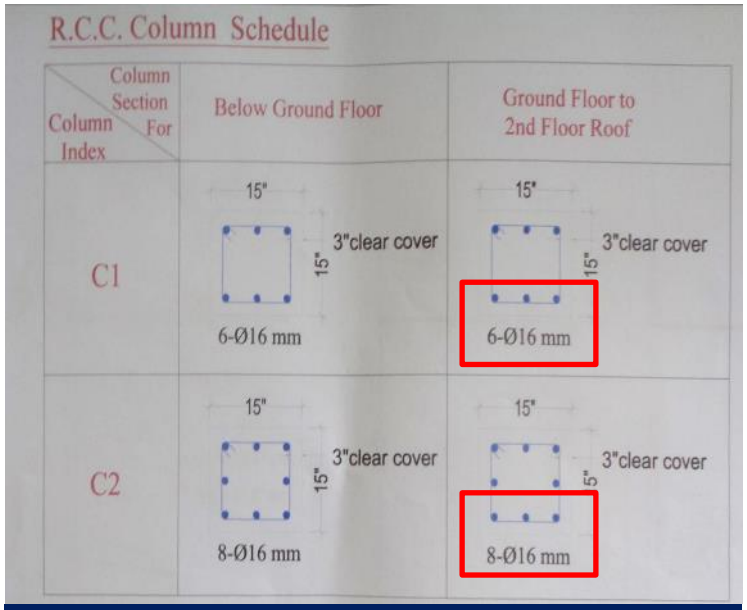
Discrepancies in as-built drawing

Observation: Building-1



Column layout: Marked column not shown in drawing

Column of porch not align with main building column grid. But drawing shown along the same column grid of main building.



Column schedule: 375x375 column with 6 & 8 rebars

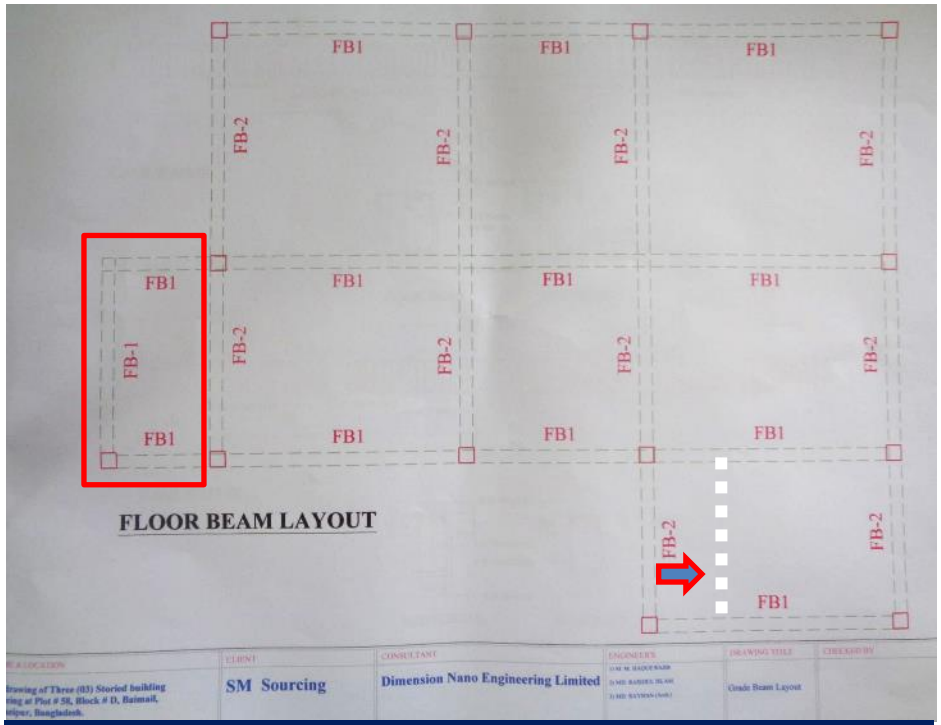
Column built up-to ground floor roof

Column layout, size and rebar number didn't match between provided drawing and as-built condition. The marked column built up-to ground floor roof which was not shown in column layout; all the column sizes were found 250x250 mm instead of 375x375 mm; and only 4 rebars were found in column by scanning where drawings shown 6 & 8 rebars. Also, mismatch was found in column grid dimension.

Column rebar: 4 numbers instead of 8

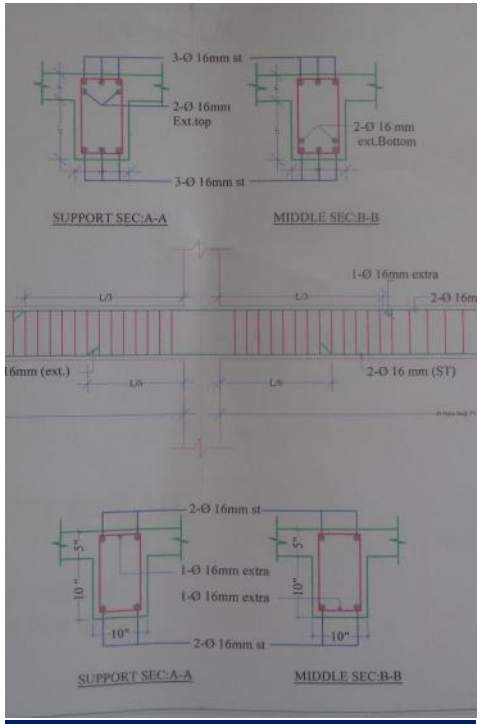
Column size: 250 mm instead of 375 mm

Observation: Building-1



Beam layout: Red marked beams were not found onsite. And white marked beam was found shifted.

The beam layout and beam sizes were not matched with the provided drawings.



Beam depth in drawing:
FB-1 = 500 mm
FB-2 = 375 mm

FB-2 Beam depth measured on site 550 mm

FB-1 Beam depth measured onsite 375 mm

Building engineer is required to survey the structure and prepare accurate as-built drawings and submit to the RSC for review.

Observation: Building-1

Dampness on exterior walls

Observation: Building-1

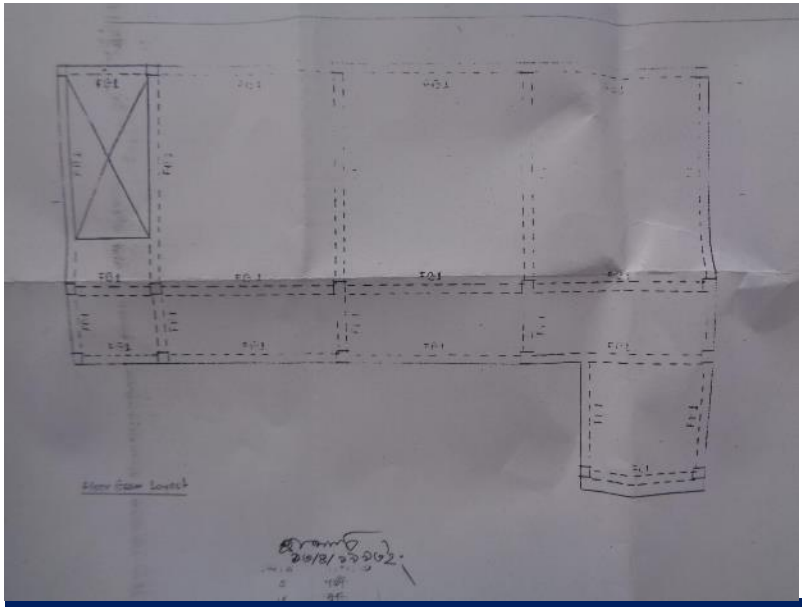
Dampness on brick wall

The factory is required to seal the source of water and repair the damped area with suitable method.

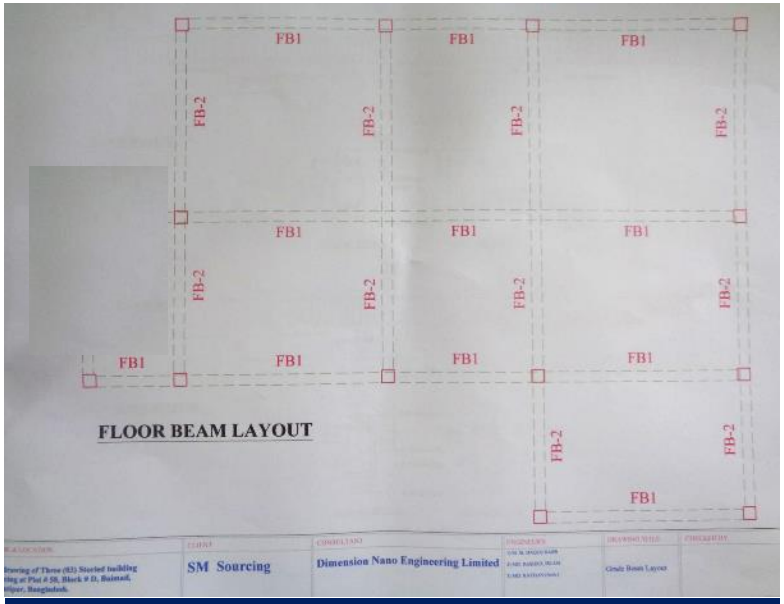
Observation: Building-1

Building permit doesn't reflect as-built construction

Observation: Building-1



Permit drawing



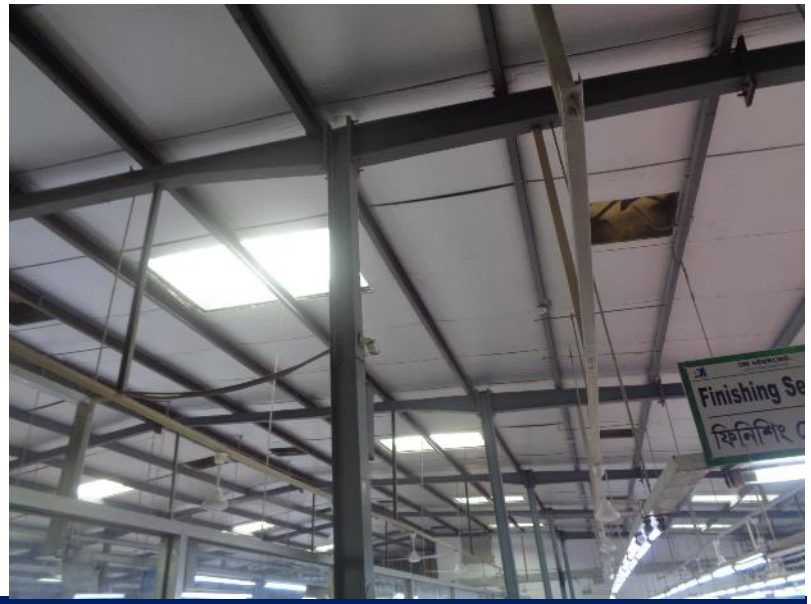
As-built drawing

The as-built construction did not reflect the permit drawing. The number of beam & column and the floor layout was not matched with permit drawing. The factory is required to collect building permit from BNBC prescribed local building permit authority.

Observation: Building-1

Lack of lateral stability system

Observation: Shed-1



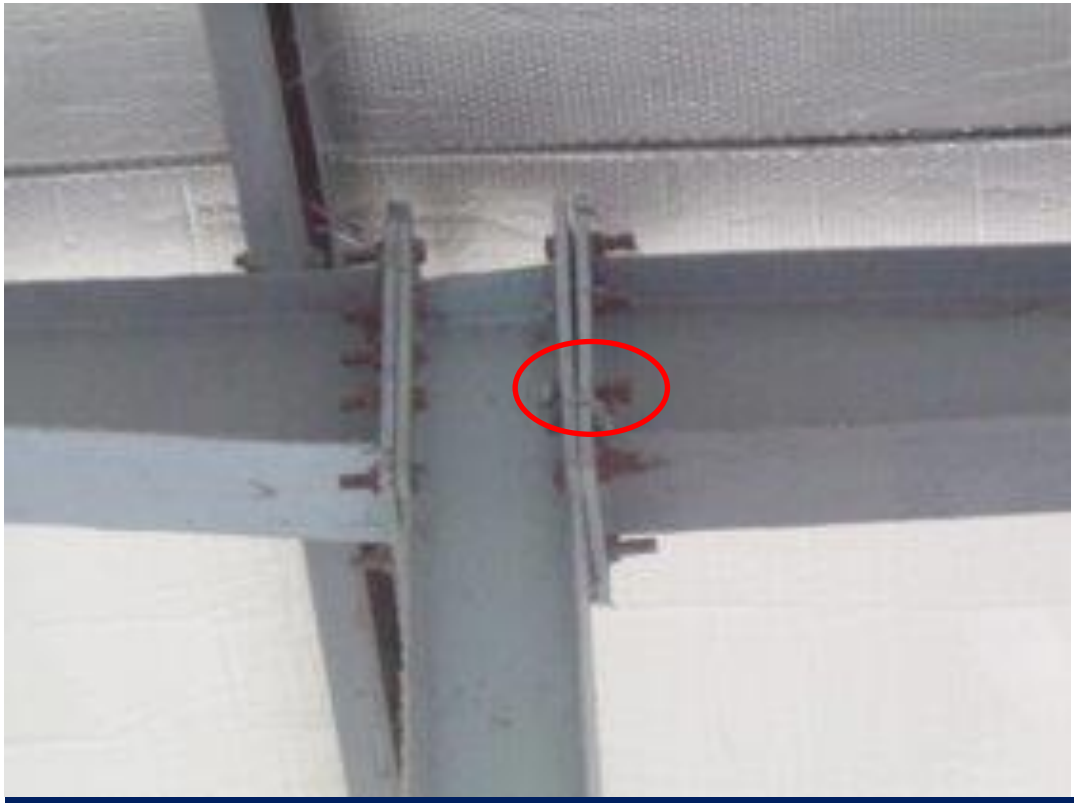
Absence of load transfer media along transverse direction of rafter and absence of bracing

Lack of lateral stability system (bracing & compression strut) was observed in the structure. Also, the column and rafter size seems to be inadequate. The building engineer is required carryout Engineering Assessment (EA) to check the lateral stability of the structure and suggest proper remedial actions accordingly.

Observation: Shed-1

Gap in connection plates and loose bolt

Observation: Shed-1



Gap between connection plates and loose bolt

The factory is required to check the connections and repair the gap with suitable method. Also, tight the loose bolts.

Observation: Shed-1

Dampness on exterior brick walls at west

Observation: Shed-1

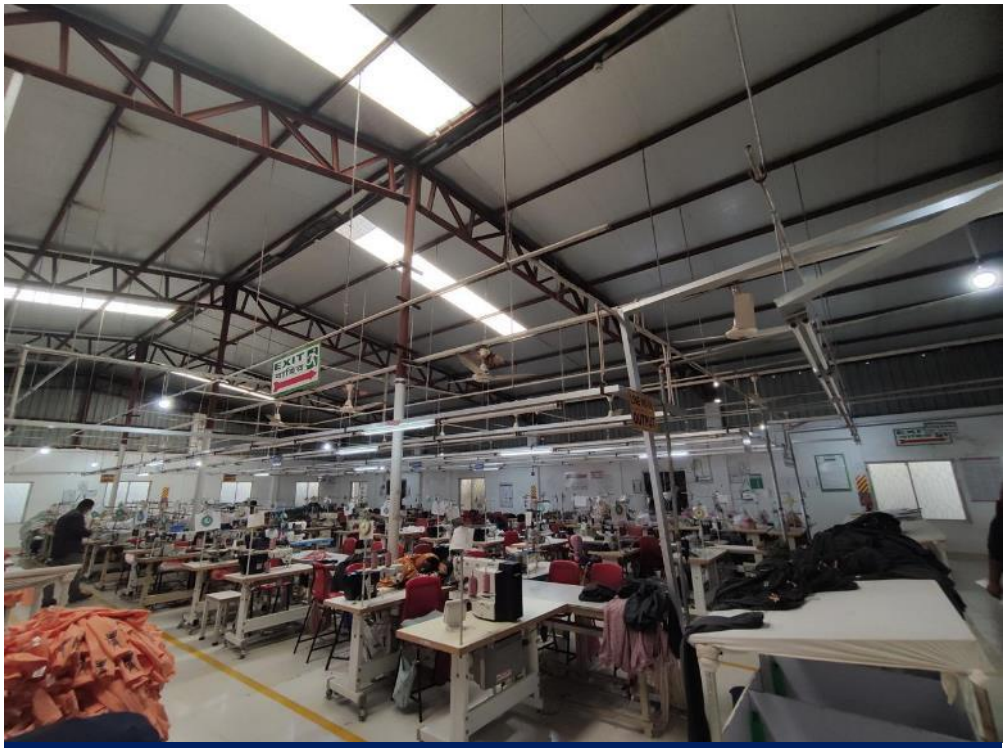
Dampness on brick wall

The factory is required to seal the source of water and repair the damped area with suitable method.

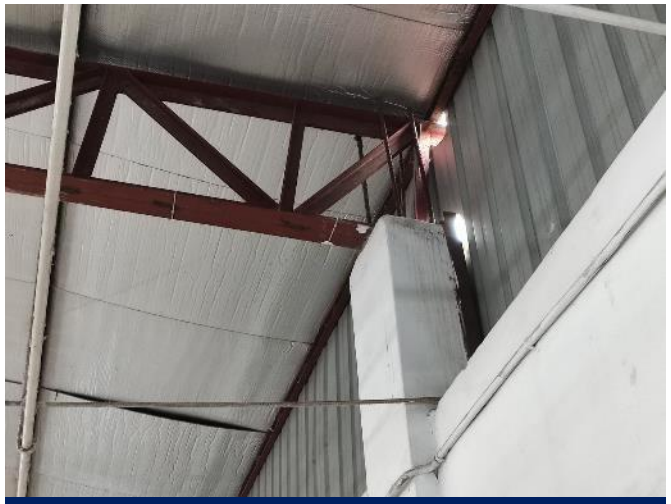
Observation: Shed-1

Lack of lateral stability of roof truss

Observation: Shed-2



No load transfer media & bracings at roof



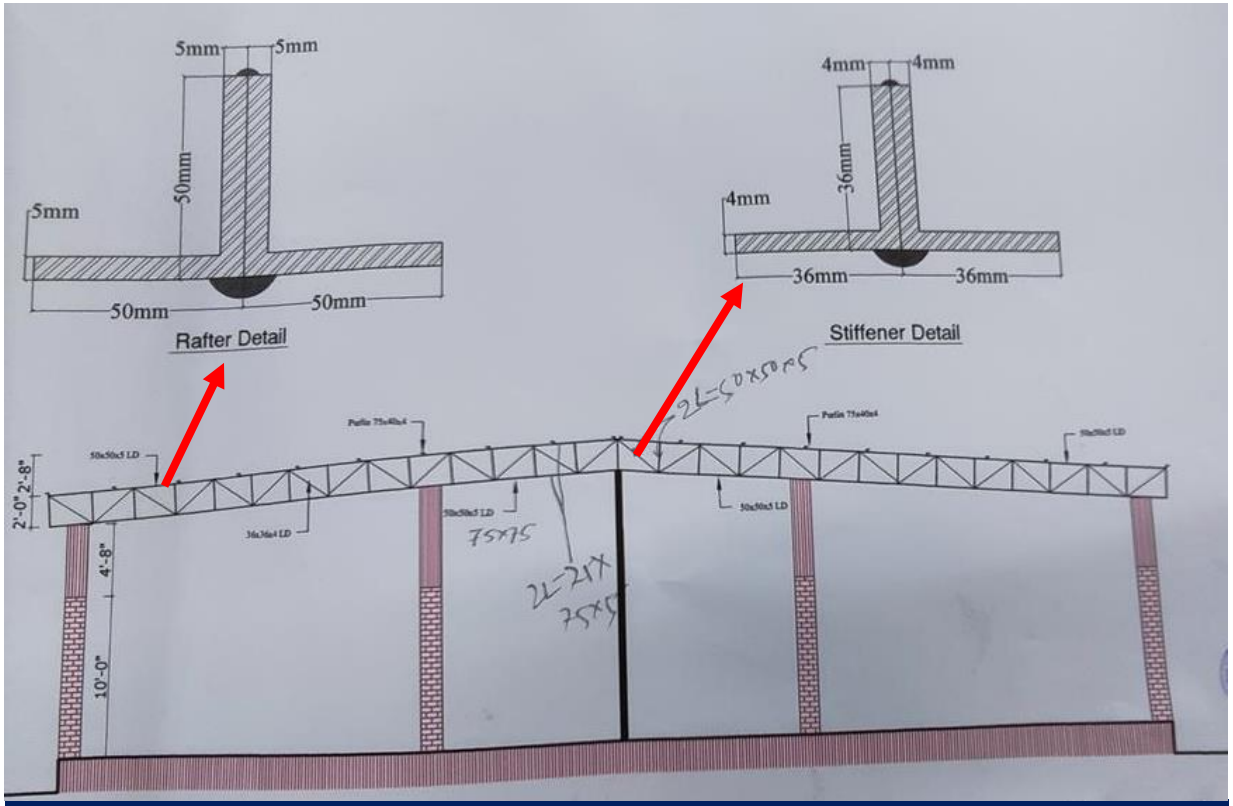
Improper connection between RC column and steel roof truss

No bracing system was observed along transverse direction of roof truss. Also, the connection between RC column and steel roof truss was improper. The building engineer is required carry out Engineering Assessment (EA) to check the connection & lateral stability of the structure and suggest proper remedial actions accordingly. Submit the EA documents to the RSC for review.

Observation: Shed-2

Discrepancies in as-built drawing

Observation: Shed-2



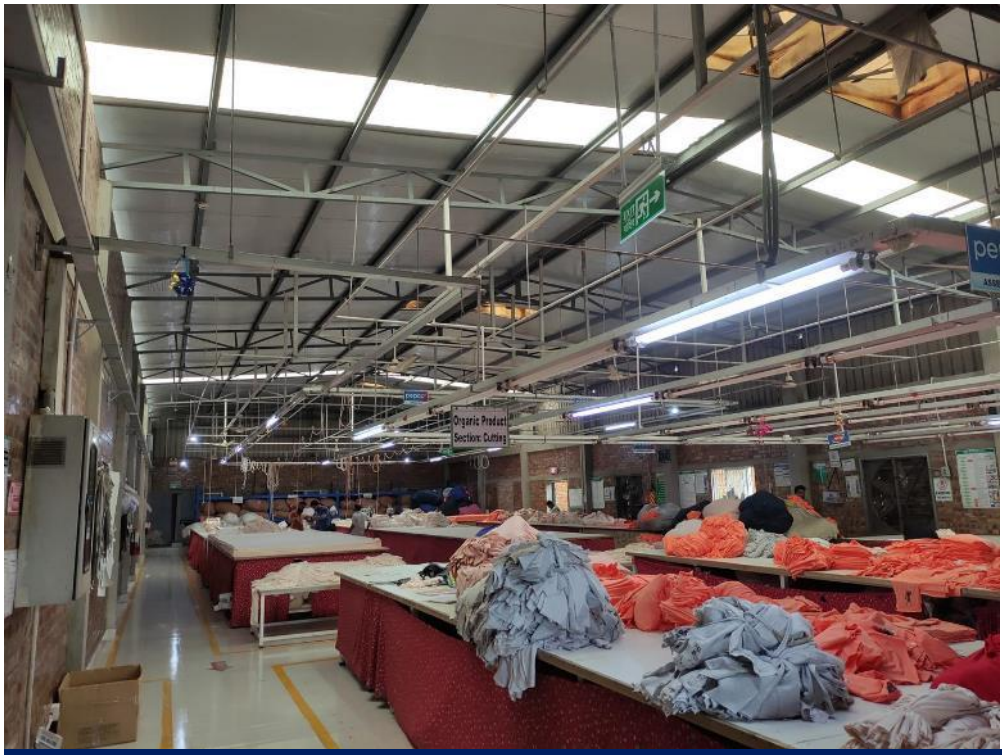
Typical roof truss section with angle size

Some discrepancies were observed between provided drawing & on-site condition. Bottom chord angle size was found 2L-75X75X5 onsite where drawing shows 2L-50X50X5. The building engineer is required to check the as-built condition and prepare accurate as-built drawings structural connection details.

Observation: Shed-2

Lack of lateral stability of roof truss

Observation: Shed-3



No load transfer media & bracings at roof

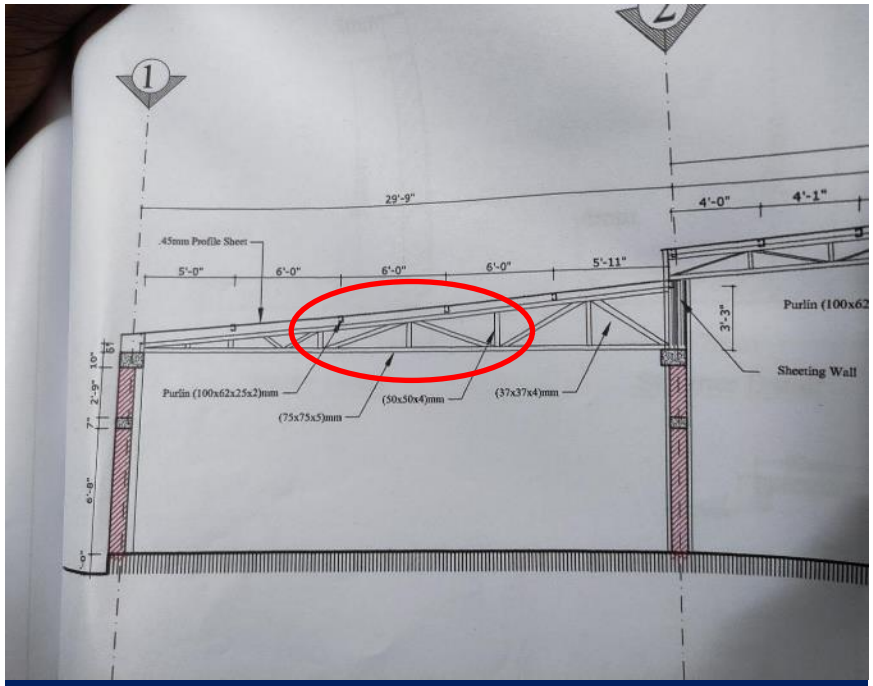
Improper connection between RC column and steel roof truss

No bracing system was observed along transverse direction of roof truss. Also, the connection between RC column and steel roof truss was improper. The building engineer is required carry out Engineering Assessment (EA) to check the connection & lateral stability of the structure and suggest proper remedial actions accordingly.

Observation: Shed-3

Discrepancies in as-built drawing

Observation: Shed-3



Truss angle direction (as-built drawing)

Truss angle direction (on-site condition)

Some discrepancies were observed between provided drawing & on-site condition. The direction of diagonal chord of roof truss doesn't match with drawing. The building engineer is required to check the as-built condition and prepare accurate as-built drawings with structural connection details.

Observation: Shed-3

Unbraced storage rack

Observation: Shed-3

Unbraced storage rack

During inspection unbraced storage rack was found. Building Engineer is required to brace/anchor all the unbraced storage rack.

Observation: Shed-3

Absence of design report

Observation: Shed-4

Shed 4

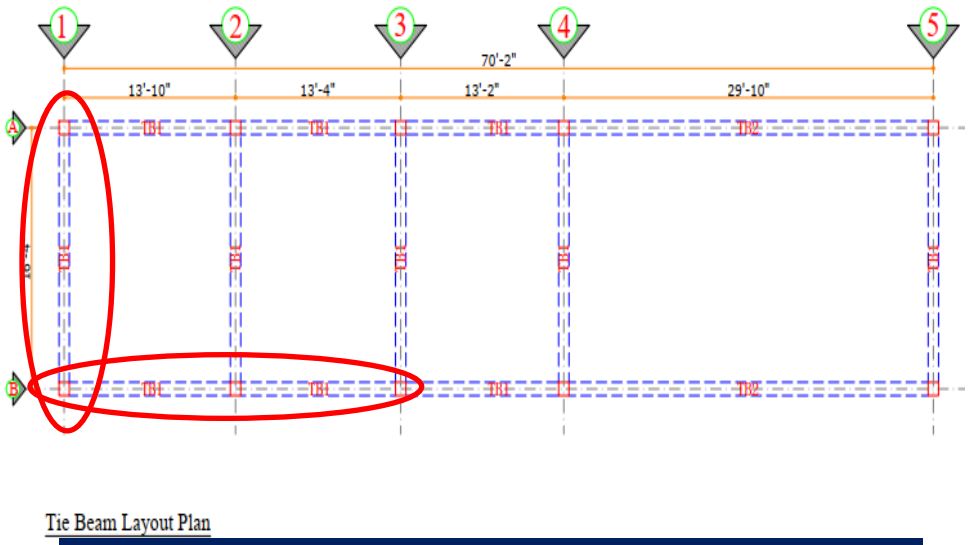
As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1, part-6 of BNBC. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.

During inspection design report was not found which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

Observation: Shed-4

Discrepancies in as-built drawing

Observation: Shed-4



Tie Beam Layout (as-built drawing)

Tie Beam missing (on-site condition)

Some tie-beams were found missing on-site. The building engineer is required to survey the structure and prepare accurate as-built drawings.

Observation: Shed-4

Apparently non-engineered structure

Observation: Shed-5

Apparently non-engineered structure with inadequate member and connection

The stability system of steel roof & peripheral walls and their connections are apparently non-engineered. Also, the member size of lightweight steel roof seems to be inadequate. The building engineer is required to suggest proper alternatives to make the structure adequate and prepare necessary design documents accordingly. Otherwise, the factory is required to replace the shed with well-designed structure.

Observation: Shed-5

Lack of design report and load plan

Observation: Shed-6

Shed-6

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1, part-6 of BNBC. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.
During inspection, design report including floor load plan was not found which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

Observation: Shed-6

Improper connections

Observation: Shed-6

Large gap between end plates

Stair rested on a thin plate leg

Less contact surface of connection

Large gap between end plates

Haunch ends not connected to beam & column flanges

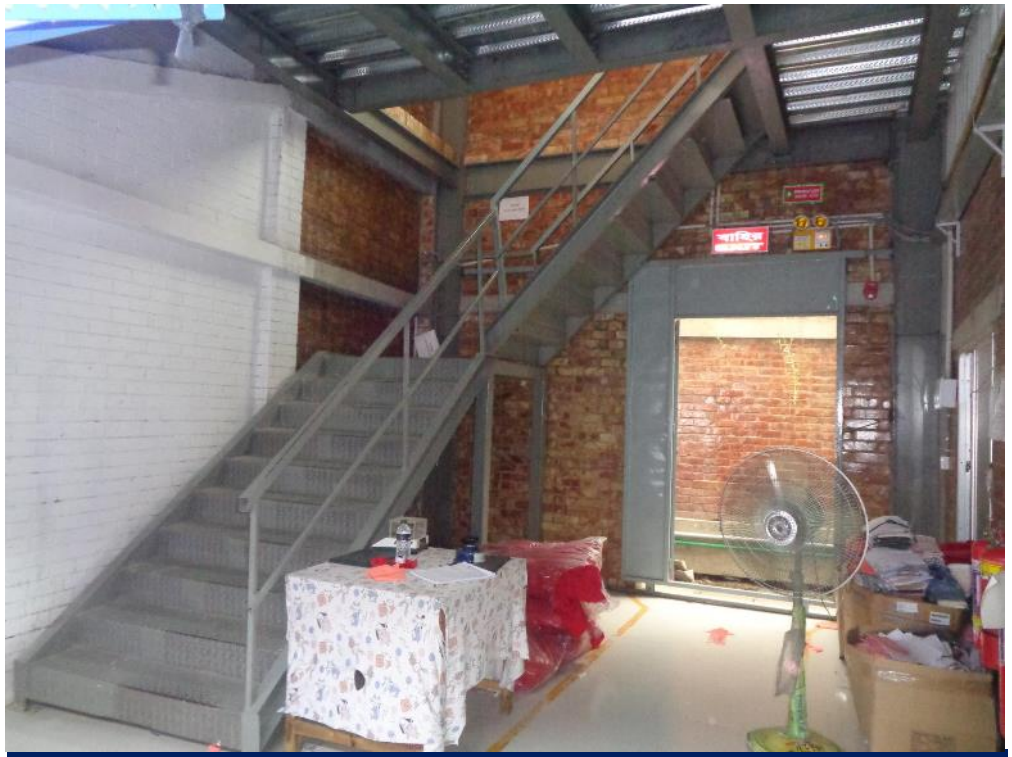
Gap between web & baseplate

Several improper connections were observed in the steel structure. The building engineer is required to check the connections and suggest proper remedial actions to make the connection active & adequate.

Observation: Shed-6

Undocumented steel stair

Observation: Shed-6



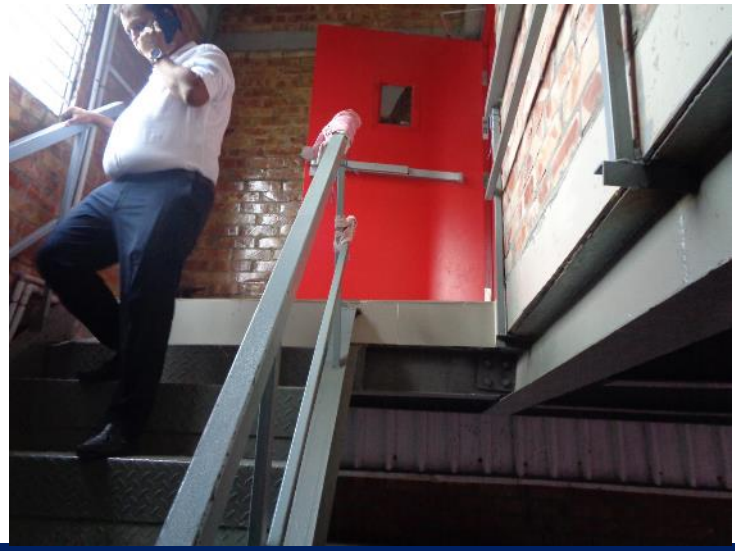
Internal steel stair

Proper documentation was not available for the steel stair. The building engineer is required to prepare as-built documents of the steel stair with necessary connection details.

Observation: Shed-6

Lack of fall protection

Observation: Shed-6



Falling hazard from stair landing

Falling hazard observed in the stair due incomplete railing. The factory is required to complete the railing to avoid possible falling hazard.

Observation: Shed-6

Absence of as-built drawings

Observation: Shed-7

Shed 7

The building engineer is required to survey the structure and prepare accurate as-built drawings.

Observation: Shed-7

Apparently non-engineered structure

Observation: Shed-8 & Shed-12

Apparently non-engineered structure with inadequate member and connection

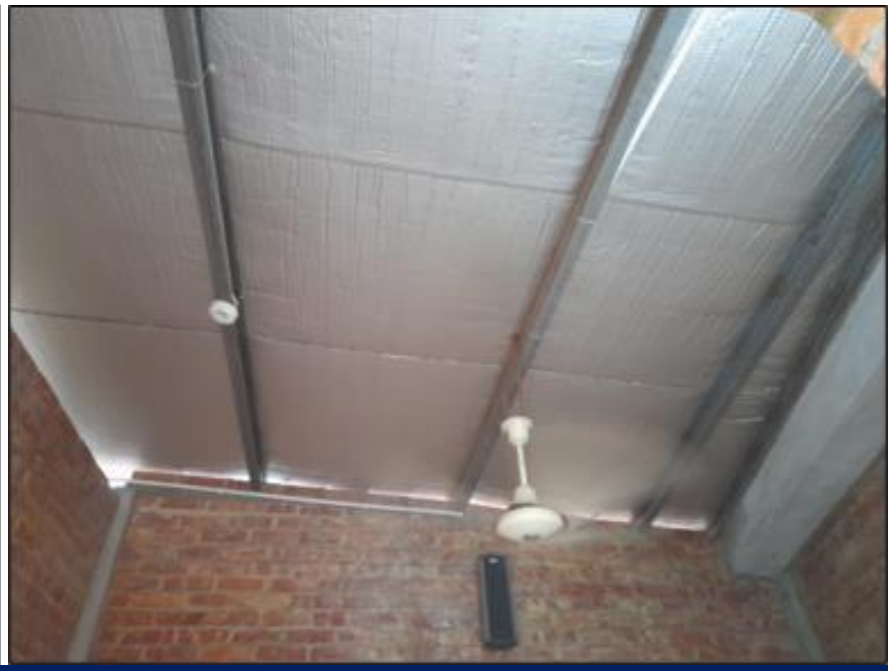
Apparently inadequate member and connection

The stability system of steel roof & peripheral walls and their connections are apparently non-engineered. The building engineer is required to suggest proper alternatives to make the structure adequate and prepare necessary design documents accordingly. Otherwise, the factory is required to replace the shed with well-designed structure.

Observation: Shed-8 & Shed-12

Absence of design documents

Observation: Shed-9



Shed 9

As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1, part-6 of BNBC. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.

During inspection design documents was not found which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

Observation: Shed-9

Absence of as-built drawings

Observation: Shed-10

Shed 10

The building engineer is required to survey the whole structures and prepare accurate as-built drawings with connection details.

Observation: Shed-10

Absence of as-built drawings

Observation: Shed-11

Shed 11

The building engineer is required to survey the whole structures and prepare accurate as-built drawings with connection details.

Observation: Shed-11

Problems Observed

All structures except Building-1:

Item 01: Lack of building permit.

Building-1:

Item 02: High stressed column & foundation.
Item 03: Discrepancies in as-built drawing.
Item 04: Dampness on exterior walls.
Item 05: Building permit doesn't reflect as-built construction.

Shed-1:

Item 06: Lack of lateral stability system.
Item 07: Lack of information in as-built drawing.
Item 08: Gap between connection plates and loose bolt.
Item 09: Dampness observed on exterior brick walls at west.

Shed 2:

Item 10: Lack of lateral stability of truss roof.
Item 11: Discrepancies in as-built drawing.

Problems Observed (continued)

Shed 3:

Item 12: Lack of lateral stability of truss roof.
Item 13: Discrepancies in as-built drawing.
Item 14: Unbraced storage rack.

Shed 4:

Item 15: Absence of design report.
Item 16: Discrepancies in as-built drawing.

Shed 5:

Item 17: Apparently non-engineered structure.

Shed-6:

Item 18: Lack of design report and load plan.
Item 19: Improper connections.
Item 20: Undocumented steel stair.
Item 21: Lack of fall protection.

Problems Observed (continued)

Shed 7:
Item 22: Absence of as-built drawings.

Shed 8 & 12:
Item 23: Apparently non-engineered structure.

Shed 9:
Item 24: Absence of design documents.

Shed 10:
Item 25: Lack of as-built drawing.

Shed 11:
Item 26: Absence of as-built drawing.

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Lack of building permit. (All structures except Building-1)	The factory is required to collect building permit fr om BNBC prescribed local building permit authority.	6-months
02	High stressed column & foundation. (Building-1)	Reduce floor live load to 1 kPa and maintain until completion of Detail Engineering Assessment (DEA) as well as suggested remedial works.	Immediate
03	High stressed column & foundation. (Building-1)	Verify in-situ soil bearing capacity by further testing and incorporate the test result in the DEA.	6-weeks
04	High stressed column & foundation. (Building-1)	As part of DEA, the building engineer is required to review the design load, column & foundation stresses and suggest proper remedial actions accordingly.	6-weeks
05	High stressed column & foundation. (Building-1)	Produce and actively manage a set of floor live load plan for all floors based on column and foundation capacity.	6-weeks
06	High stressed column & foundation. (Building-1)	Carry out suggested remedial works.	6-months
07	High stressed column & foundation. (Building-1)	Continue to implement floor load plan.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
08	Discrepancies in as-built drawing. (Building-1)	Building engineer is required to survey the structure and prepare accurate as-built drawings and submit to the RSC for review.	6-weeks
09	Dampness on exterior walls. (Building-1)	The factory is required to seal the source of water and repair the damped area with suitable method.	6-months
10	Building permit doesn't reflect as-built construction. (Building-1)	Building engineer is required to survey the full structure and update the as-built drawing accordingly.	6-weeks
11	Building permit doesn't reflect as-built construction. (Building-1)	The factory is required to collect building permit fro m BNBC prescribed local building permit authority.	6-months
12	Lack of lateral stability system. (Shed-1)	The building engineer is required carry out Engineering Assessment (EA) to check the lateral stability of the structure and suggest proper remedial actions accordingly. Submit the EA documents to the RSC for review.	6-weeks
13	Lack of lateral stability system. (Shed-1)	Carry out suggested remedial works.	6-months
14	Lack of information in as-built drawing. (Shed-1)	Building engineer is required to survey the structure and prepare accurate as-built drawings and submit to the RSC for review.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
15	Gap between connection plates and loose bolt. (Shed-1)	The factory is required to check the connections and repair the gap with suitable method. Also, tight the loose bolts.	6-weeks
16	Dampness observed on exterior brick walls at west. (Shed-1)	The factory is required to seal the source of water and repair the damped area with suitable method.	6-months
17	Lack of lateral stability of truss roof. (Shed-2)	The building engineer is required carry out Engineering Assessment (EA) to check the connections & lateral stability of the structure and suggest proper remedial actions accordingly. Submit the EA documents to the RSC for review.	6-weeks
18	Lack of lateral stability of truss roof. (Shed-2)	Complete suggested remedial works.	6-months
19	Discrepancies in as-built drawing. (Shed-2)	Building engineer is required to survey the structure and prepare accurate as-built drawings and submit to the RSC for review.	6-weeks
20	Lack of lateral stability of truss roof. (Shed-3)	The building engineer is required carry out Engineering Assessment (EA) to check the connection & lateral stability of the structure and suggest proper remedial actions accordingly. Submit the EA documents to the RSC for review.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
21	Lack of lateral stability of truss roof. (Shed-3)	Complete suggested remedial works.	6-months
22	Discrepancies in as-built drawing. (Shed-3)	Building engineer is required to survey the structure and prepare accurate as-built drawings and submit to the RSC for review.	6-weeks
23	Unbraced storage rack. (Shed-3)	Building engineer required to brace/anchor all the unbraced storage rack.	6-months
24	Absence of design report. (Shed-4)	The building engineer is required to prepare a set of design documents in compliance with section 1.9.1.1 (part-6, BNBC).	6-weeks
25	Absence of design report. (Shed-4)	Complete remedial works if required.	6-months
26	Discrepancies in as-built drawing. (Shed-4)	Building engineer is required to survey the structure and update the as-built drawing accordingly.	6-weeks
27	Apparently non-engineered structure. (Shed-5)	The building engineer is required to suggest proper alternatives to make the structure adequate and prepare necessary design documents accordingly. Otherwise, the factory is required to replace the shed with well-designed structure.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
28	Apparently non-engineered structure. (Shed-5)	Complete remedial works.	6-months
29	Lack of design report and load plan. (Shed-6)	The building engineer is required to prepare design report in compliance with section 1.9.1.1 of BNBC (part-6).	6-weeks
30	Lack of design report and load plan. (Shed-6)	Produce and actively manage a floor load plan.	6-weeks
31	Lack of design report and load plan. (Shed-6)	Carry out suggested remedial works.	6-months
32	Lack of design report and load plan. (Shed-6)	Implement floor load plan.	6-months
33	Improper connections. (Shed-6)	The building engineer is required to check the connections and suggest proper remedial actions to make the connection active & adequate.	6-weeks
34	Improper connections. (Shed-6)	Carry out suggested remedial works where required.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
35	Undocumented steel stair. (Shed-6)	The building engineer is required to prepare as-built documents of the steel stair with necessary connection details.	6-weeks
36	Lack of fall protection. (Shed-6)	The factory is required to complete the railing to avoid possible falling hazard.	6-weeks
37	Absence of as-built drawings. (Shed-7)	The building engineer is required to survey the structures and prepare accurate as-built drawings with connection details.	6-weeks
38	Apparently non-engineered structure. (Shed-8 & 12)	The building engineer is required to suggest proper alternatives to make the structure adequate and prepare necessary design documents accordingly. Otherwise, the factory is required to replace the shed with well-designed structure.	6-weeks
39	Apparently non-engineered structure. (Shed-8 & 12)	Carry out suggested remedial works.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
40	Absence of design documents. (Shed-9)	Building engineer is required to prepare the design documents including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2, part-6 of BNBC and submit it to RSC for review.	6-weeks
41	Absence of design documents. (Shed-9)	Carry out remedial works (if any) after reviewed by the RSC.	6-months
42	Lack of as-built drawing. (Shed-10)	The building engineer is required to survey the structures and prepare accurate as-built drawings with connection details.	6-weeks
43	Absence of as-built drawing. (Shed-11)	The building engineer is required to survey the structures and prepare accurate as-built drawings with connection details.	6-weeks