

Kenpark Bangladesh (Pvt) Ltd. (Extension)

Plot # 31-42, Sector # 08, Chittagong EPZ, Chittagong.

(22.279173, 91.774196)

13 December 2023



1. Building Information

- 1. Main Factory Building:** The structure is a single-storied prefabricated steel shed with a mezzanine floor.
- 2. Canteen Building:** The structure is single storied steel.
- 3. 3D Building:** 3D building is a three storied RC building.
- 4. Security Room:** This is a single storied RC moment resisting frame building.
- 5. CMS Shed:** This is a single storied (G) steel shed.
- 6. Boiler Room (6 Ton):** This is a single storied steel roof supported by RC beam-column frame.
- 7. Rain Protection Shed:** The structure is single storied steel.
- 8. Transformer Room-1:** This is a single storied shed (steel roof rested on RC column).
- 9. RWTP Shed-1:** This is a single storied steel shed.
- 10. RWTP Shed-2:** This is a single storied steel shed.
- 11. Garbage Receptacle & Idle Machine Shed:** This is a single storied steel shed.
- 12. Prayer & Locker Building:** This is a two storied (G+1) RC building.
- 13. Compressor Room-1:** This is a single storied RC building.
- 14. Diesel Tank Shed:** This is a single storied shed.
- 15. Male Toilet Block:** This is a single storied (G) RC structure.
- 16. Driver's Waiting Room:** This is a single storied (G) RC structure.
- 17. Chemical Issue Room:** This is a single storied (G) RC structure.
- 18. WP QC Area Shed:** This is a single storied (G) steel shed.
- 19. Fire Pump Room:** This is a single storied (G) shed.
- 20. Overhead Pump Room:** The overhead pump room building is a two storied RC building with an overhead water tank.
- 21. ETP Pump Room:** ETP Pump room building is a single storied RC building.
- 22. Maintenance Workshop Shed:** This is a single-storied steel shed.
- 23. WP Maintenance Workshop Shed:** This is a single-storied steel shed.
- 24. Loading & Unloading Shed of WP:** This is a single-storied steel shed.

2. Observations

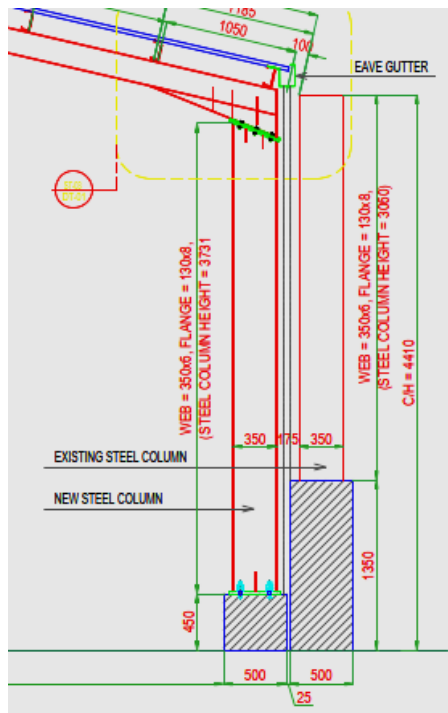
Observation-1: Lack of design documents. (Main factory building)



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. 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.

At the time of inspection, design documents (including as-built drawings, design report, load plan and material test reports) were not available which are required to be prepared in compliance with section 1.9.1 (part-6, BNBC).

Observation-2: Incomplete as-built drawing (Canteen building and rain protection shed)



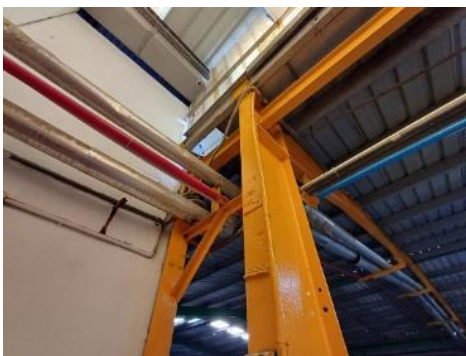
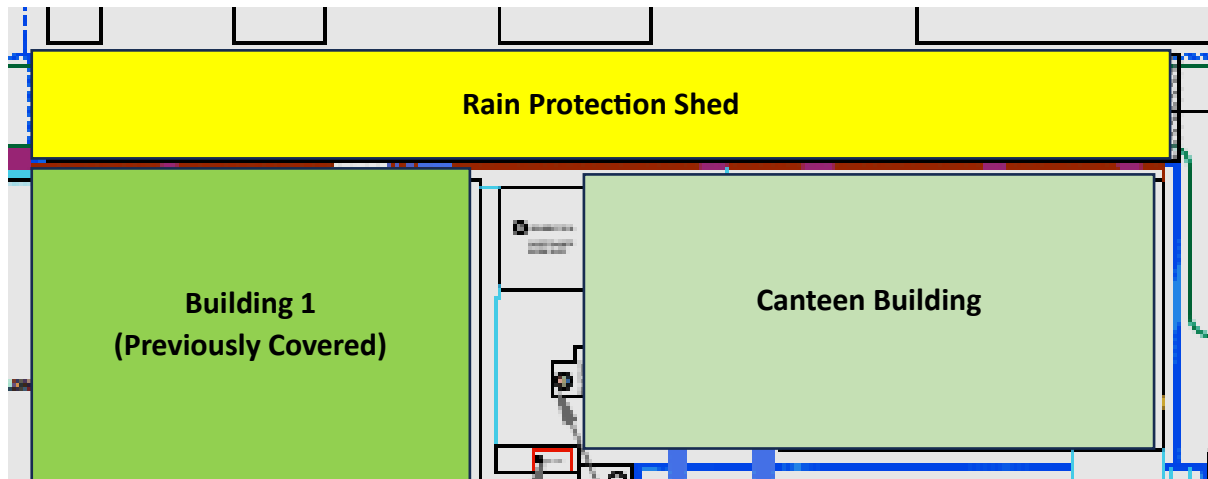
Schedule of Steel Column
(Rain Protection Shed)



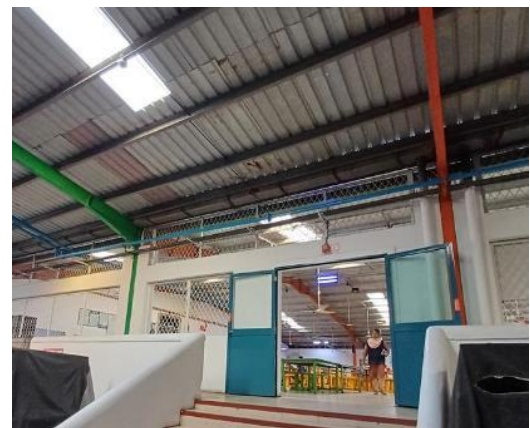
Flange thickness of steel column
(Canteen Building)

Description: Flange thickness of steel column for Rain Protection Shed was found 7.1 mm instead of 8 mm. Also, the flange thickness of several columns and rafters of Canteen Building were found 5 to 8 mm instead of 10 mm. Details of compression strut, roof bracing, connection was not found in as-built drawing. Building engineer is required to survey whole structure and prepare accurate as-built drawings as per site condition.

Observation-3: Lack of lateral stability (Canteen building and Rain protection shed)



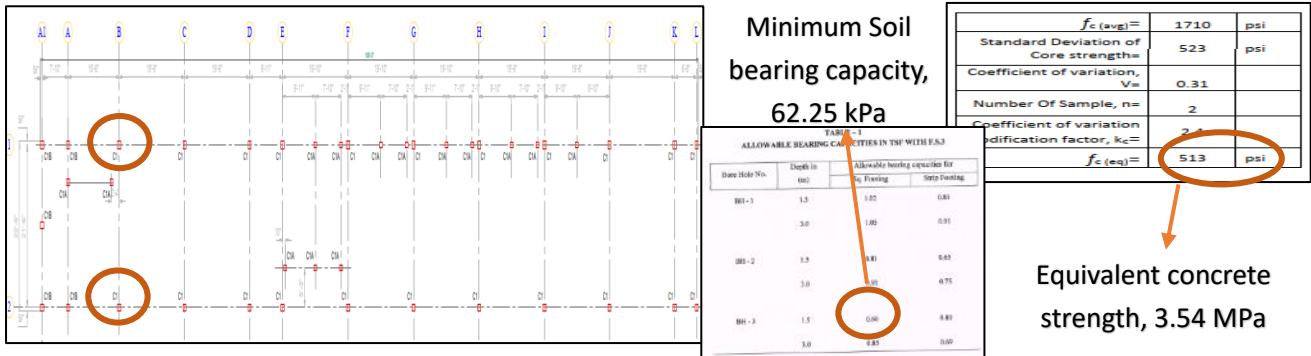
Connection between Rain Protection Shed and Building 1



Canteen Building and Rain Protection shed – Structurally Connected

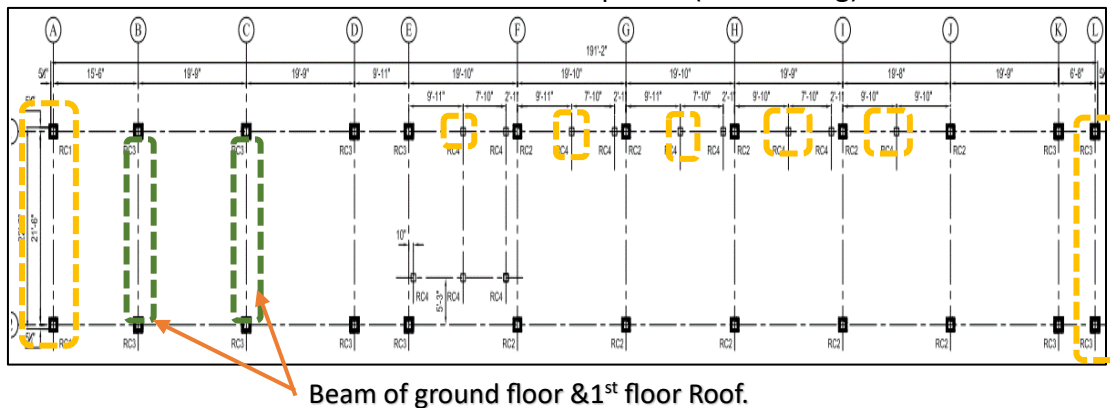
Description: Rain Protection Shed is partially connected with Canteen Building and partially connected with Building 1. Besides, no compression strut at ridgeline and vertical bracing in north-south direction. Building engineer is required to check the stability system & adequacy of all structural element, connection etc. and submit to RSC for review.

Observation-4: High stress in Column and Footing (3D Building).



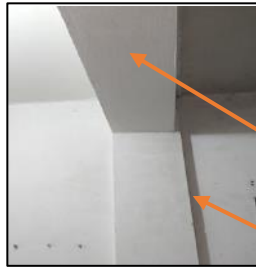
Description: Cursors calculation indicates high stress in the marked columns and footings based on live load (3kPa for typical floor, 1.5 kPa for Roof), dead load (including wall load) and 62.25 kPa for foundation capacity & 3.54 Mpa concrete strength for column as per core test report. The source of loading is minimum live load as per load plan and partition wall. The building engineer is required to carry out Detail Engineering Assessment (DEA) to review the design, loads, column capacity and foundation stress based on in-situ material strength, and minimum floor live loads.

Observation-5: Remediation works needs to be completed (3D Building).

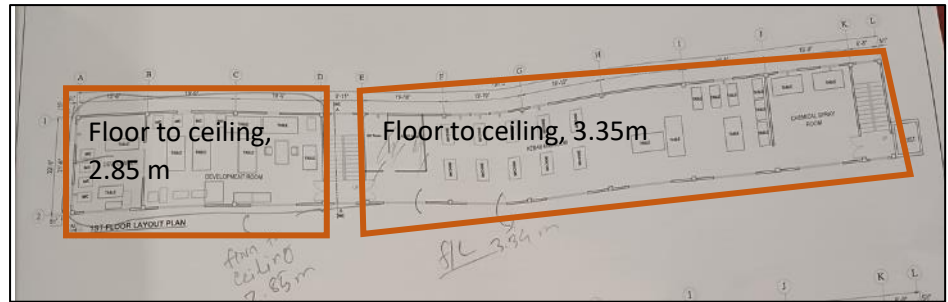
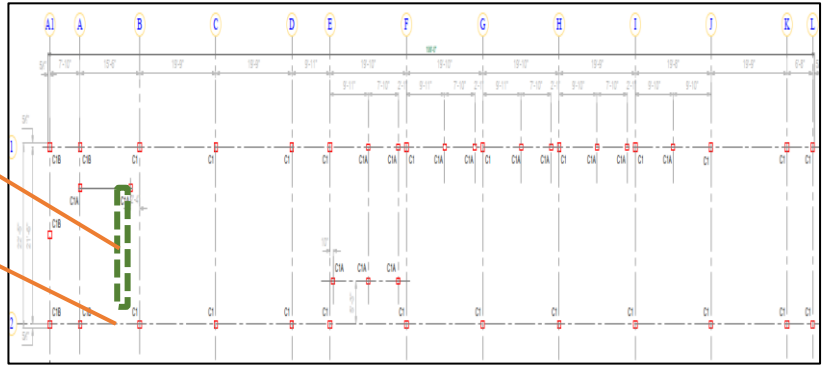


Description: Marked columns and beam were required to retrofit as per retrofitting drawing. However, during inspection remediation works were found incomplete for these columns and beam. Factory is required to complete the remediation works as per retrofitting drawing.

Observation-6: Mismatch in as built drawings (3D Building).



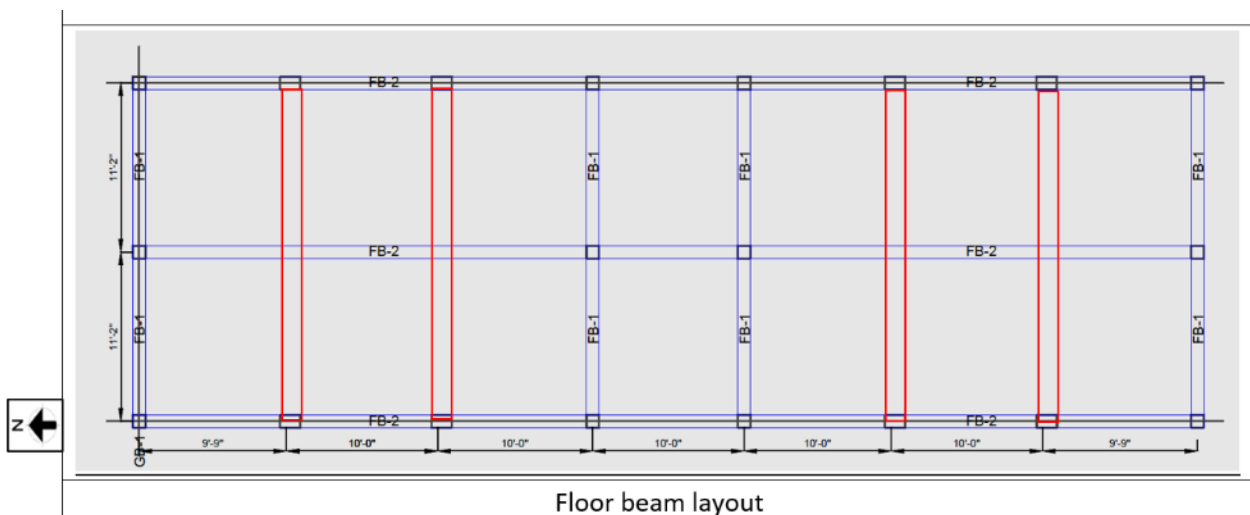
This Beam & Column not shown in drawings.



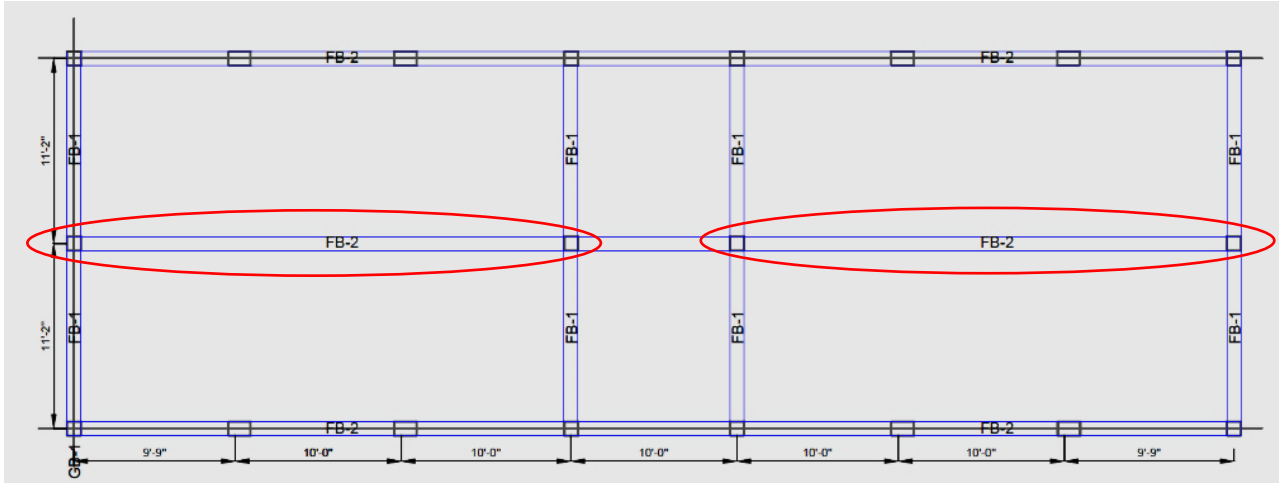
Different level was observed between these two parts at 1st floor level.

Description: During inspection, mismatches were found between onsite condition and as-built drawing. Some column and beam are not shown up to 1st floor roof. Also, different floor to ceiling height was observed on 1st floor level. The building engineer is required to survey the full structure and produce accurate as-built drawings.

Observation 7: Mismatches in as built drawings (Prayer & locker building)



Description: Red marked beams were found onsite but not shown in drawing.



Description: Marked beams were not found onsite. Moreover, foundation and slab details are not shown in as-built drawings.

Building engineer is required to update the as-built drawing.

Observation 8: Lack of design documents. (Prayer & locker building)



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. 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.

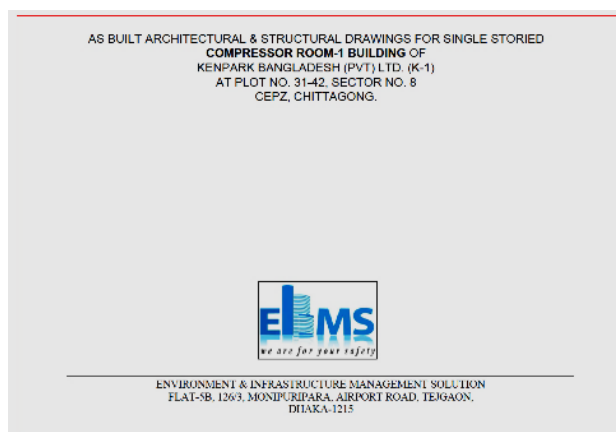
At the time of inspection, design documents (including design report, load plan and material test reports) were not available which are required to be prepared in compliance with section 1.9.1 (part-6, BNBC).

Observation 9: Crack on beams (Compressor Room 1)



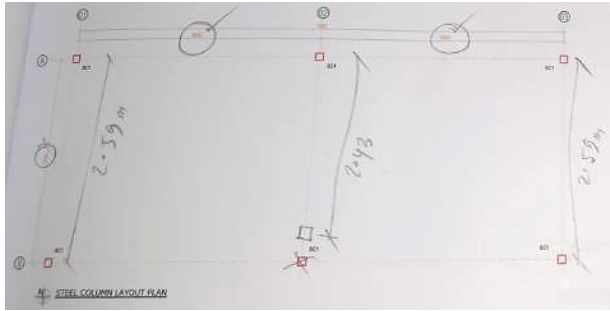
Description: Crack was observed on beam surface. The building engineer is required to check the extent of crack and prepare an investigation report with necessary remedial measure.

Observation 10: Lack of information in as built drawings. (Compressor room 1)

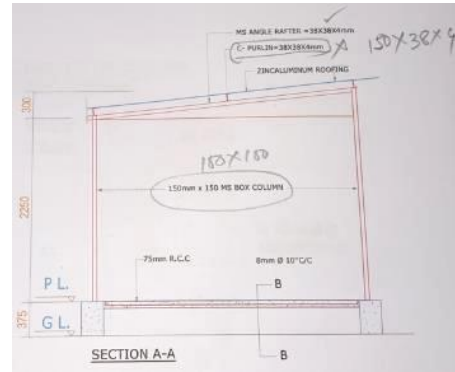


Description: During the inspection, the factory provided a set of as-built drawing. But foundation and slab details are not shown in as-built drawings. The building engineer is required to update the as-built drawing.

Observation 11: Discrepancies in as-built drawing (CMS Shed)



On-site grid spacing



Existing steel member size

Description: On-site grid spacing, and location of column did not match with as-built drawing. Also, steel column size found 100X100 box section instead of 150X150 box and C-channel found 150X38X4 instead of 38X38X4. The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.

Observation 12: Apparently inadequate connection (CMS Shed)



On-site connections

Description: During inspection, inadequate connections and apparently inadequate member size found. The building engineer is required to check the connection adequacy against the uplift force.

Observation 13: Corrosion observed at steel member (CMS Shed)



Severe corrosion at steel member

Description: During inspection, severe corrosion was observed at several steel members. The building engineer is required to remove the corrosion and provide rust proof coating.

Observation-14: Lack of design documents (Boiler Room (6 Ton))



Outside View



Steel Roof



Connection

Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design documents shall include as built drawings and a design report which shall be prepared in compliance with section 1.9.1, part-6 of BNBC. During inspection, the design report was not available on site. The building engineer is required to prepare a design report in compliance with BNBC 1.9.1.

Observation-15: Apparently inadequate connection (Transformer room-1)



Connection between pipe and brick wall

Description: The steel pipe is inserted into the brick wall poorly without any proper connection. The building engineer is required to check the connection adequacy of the steel members.

Observation-16: Lack of lateral stability system (RWTP Shed - 1)



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

Observation-17: Lack of lateral stability (RWTP Shed - 2)



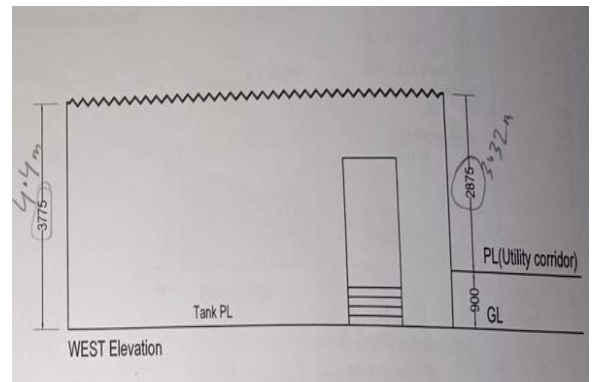
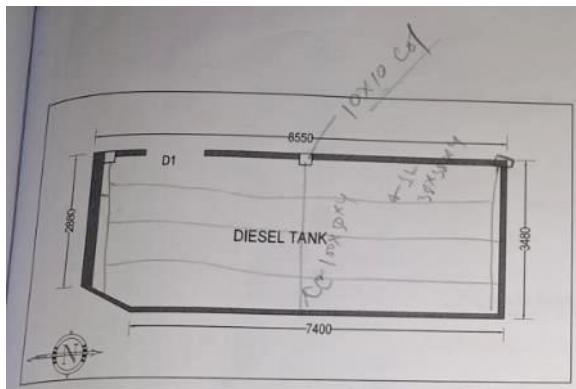
Lightweight Steel Roof



Poor Connection

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

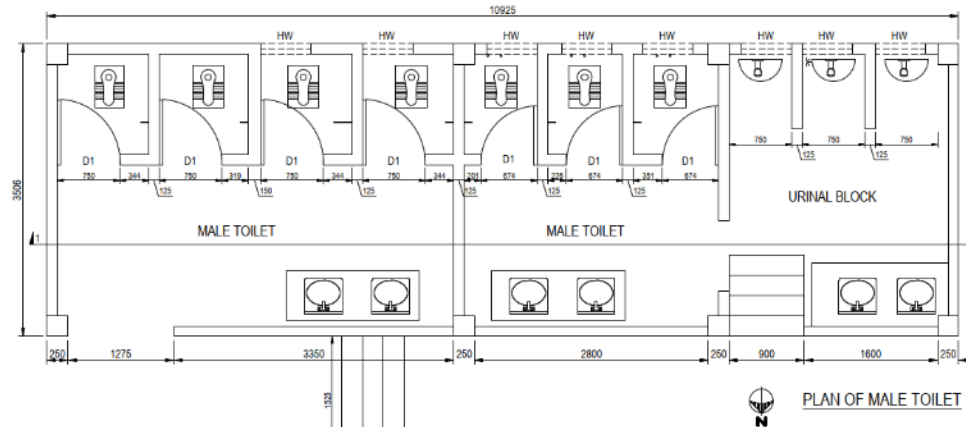
Observation 18: Lack of as-built drawing (Diesel tank shed)



Steel member, Column and Foundation details not available

Description: Details of steel members, columns and foundations were not available, only architectural plan was available. The building engineer is required to prepare a complete set of drawings as per actual site condition.

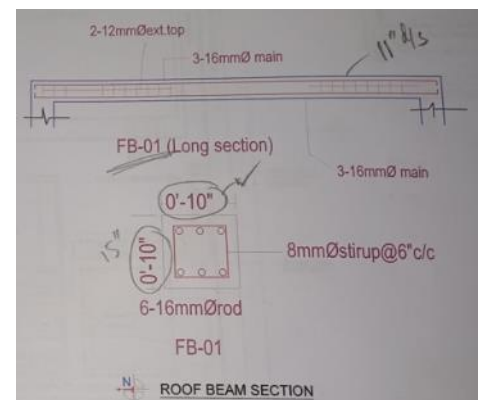
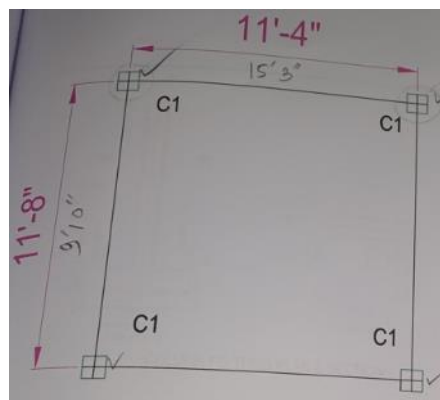
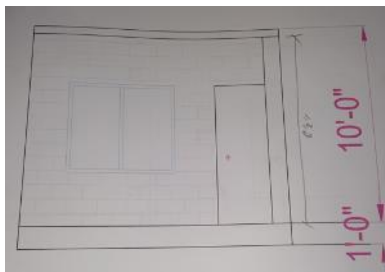
Observation 19: Lack of As-built drawing (Male toilet block)



Beam, Column and Foundation details not available

Description: Details of beams, Columns and Foundations were not available, only an architectural plan was available. The building engineer is required to prepare a complete set of as-built drawings as per actual site condition.

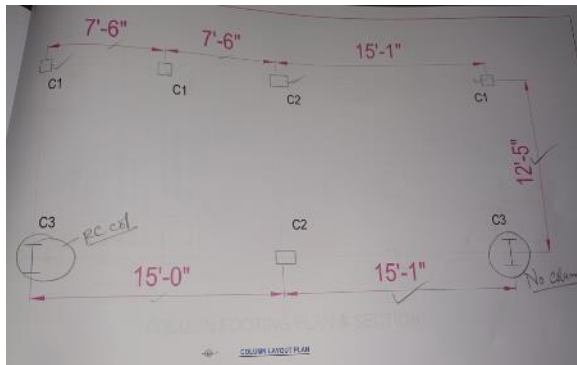
Observation 20: Discrepancies in As-built drawing (Driver's waiting room)



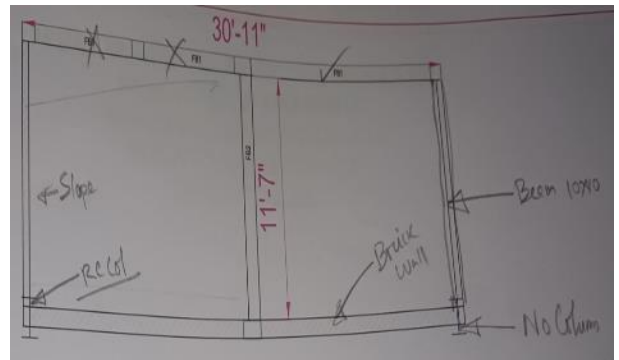
On-site conditions

Description: On-site grid spacing, height, beam section did not match with as-built drawing. A details were not available. The building engineer is required to survey the whole structure and re as-built drawing as per actual site condition.

Observation 21: Discrepancies in As-built drawing (Chemical issue room)



Mismatch in Column



Beam Layout not matched

Description: Column layout and beam layout did not match with as-built drawing. The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.

Observation 22: Lack of design documents (Chemical issue room)



Design documents not available

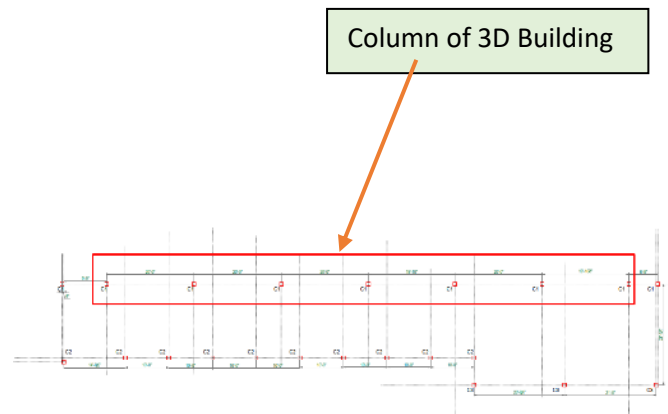
Description: As per BNBC (part-6), every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1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

At the time of inspection, design report was not available for this structure. The building engineer is required to prepare a set of design documents in compliance with BNBC.

Observation 23: Structurally connected with 3D Building (WP QC area shed)



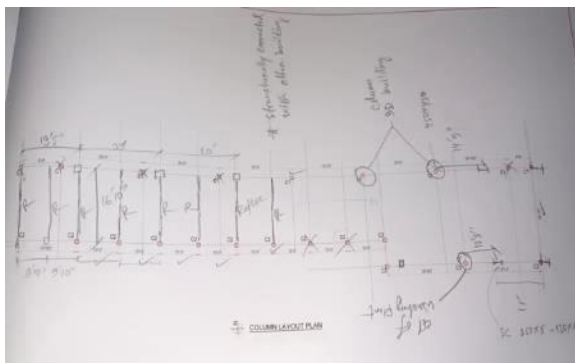
Structurally Connected Column



Column Layout

Description: Columns of this structure found connected with 3D Building. The building engineer is required to analysis the structure with 3D building otherwise separate the structure.

Observation 24: Discrepancies in As-built drawing (WP QC area shed)



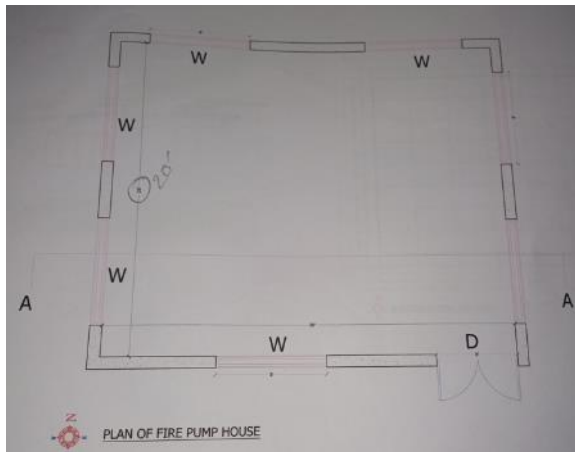
Mismatch in Column & Rafter



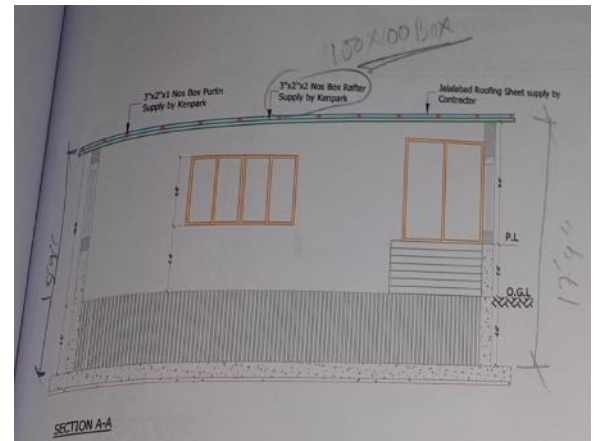
On-site condition

Description: Column layout and Rafter layout in as-built drawing did not match with actual site condition. The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.

Observation 25: Discrepancies in As-built drawing (Fire pump room)



On-site grid spacing



Existing steel member size

Description: On-site grid spacing did not match with as-built drawing. Also, steel column size found 100X100 box section instead of 75X50 box. The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.

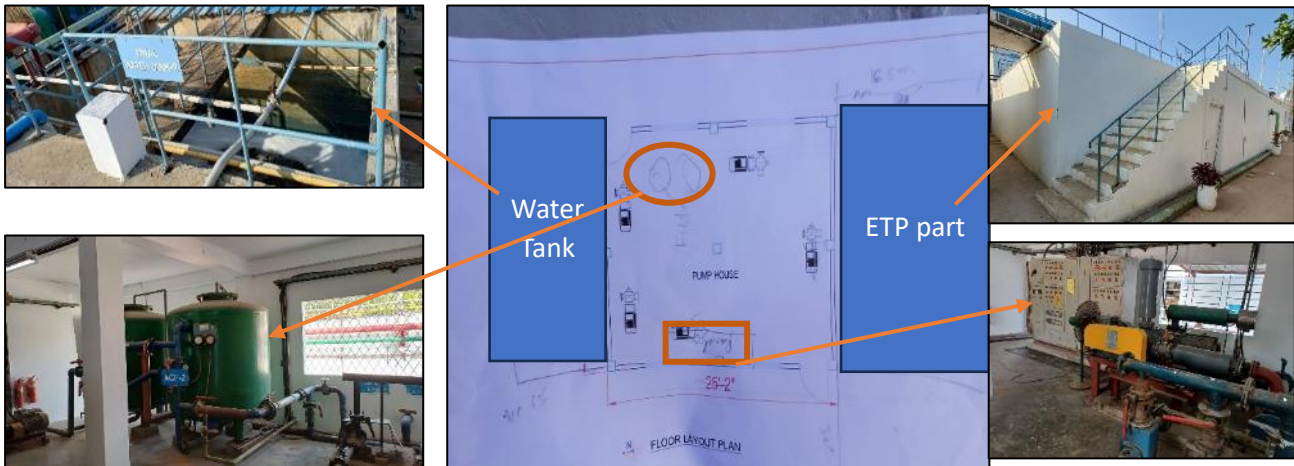
Observation-26: Lack of design documents (Overhead pump room).



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

During inspection, the design documents (as-built structural drawings, design report) were not available on site. The building engineer is required to prepare a design document based on in-situ material strength & software-based analysis and submit it to RSC for review.

Observation-27: Discrepancies in as built drawings (ETP pump room).



Description: During inspection, mismatches were found between onsite condition and as-built drawing. Water tank and ETP process part were not shown in as built drawings. Also, mis match was observed in pump room foot layout. The building engineer is required to survey the full structure and produce accurate as-built drawings.

Observation-28: Lack of information in as built drawings. (Maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP)



Maintenance workshop shed



WP maintenance workshop shed



Loading & unloading shed of WP

Description: During the inspection factory provided a set of as-built drawings for maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP. But foundation details are not shown for maintenance workshop shed and WP maintenance workshop shed. Also, connection details are not found for maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP in as-built drawings.

Building engineer is required to update the as-built drawing as per on site condition.

Observation-29: Apparently inadequate connection. (WP maintenance workshop shed and loading & unloading shed of WP)



WP maintenance workshop shed



Loading & unloading shed of WP

Description: During inspection poor connections were observed. The building engineer is required to check the connection adequacy of the structures and suggest proper remediation accordingly.

Observation-30: Lack of lateral stability system. (Maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP)



Maintenance workshop shed



WP maintenance workshop shed



Loading & unloading shed of WP

Description: Lack of lateral stability system (horizontal and vertical bracing etc.) and apparently inadequate members were observed. The building engineer is required to check adequacy of the member & stability system of the structure and suggest proper remediation accordingly.

Observation-31: Corrosion on steel columns. (Loading & unloading shed of WP)



Description: During inspection corrosion was found to steel pipe columns. The building engineer is required to identify all corroded members, remove the corrosion and apply suitable anti-corrosive coating to the affected steel members.

3. Action Plan

Observation	Action Plan	Timeline
Lack of design documents. (Main factory building)	Building engineer is required to prepare design documents (including as-built drawings, design report, load plan and material test reports) in compliance with section 1.9.1 (part-6, BNBC).	within 6 weeks
Lack of design documents. (Main factory building)	Carry out suggested remedial works.	within 6 months
Incomplete as-built drawing (Canteen Building and Rain Protection Shed)	Building engineer is required to survey whole structure and prepare accurate as-built drawings as per site condition.	within 6 weeks
Lack of lateral stability system (Canteen Building and Rain Protection Shed)	Building engineer is required to check the stability system & adequacy of all structural element, connection etc. and submit to RSC for review.	within 6 weeks
Lack of lateral stability system (Canteen Building and Rain Protection Shed)	Carry out suggested remedial works if required.	within 6 months
High stress in Column and Footing (3D Building).	Building engineer is required to carry out Detail Engineering Assessment (DEA) to review the design, loads, column capacity and foundation stress based on material strength, and minimum floor live loads.	within 6 weeks
High stress in Column and Footing (3D Building).	Carry out suggested remedial works if required.	within 6 months
Remediation works needs to be completed (3D Building).	Factory is required to complete the remediation works as per retrofitting drawing.	within 6 months
Mismatch in as built drawings (3D Building).	The building engineer is required to survey the full structure and produce accurate as-built drawings.	within 6 weeks
Mismatches in as built drawings (Prayer & locker building)	The building engineer is required to survey the full structure and produce accurate as-built drawings.	within 6 weeks
Lack of design documents. (Prayer & locker building)	Building engineer is required to prepare design documents (including design report, load plan and material test reports) in compliance with section 1.9.1 (part-6, BNBC).	within 6 weeks
Lack of design documents. (Prayer & locker building)	Carry out suggested remedial works.	within 6 months
Crack on beams (Compressor room-1)	Building engineer is required to check the extent of crack and prepare an investigation report with necessary remedial measure.	within 6 weeks
Crack on beams (Compressor	Carry out remedial works as per investigation	within 6 months

room-1)	report.	
Lack of information in as built drawings. (Compressor room-1)	The building engineer is required to survey the whole structure and update the as-built drawing as per actual site condition.	within 6 weeks
Discrepancies in As-built drawing (CMS Shed)	The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.	within 6 weeks
Apparently inadequate connection (CMS Shed)	The building engineer is required to check the connection adequacy against the uplift force.	within 6 weeks
Apparently inadequate connection (CMS Shed)	Carry out the suggested remedial works if required.	within 6 months
Corrosion observed at steel member (CMS Shed)	The building engineer is required to remove the corrosion and provide rust proof coating.	within 6 weeks
Corrosion observed at steel member (CMS Shed)	Carry out suggested remedial works if required.	within 6 months
Lack of design documents (Boiler Room (6 Ton))	Building engineer is required to prepare a design report in compliance with section 1.9.1, part 6 of BNBC.	within 6 weeks
Lack of design documents (Boiler Room (6 Ton))	Carry out suggested remedial works if required.	within 6 months
Apparently inadequate connection (Transformer Room-1).	Building engineer is required to check the connection adequacy of the steel members.	within 6 weeks
Apparently inadequate connection (Transformer Room-1).	Carry out remedial work if required.	within 6 months
Lack of lateral stability system (RWTP Shed - 1)	Building engineer is required to check the stability system & adequacy of all structural element, connection etc. and submit to RSC for review.	within 6 weeks
Lack of lateral stability system (RWTP Shed - 1)	Carry out suggested remedial works if required.	within 6 months
Lack of lateral stability system (RWTP Shed - 2)	Building engineer is required to check the stability system & adequacy of all structural element, connection etc. and submit to RSC for review.	within 6 weeks
Lack of lateral stability system (RWTP Shed - 2)	Carry out suggested remedial works if required.	within 6 months
Lack of As-built drawing (Diesel tank shed)	The building engineer is required to prepare a complete set of as-built drawings as per actual site condition.	within 6 weeks
Lack of As-built drawing (Male toilet block)	The building engineer is required to prepare a complete set of as-built drawings as per actual site condition.	within 6 weeks

Discrepancies in As-built drawing (Driver's waiting room)	The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.	within 6 weeks
Discrepancies in As-built drawing (Chemical issue room)	The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.	within 6 weeks
Lack of design documents (Chemical issue room)	The building engineer is required to prepare a set of design documents in compliance with BNBC.	within 6 weeks
Lack of design documents (Chemical issue room)	Carry out the suggested remedial works if required.	within 6 months
Structurally connected with 3D Building (WP QC area shed)	The building engineer is required to analysis the structure with 3D building otherwise separate the structure.	within 6 weeks
Structurally connected with 3D Building (WP QC area shed)	Carry out the suggested remedial works if required.	within 6 months
Discrepancies in As-built drawing (WP QC area shed)	The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.	within 6 weeks
Discrepancies in As-built drawing (Fire pump room)	The building engineer is required to survey the whole structure and revise the as-built drawing as per actual site condition.	within 6 weeks
Lack of design documents (Overhead pump room).	The building engineer is required to prepare a design document based on in-situ material strength & software-based analysis and submit it to RSC for review.	within 6 weeks
Lack of design documents (Overhead pump room).	Carry out suggested remedial works if required.	within 6 months
Discrepancies in as built drawings (ETP pump room).	The building engineer is required to survey the full structure and produce accurate as-built drawings.	within 6 weeks
Lack of information in as built drawings. (Maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP)	The building engineer is required to survey the whole structure and update the as-built drawing as per actual site condition.	within 6 weeks
Apparently inadequate connection. (WP maintenance workshop shed and loading & unloading shed of WP)	The building engineer is required to check the connection adequacy against the uplift force.	within 6 weeks
Apparently inadequate connection. (WP maintenance workshop shed and loading & unloading shed of WP)	Carry out the suggested remedial works if required.	within 6 months

Lack of lateral stability system. (Maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP)	Building engineer is required to check the stability system & adequacy of all structural element and submit to RSC for review.	within 6 weeks
Lack of lateral stability system. (Maintenance workshop shed, WP maintenance workshop shed and loading & unloading shed of WP)	Carry out the suggested remedial works if required.	within 6 months
Corrosion on steel columns. (Loading & unloading shed of WP)	Building Engineer is required to identify all corroded members, remove the corrosion, and apply suitable anti-corrosive coating to the affected steel members.	within 6 weeks