UTAH Knitting & Dyeing Ltd. (Extension)

Bokran-Monipur, Hotapara, Gazipur , Bangladesh
(24.125801, 90.389984)
06th January and 4th & 19th Feb 2020

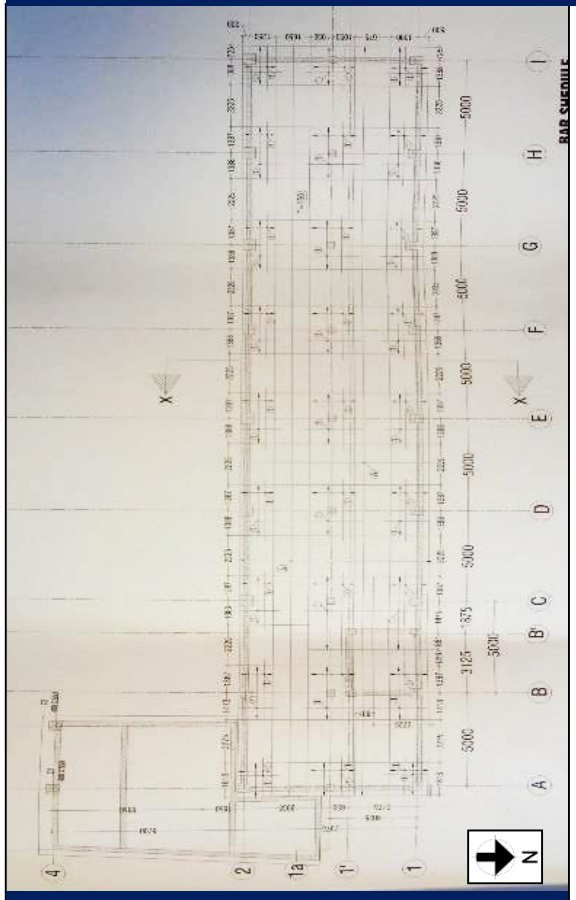
ACCORD
on Fire and Building Safety in Bangladesh

Observations

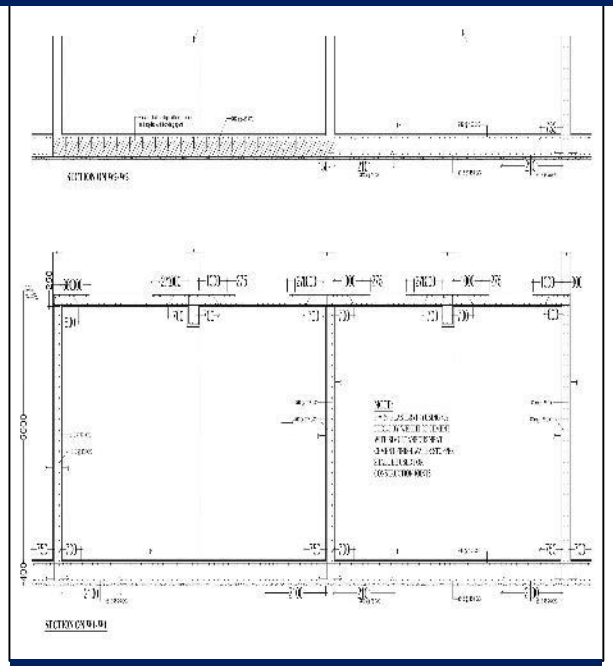
No geotechnical investigation report

Building-9, Building -10, Building -11

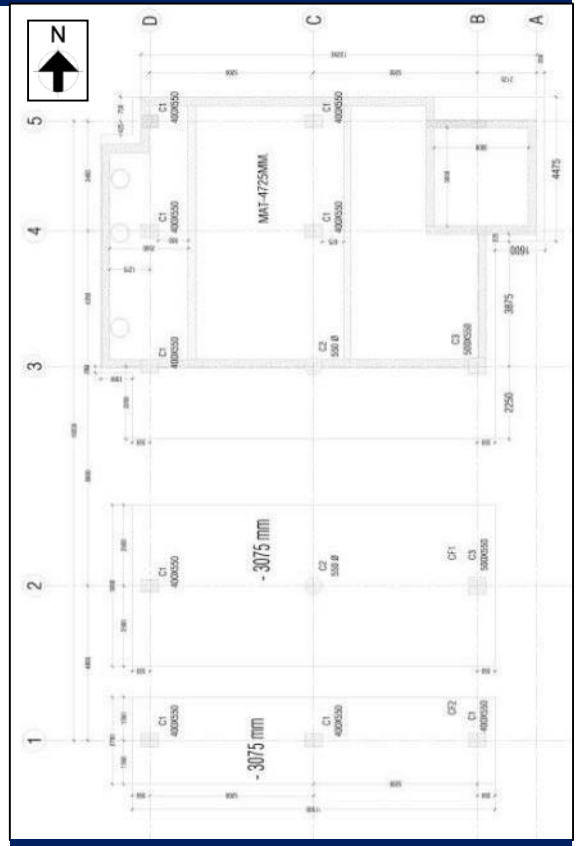
No geotechnical investigation report was found for the Building-9 Chemical Building (New), Building-10 (Thermo Oil Building) and Building-11 (Washing Extension Building). The factory management stated that, the geotechnical evaluation was done for the mentioned buildings based on the previous geotechnical investigation report that was produced for the factory buildings under ACCORD ID: 9533. But no bore hole sample for Building-9, 10 & 11 has been taken in the previous geotechnical investigation report . Thus, new geotechnical investigation report for the mentioned buildings is required to confirm the foundation adequacies for bearing.



Building 9 Mat Layout



Building 10 Mat Section



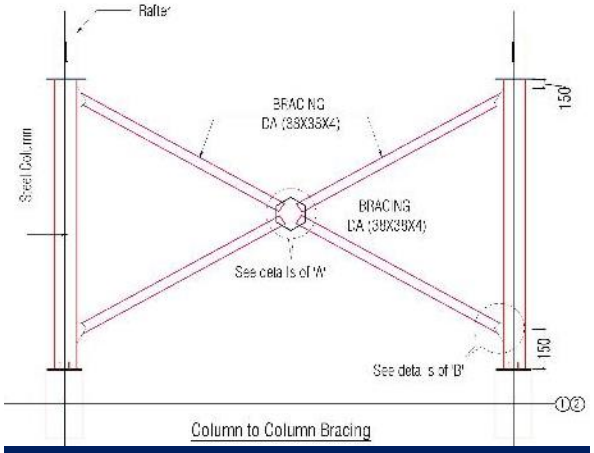
Building 11 Mat and combined footing layout

Building-9 ,Building -10, Building -11

Improper bracing system

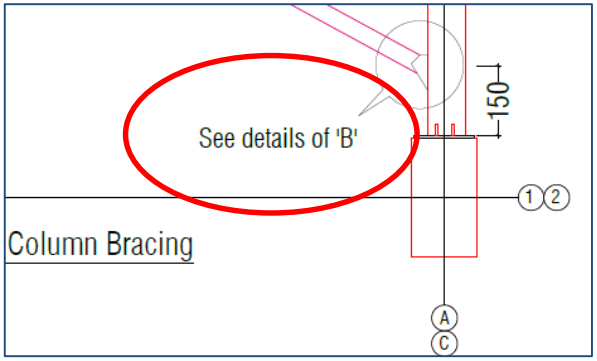
Building-8 (ETP Shed)

Bracing on site

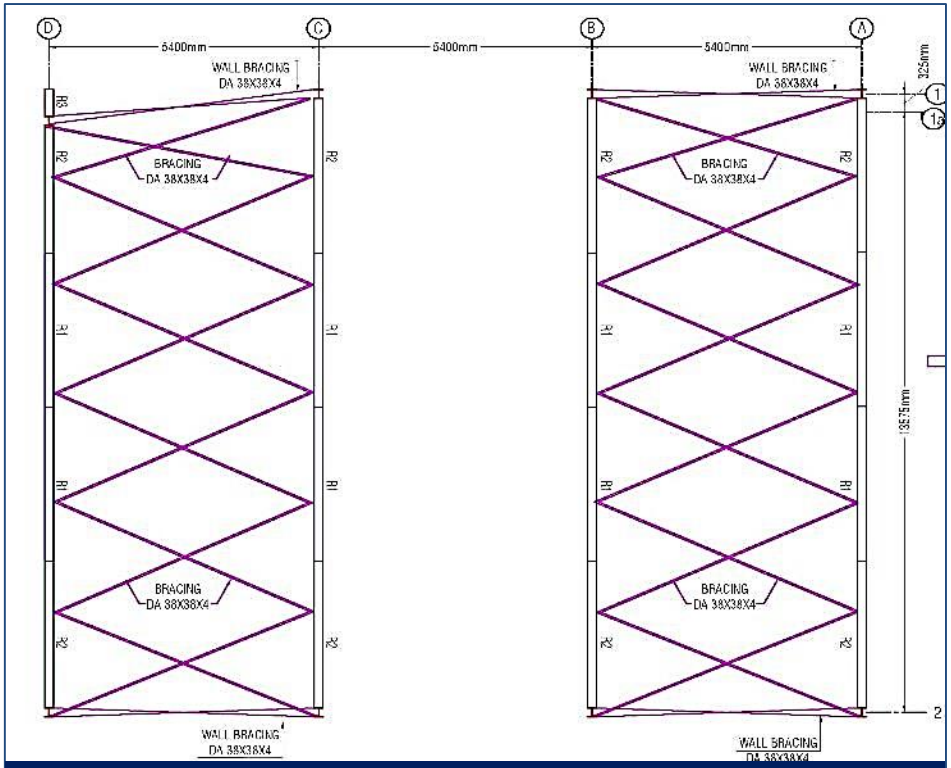


Bracing in drawing

Some bracing has not been installed as per drawings. Details of bracing connection is missing in the drawing. Lateral load transfer mechanism between braced frames is not clear.



No details of “B” was found



Compression strut missing between grid B and C

Building-8 (ETP Shed)

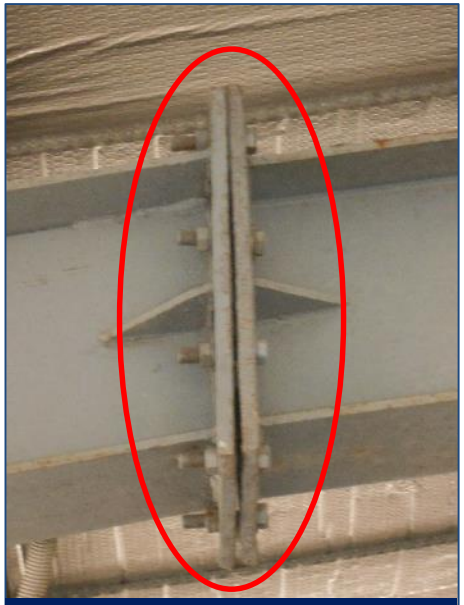
Gap between connection plates

Building-8 (ETP Shed)

Gap in connection plate

Gap in connection plate

Significant gap found between connection plates in several locations. The factory engineer to take remedial actions to repair the connections where required.



Gap in connection plate

Gap between baseplate and concrete short column

Building-8 (ETP Shed)

Corrosion in steel member

Building-8 (ETP Shed)

Corrosion in bracing

Corrosion in column and bolt

Corrosion found in column, bolt and bracing members. The factory engineer to investigate the reason & extent of corrosion and suggest proper remedial measure accordingly.

Building-8 (ETP Shed)

Lack of drawing of steel shed at roof

Observations: Building-9 (Chemical Building (New))

Steel shed at roof

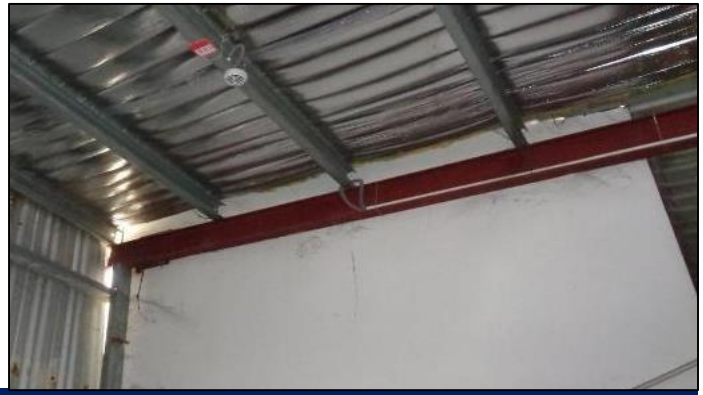
Interior of steel shed

Steel shed was found on the roof of the chemical building (New). As-built drawing and design documents for the steel shed was not available. Factory engineer is required to prepare “as-built” drawings with complete structural information.

Observations: Building-9 (Chemical Building (New))

Lack of lateral stability of steel shed at roof

Observations: Building-9 (Chemical Building (New))



Connection of rafter with wall

Connections of steel sheds

Along the long direction of the roof shed, no load transfer mechanism was found except some purlins. The factory engineer is required to check the lateral stability of the shed as part Engineering Assessment.

Observations: Building-9 (Chemical Building (New))

Lack of expansion gap between old and new Chemical Building

Observations: Building-9 (Chemical Building (New))

Chemical building (New)

Chemical building (Old)

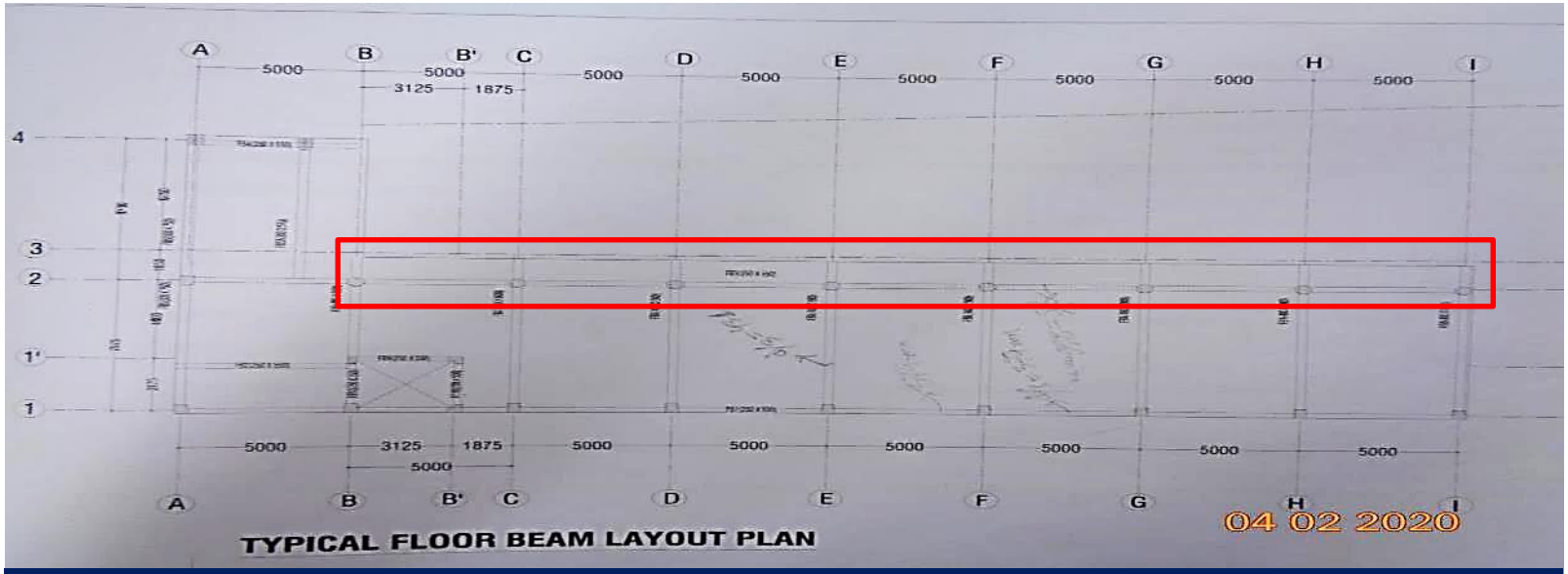
No gap provided between the old and new part of Chemical Building. The factory engineer is required to assess the maximum displacement of the building for the critical loadings and take necessary actions accordingly.

No gap has been provided

Observations: Building-9 (Chemical Building (New))

Discrepancies between drawing and as-built condition

Observations: Building-9 (Chemical Building (New))



Cantilever beam in the layout drawing

Cantilever beam was not found at 1st floor level

Cantilever beam was shown in the provided drawings but was not found on site at 1st floor level. The factory engineer is required to prepare "as-built" drawings with complete structural information.

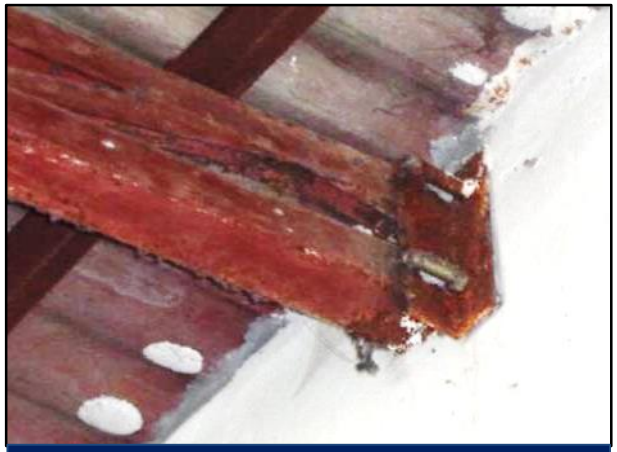
Observations: Building-9 (Chemical Building (New))

Undocumented waste store at ground floor level.

Observations: Building-9 (Chemical Building (New))

Waste store

Trusses are connected to the beam of main building



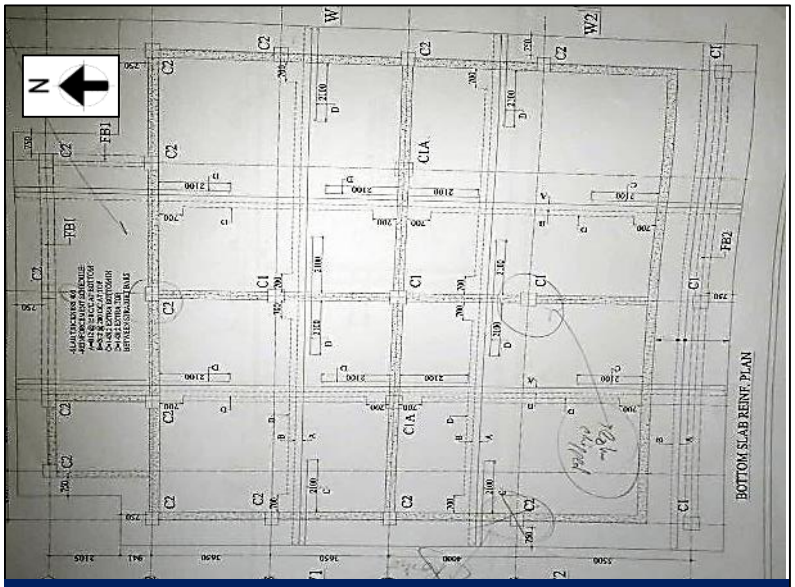
Connection

Undocumented waste store was found at east side on ground floor of the building. The trusses are connected to the beam of the main building. Factory engineer is required to prepare “as-built” drawings with complete structural information. Also, the adequacy of trusses to be checked for gravity and lateral forces.

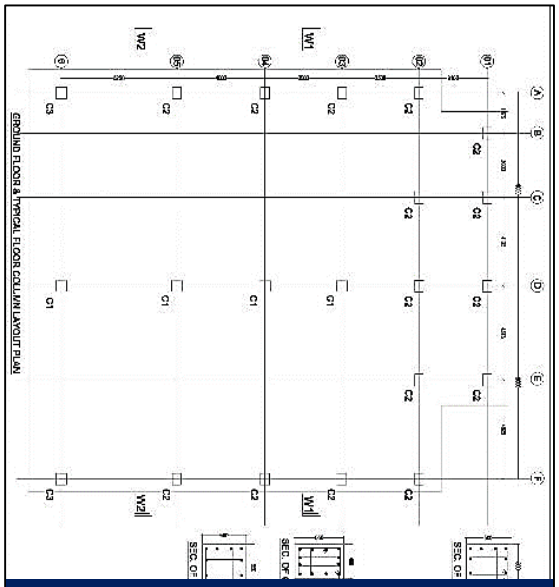
Observations: Building-9 (Chemical Building (New))

Inconsistencies in drawings

Observation: Building-10 (Thermo Oil Building) and Building-11 (Washing Extension Building)

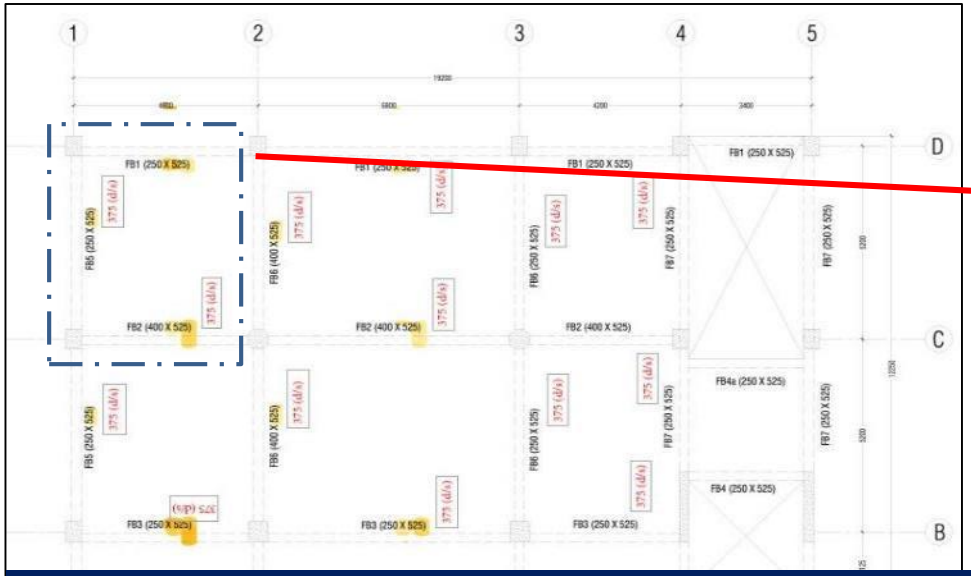


Mat Bottom slab reinforcement plan with column layout of thermo Oil Building



Column layout of thermo Oil Building

Mat slab reinforcement detail does not match with column layout of Thermo oil building.



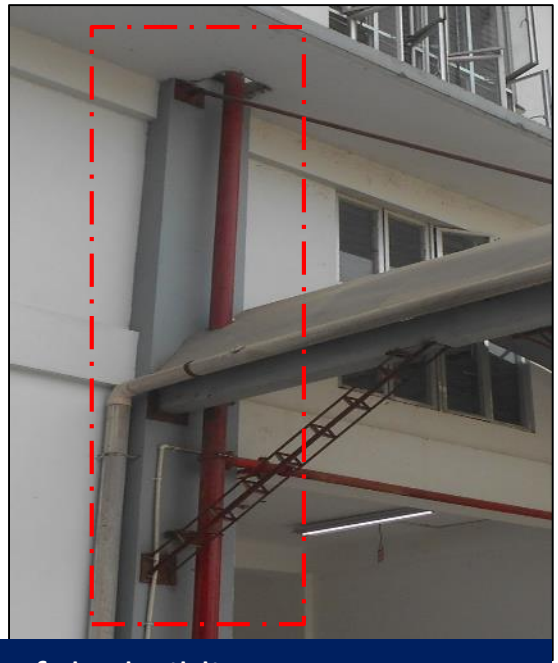
Beam layout of Washing Oil Building and Beam Dimension

Beam down stand of Washing building found 375 mm instead of 325 mm. The Slab thickness of washing building was found 200 mm instead of 150 mm. Some drawing as such lift core section, slab layout found missing. Revision of As-built drawing is required.

Observations: Building-10 and Building-11

Porch was found in both Thermo Oil Building and Washing Building

Drawing of porch was not available. The porch connected to brick wall. Verification of the connection is required.



Porch connected to the wall of the buildings

Observations: Building-10 and Building-11

Column susceptible to impact load

Observation: Building-10 (Thermo Oil Building) and Building-11 (Washing Extension Building)

Washing Extension Building

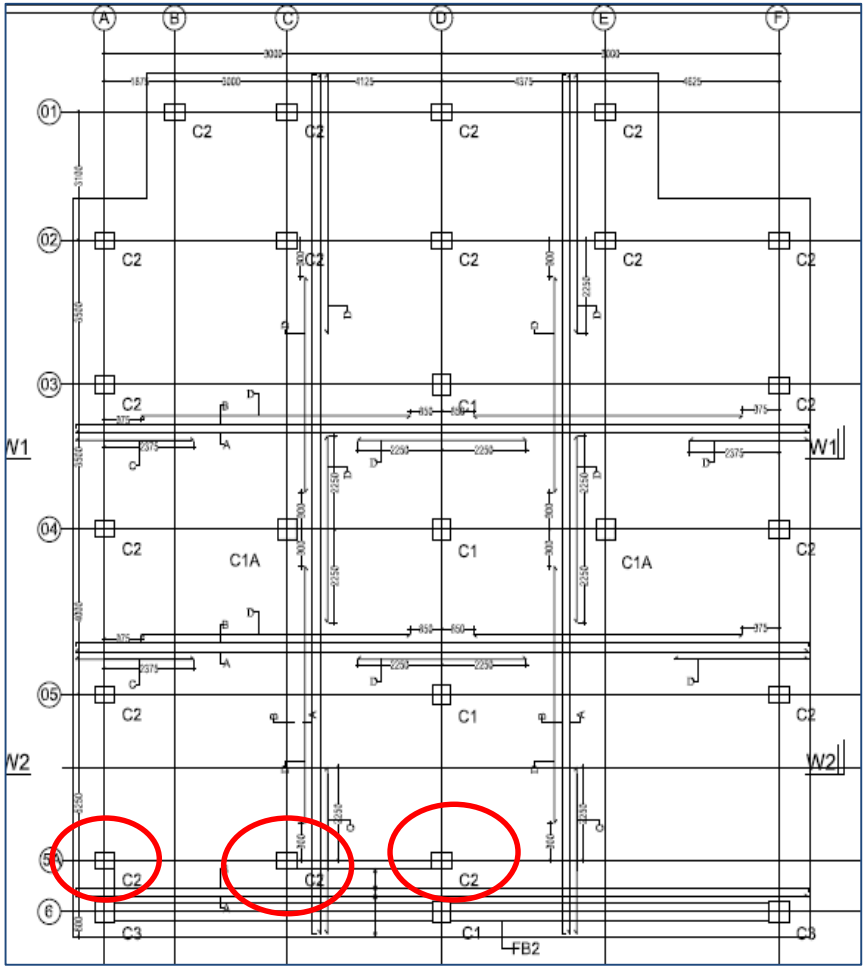
Thermo Oil Building

Columns are susceptible to impact loading from trolly. Signs of damage in columns were observed. Protection to be provided to the columns.

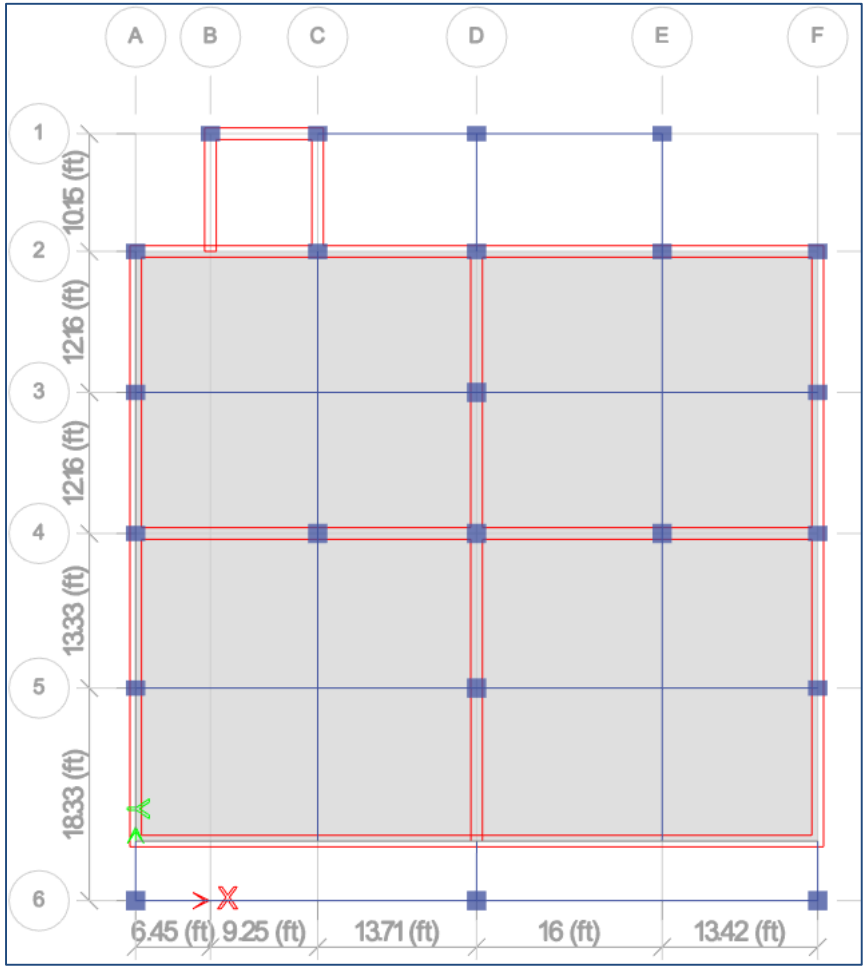
Observations: Building-10 and Building-11

Mismatch between drawings and FEA model

Observation: Building-10 (Thermo Oil Building)



Column Layout in provided drawing



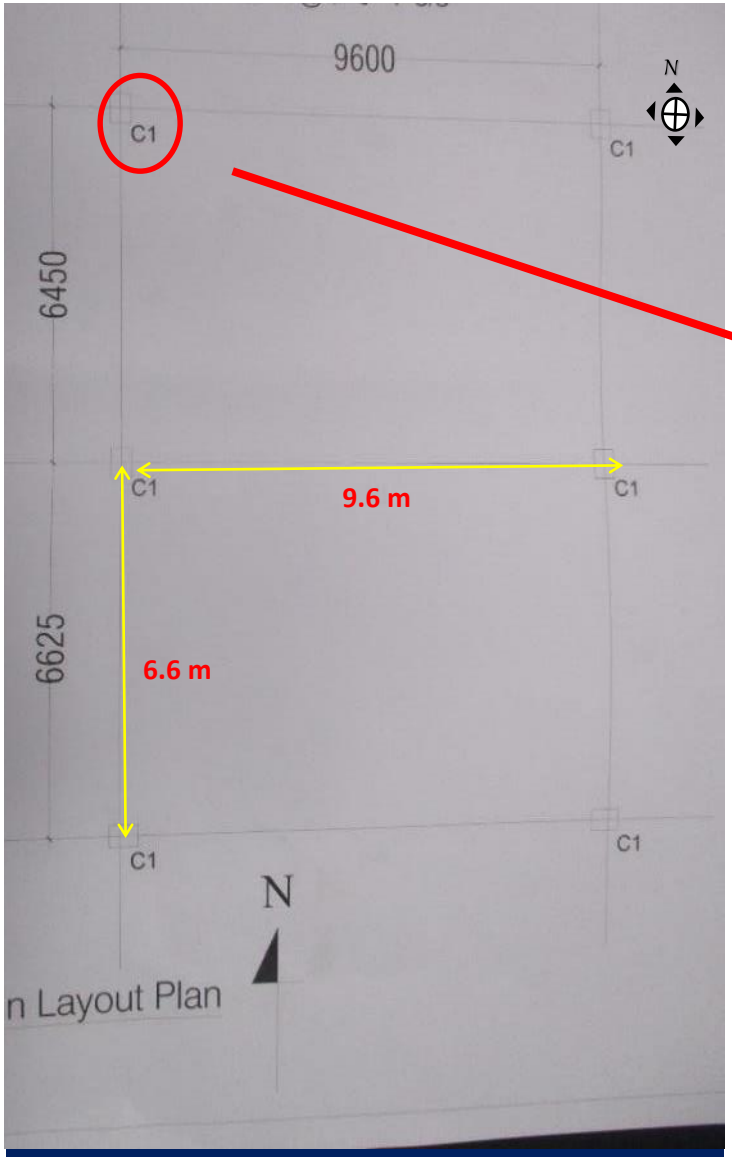
Column Layout in FEA model

Marked Columns at basement level is shown in the drawing was not found in the provided FEA model that. The FEA model is required to be updated properly.

Observation: Building-10 (Thermo Oil Building)

Crack in column

Observations: Building-12 (Boiler Building)



Column layout

Crack found in concrete surface

Crack found in concrete surface in the column at north-west corner (marked). The factory engineer is required to investigate the causes of crack and repair with a suitable method immediately.

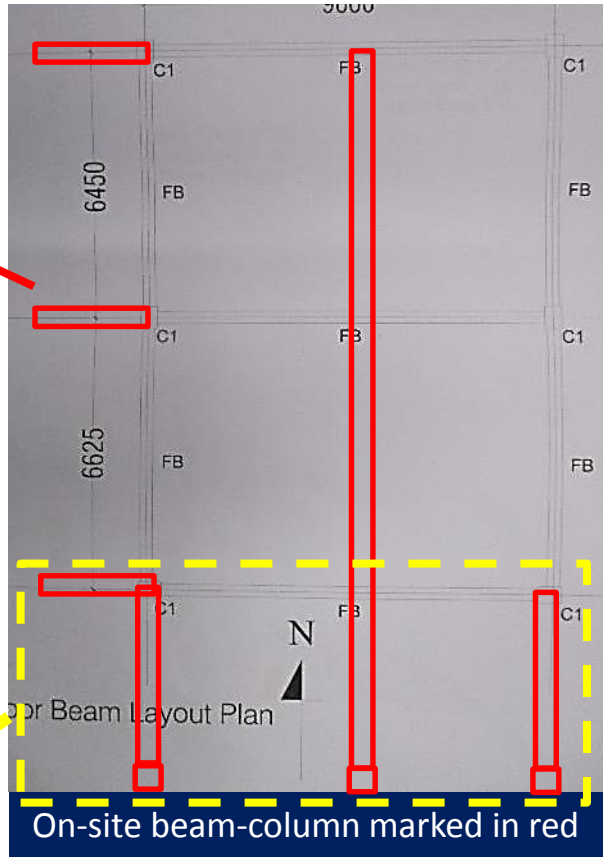
Observations: Building-12 (Boiler Building)

Discrepancy between provided drawing and as-built condition

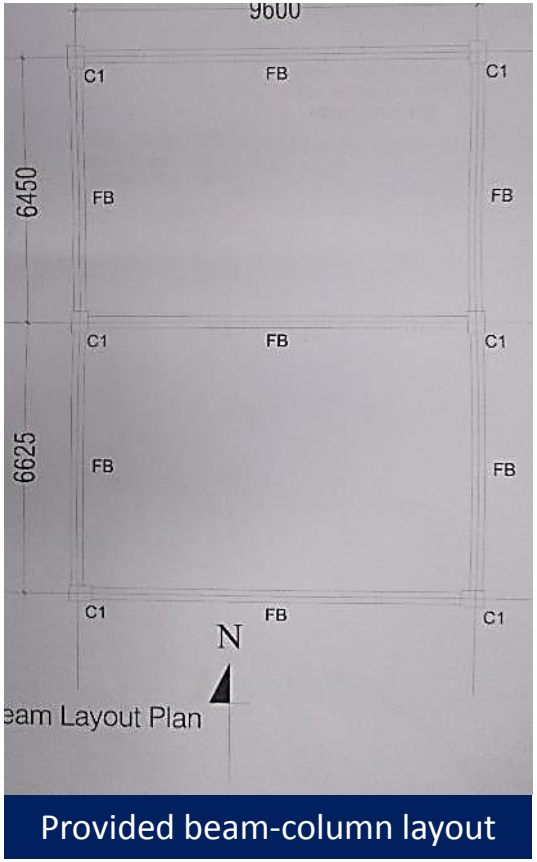
Observations: Building-12 (Boiler Building)

Undocumented cantilever

One extra bay connected with another building



On-site beam-column marked in red



Provided beam-column layout

Provided beam-column layout didn't match with onsite condition. One extra bay was found connected with another building. The factory engineer is required to produce accurate as-built drawing and carryout Detail Engineering Assessment.

Observations: Building-12 (Boiler Building)

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Unsupported long column

Observations: Building-12 (Boiler Building)

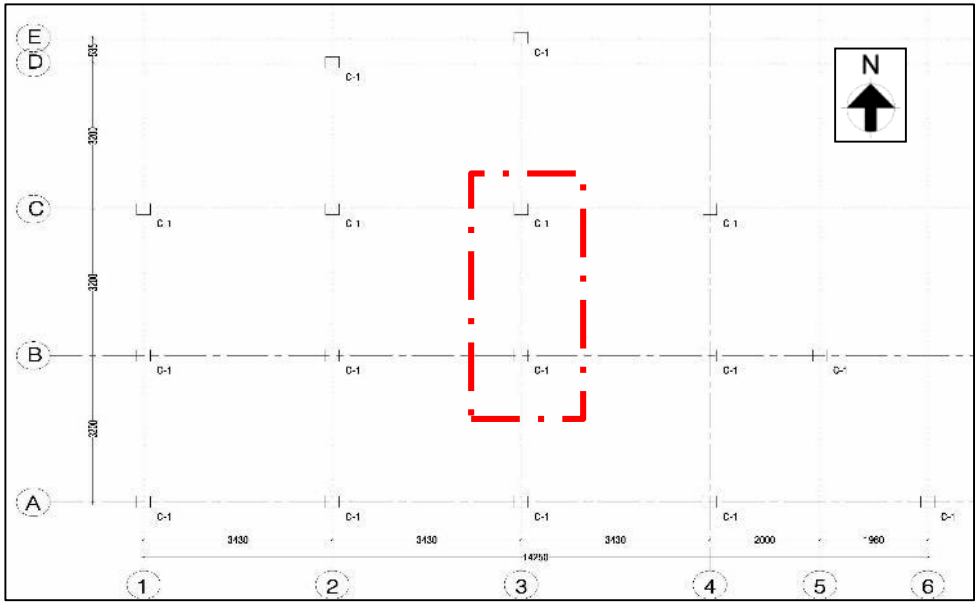
The column size is 500mm x 400mm and unsupported length is 5.88 m

The factory engineer is required to check the adequacy of the long columns as a part of Detail Engineering Assessment.

Observations: Building-12 (Boiler Building)

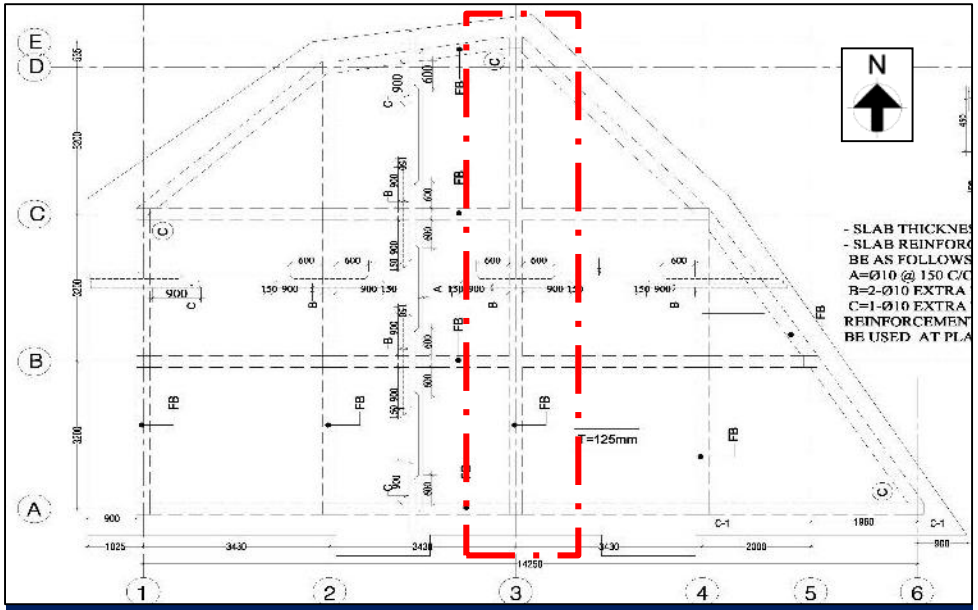
Inconsistencies in the provided drawings

Observation: Building-13 (Child Care)

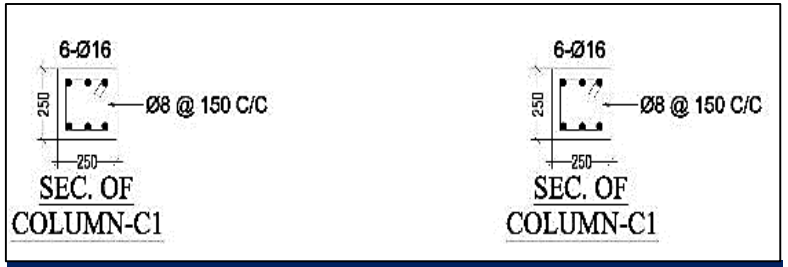


Columns have shown in the drawing

No columns and beam found in the marked location



Beam has shown in the drawing



6 rebars have shown in the column schedule where 4 rebars found onsite.

The factory engineer to survey the structure and update the as-built structural drawings accurately.

Observation: Building-13 (Child Care)

Absence of lateral load transfer media

Observations: Building-20 (Steel shed Go-down)

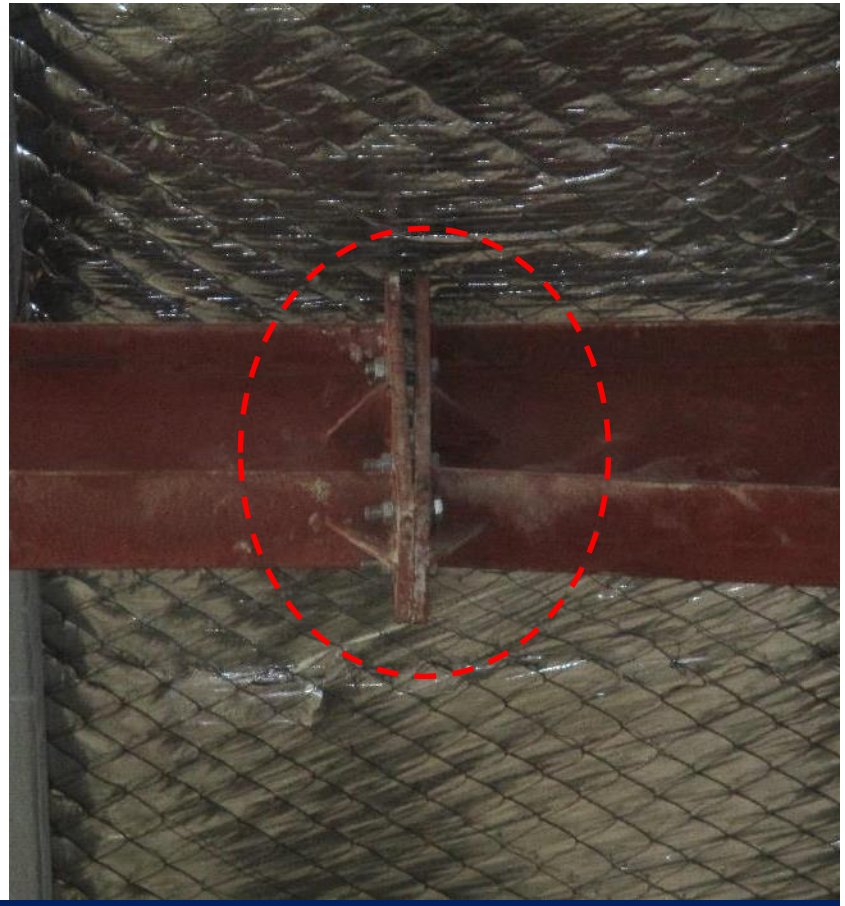
No vertical bracing/tie beam/compression strut provided along long direction

Lateral load transfer mechanism along long direction was absence. The factory engineer to carryout engineering assessment and design the lateral stability system for the structure.

Observations: Building-20 (Steel shed Go-down)

Gap between connection plates

Observations: Building-20 (Steel shed Go-down)



Gap between connections plates

The factory engineer is required to repair the connections.

Observations: Building-20 (Steel shed Go-down)

Loose cable bracing

Observations: Building-20 (Steel shed Go-down)

Roof cable bracing was found loose in several locations

Observations: Building-20 (Steel shed Go-down)

Corrosion in steel members

Observations: Building-20 (Steel shed Go-down)

Corrosion found in steel members in several locations

The factory to take protective measures to protect the steel columns from corrosion.

Observations: Building-20 (Steel shed Go-down)

Undocumented canopy

Observations: Building-20 (Steel shed Go-down)

Canopy at front side of the shed

No bracing system

Observations: Building-20 (Steel shed Go-down)

Problems Observed

All Multistoried Structures

Item 01 : No geotechnical investigation report.

Building-8 (ETP Shed)

Item 02: Improper bracing system.
Item 03: Gap between connection plates.
Item 04: Corrosion in steel member.

Building-9 (Chemical Building New)

Item 05: Lack of drawing of steel shed at roof.
Item 06: Lack of lateral stability of steel shed at roof.
Item 07: Lack of expansion gap between old and new Chemical Building.
Item 08: Discrepancies between drawing and as-built condition.
Item 09: Undocumented waste store at ground floor level.

Building-10 (Thermo Oil Building) and Building-11 (Washing Extension Building)

Item 10: Inconsistencies in drawings.
Item 11: Column susceptible to impact load.

Building-10 (Thermo Oil Building)

Item 12: Mismatch between drawings and FEA model.

Problems Observed

Building-12 (Boiler Building)

Item 13: Crack in column
Item 14: Discrepancy between provided drawing and as-built condition
Item 15: Unsupported long column

Building -13 Child Care

Item 16: Inconsistencies in the provided drawings

Building-20 (Steel shed Go-down)

Item 17: Absence of lateral load transfer media
Item 18: Gap between connection plates
Item 19: Loose cable bracing
Item 20: Corrosion in steel members
Item 21: Undocumented canopy

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	No geotechnical investigation report. (Building-9, 10 and 11)	Carryout geotechnical investigation.	**6-weeks**
2	No geotechnical investigation report. (Building-9, 10 and 11)	Check the foundation adequacies and prepare a report regarding the adequacy check.	**6-weeks**
3	No geotechnical investigation report. (Building-9, 10 and 11)	Carry out remedial works where necessary.	**6-months**
4	Improper bracing system. (Building-8: ETP Shed)	Prepare “as constructed” drawings with complete structural information.	**6-weeks**
5	Improper bracing system. (Building-8: ETP Shed)	Engineering assessment is required to be carried out to confirm the lateral stability.	**6-weeks**
6	Improper bracing system. (Building-8: ETP Shed)	Carry out remedial works where necessary.	**6-months**
7	Gap between connection plates. (Building-8: ETP Shed)	The factory engineer to investigate the connections and repair with proper remedial method.	**6-weeks**
8	Corrosion in steel member. (Building-8: ETP Shed)	The factory engineer to investigate the reason & extent of corrosion and implement proper remedial measure accordingly.	**6-weeks**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
9	Lack of drawing of steel shed at roof. (Building-9: Chemical Building New)	Prepare as-built drawings with complete structural information.	**6-weeks**
10	Lack of lateral stability of steel shed at roof. (Building-9: Chemical Building New)	The factory engineer is required to carry out an Engineering Assessment (EA) for the steel shed.	**6-weeks**
11	Lack of lateral stability of steel shed at roof. (Building-9: Chemical Building New)	Implement the recommendation of EA.	**6-months**
12	Lack of expansion gap between old and new Chemical Building. (Building-9)	The factory engineer is required to assess the maximum displacement of the building for the critical loadings.	**6-weeks**
13	Lack of expansion gap between old and new Chemical Building. (Building-9)	Provide the expansion gap between the New & Old building as required.	**6-months**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
14	Discrepancies between drawing and as-built condition. (Building-9: Chemical Building New)	The factory engineer is required to survey the structure and develop as-built drawings which reflect the on-site condition.	**6-weeks**
15	Discrepancies between drawing and as-built condition. (Building-9: Chemical Building New)	Check the capacity of the RC cantilever slab.	**6-weeks**
16	Undocumented waste store at ground floor level. (Building-9: Chemical Building New)	Produce as-built drawings with complete structural information.	**6-weeks**
17	Undocumented waste store at ground floor level. (Building-9: Chemical Building New)	The factory engineer to check the adequacy of roof trusses for the gravity and lateral forces.	**6-weeks**
18	Undocumented waste store at ground floor level. (Building-9: Chemical Building New)	Carryout remedial works if required.	**6-months**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
19	Inconsistencies in drawings. (Building-10 & 11: Thermo Oil Building & Washing Extension Building)	Prepare as-built drawings with complete structural information.	**6-weeks**
20	Column susceptible to impact load. (Building-10 & 11: Thermo Oil Building & Washing Extension Building)	Construct and maintain protection to critical columns.	**6-weeks**
21	Mismatch between drawings and FEA model. (Building-10: Thermo Oil Building)	The FEA model is required to be updated properly and submitted to Accord for further review.	**6-weeks**
22	Mismatch between drawings and FEA model. (Building-10: Thermo Oil Building)	Carry out remedial works where necessary.	**6-months**
23	Crack in column (Building-12: Boiler Building)	Factory consultant is required to investigate the cause of crack and prepare an investigation report with a repair methodology.	**Immediate - Now**
24	Crack in column (Building-12: Boiler Building)	Repair the crack as per investigation report	**Immediate - Now**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
25	Discrepancy between provided drawing and as-built condition (Building-12: Boiler Building)	The factory engineer is required to re-survey the whole building and produce accurate as-built drawing.	**6-weeks**
26	Discrepancy between provided drawing and as-built condition (Building-12: Boiler Building)	Carryout Detail Engineering assessment (DEA) considering the deviation in drawing.	**6-weeks**
27	Discrepancy between provided drawing and as-built condition (Building-12: Boiler Building)	Implement remediation work if required.	**6-months**
28	Unsupported long column (Building-12: Boiler Building)	Factory engineer is required to carryout the adequacy check of the unsupported long columns.	**6-weeks**
29	Unsupported long column (Building-12: Boiler Building)	Implement remediation work if required.	**6-months**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
30	Inconsistencies in the provided drawings (Building-13: Child Care)	Prepare as-built drawings with complete structural information.	**6-weeks**
31	Absence of lateral load transfer media (Building-20: Steel Shed Go-down)	The factory engineer to carryout engineering assessment (EA) and design the lateral stability system for the structure.	**6-weeks**
32	Absence of lateral load transfer media (Building-20: Steel Shed Go-down)	Implement remediation work suggested in EA.	**6-months**
33	Gap between connection plates (Building-20: Steel Shed Go-down)	The factory engineer to investigate the connections and repair with proper remedial method.	**6-weeks**
34	Loose cable bracing (Building-20: Steel Shed Go-down)	The factory engineer is required to tighten the loose bracings properly.	**6-weeks**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
35	Corrosion in steel members (Building-20: Steel Shed Go-down)	The factory is required to take protective measure to protect steel column/rafter from corrosion.	**6-weeks**
36	Undocumented canopy (Building-20: Steel Shed Go-down)	The factory engineer to develop as-built drawing as part of engineering assessment (EA).	**6-weeks**
37	Undocumented canopy (Building-20: Steel Shed Go-down)	Implement remedial actions if required.	**6-months**