

# Amigo Bangladesh Ltd.

RS No: 1408 - 1416, Khalapara, Dakkhinbag, Kaliganj, Gazipur-1613  
(23.951914, 90.613541)

3<sup>rd</sup> & 11<sup>th</sup> October 2021



# Building information

**Block-1:** The structure is a five-storied (G+4) reinforced concrete (RC) building with a mezzanine between GF and 1<sup>st</sup> floor.

**Block-2:** The structure is a five-storied (G+4) reinforced concrete (RC) building with a mezzanine between GF and 1<sup>st</sup> floor.

**Link Bridge:** There are two self supported steel structure.

**Dormitory:** The structure is a five-storied (G+4) reinforced concrete (RC) building.

**Main Office Building:** The structure is a four-storied (G+3) reinforced concrete (RC) building.

**General Office Building:** The structure is a two-storied (G+1) reinforced concrete (RC) building.

**Canteen:** The structure is a two-storied (G+1) reinforced concrete (RC) building.

**Boiler Building:** The structure is a single storied roof portal frame supported on RC column.

**Power Plant Building:** The structure is a single storied prefabricated steel shed with extension deck slab.

**Washing Plant Building:** The structure is a single storied prefabricated steel shed with a mezzanine.

**ETP Building:** The structure is a single storied reinforced concrete (RC) building.

**Water Treatment Plant (WTP):** The structure is comprised with two parts. single storied steel building single storied RC building.

**Generator Shed:** The structure is a non-engineered steel shed.

**Fire Pump:** The structure is a single storied reinforced concrete (RC) building.

# Observations

**Structural design report not available**



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



Clear height of ground floor is 9.65 m. The least dimension of column is 600 mm. The building engineer to check the slenderness effect for those columns and incorporate the design in the report.

# Water ponding on roof

## Water Ponding on roof



Block 1 roof



Block 2 roof

Factory is required to develop proper drainage system on roof with adequate slope or apply water proofing compound on roof slab to resist water ingress.

# Crack in brick wall



Some cracks were found in brick wall at several place of ground floor and stair of block 1 & 2. Factory engineer is required to investigate the cause of cracks and suggest proper remedial actions in the crack investigation report.

# Missing bolts on canteen ramp and link bridge



Link Bridge



Canteen Ramp

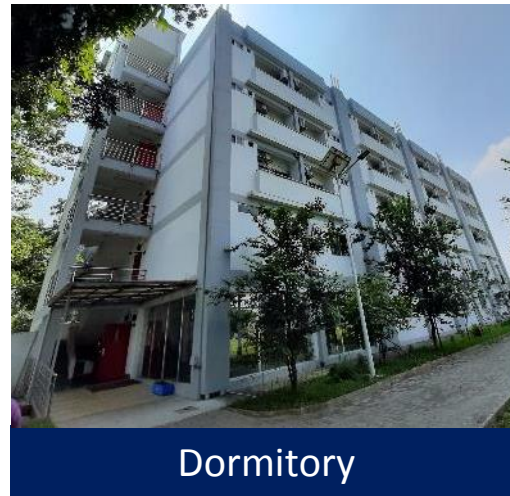


Missing bolt

Factory Engineer is required to find the missing bolts and install the bolts as per specification.

# Lack of design documents

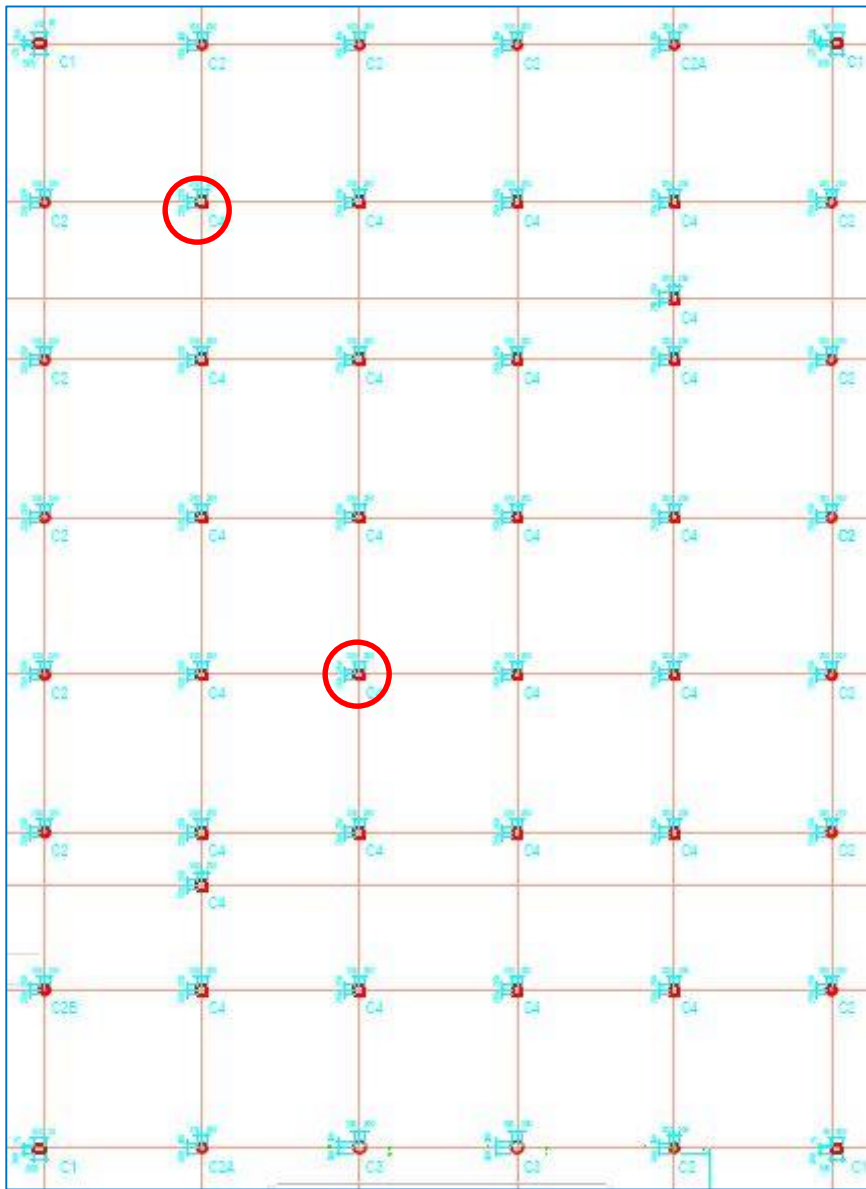
**Observation: Dormitory, Canteen, Canteen Ramp, & Link Bridge**



As per BNBC Section 1.9.1, every structure should have design documents. There is no design documents for above mentioned structures. So, the factory engineer is required to prepare a set of design documents for all structures as per BNBC part-6, section 1.9.1.

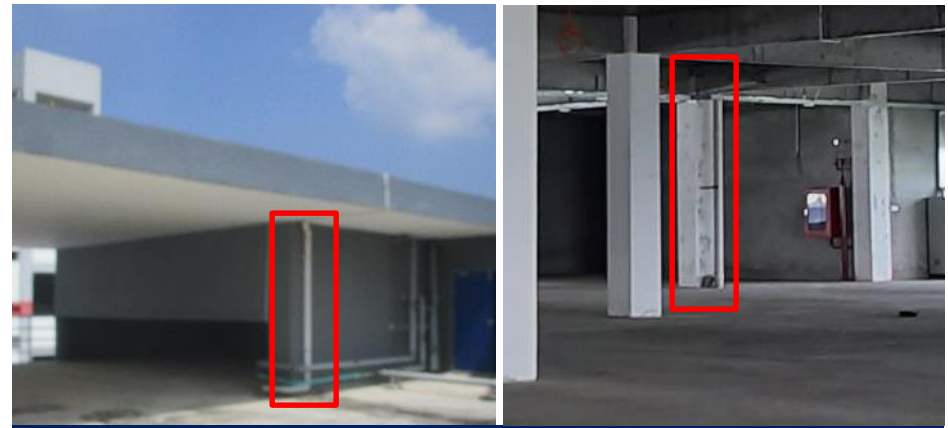
## Observation: Dormitory, Canteen, Canteen Ramp & Link Bridge

**Column stress exceeds normal design limit**



Cursory calculation indicate that the working stress of the marked columns exceed the normal design limit due to O.HWT and large span(8m) considering 3 kPa live load on typical floor, 1.5 KPa live load on roof and 16.37 MPa concrete strength. As part of Engineering Assessment (EA), factory engineer is required to verify the in-situ concrete strength, check the column capacity and suggest proper remedial actions accordingly.

Column Layout Plan



Column location for cursory calculation

15 **Observation: Main Office Building**

**Structural design report not available**



No design documents were available for General Office Building

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, no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

# Improve roof drainage system



Sign of stagnant Water observed on the roof. Building engineer is required to improve the roof drainage system.

# Undocumented and apparently Non-engineered steel shed at roof



Undocumented and apparently non-engineered Steel Shed found at roof top of the building. No as-built drawing was found. The factory engineer is required to prepare as-built drawing and check the structural integrity for the steel shed.

**Structural design report not available**



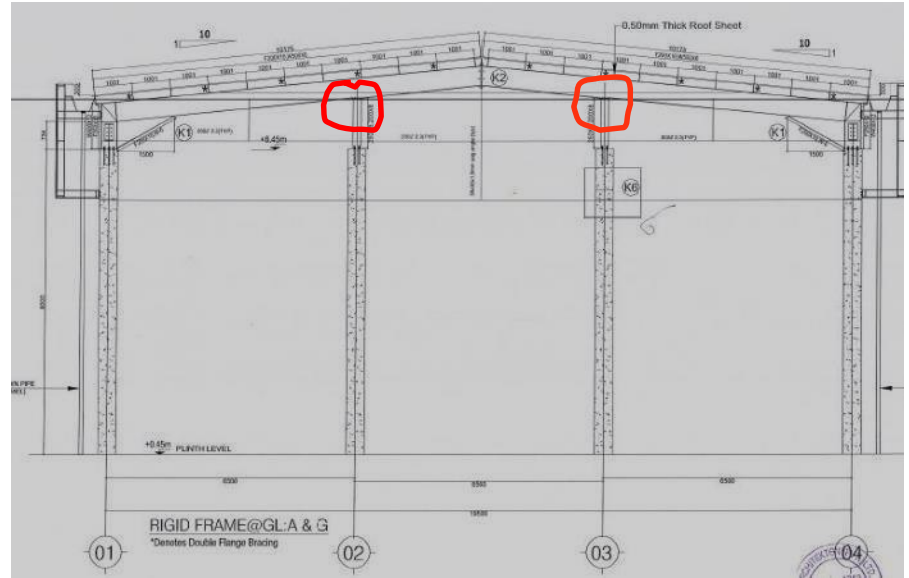
No design reports were available for Boiler shed Building

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 no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

# **Lack of documents and discrepancies in as-built drawing**

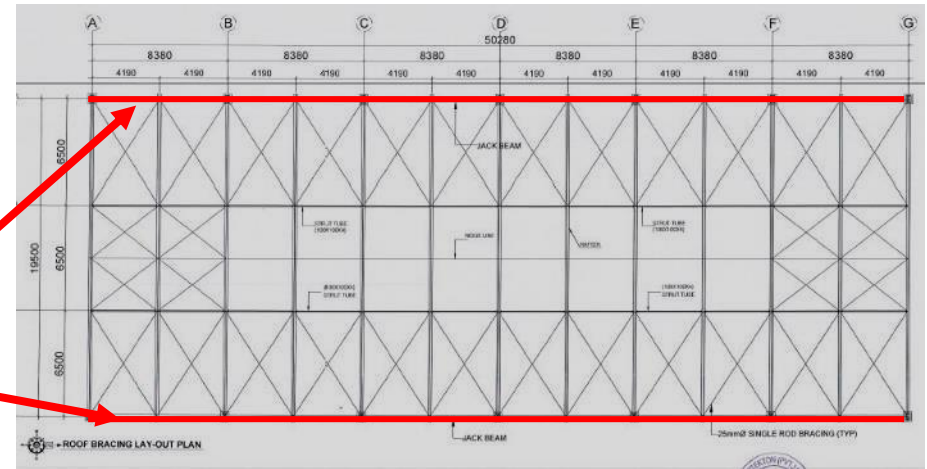
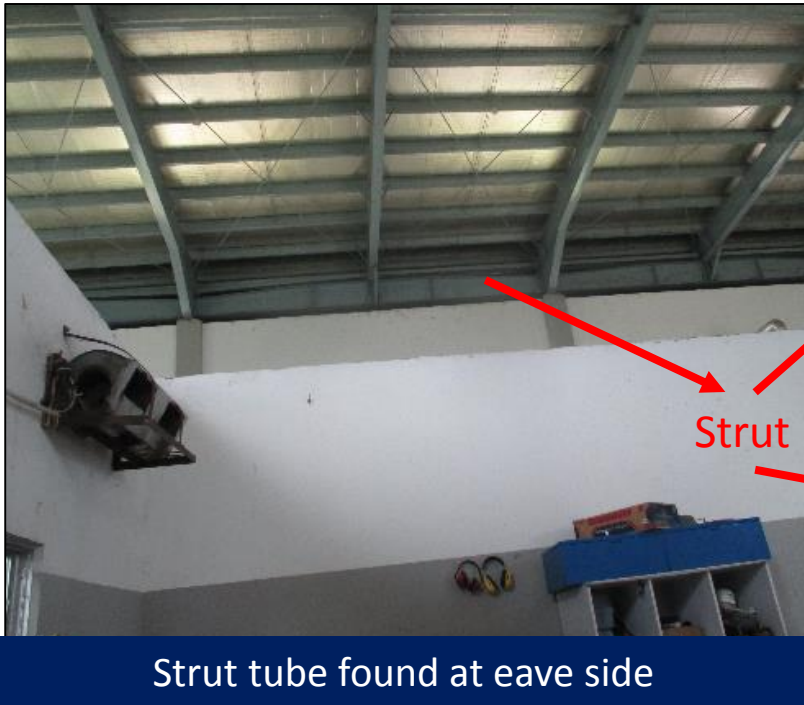


Gable frame



Gable frame details

No connection details were found at red marked portion in drawing. Building engineer is required to update the as-built drawing.



Strut tube layout

Strut tubes were found at red marked area which is not shown in drawing. Building engineer is required to update the as-built drawing.

**Structural design report not available**



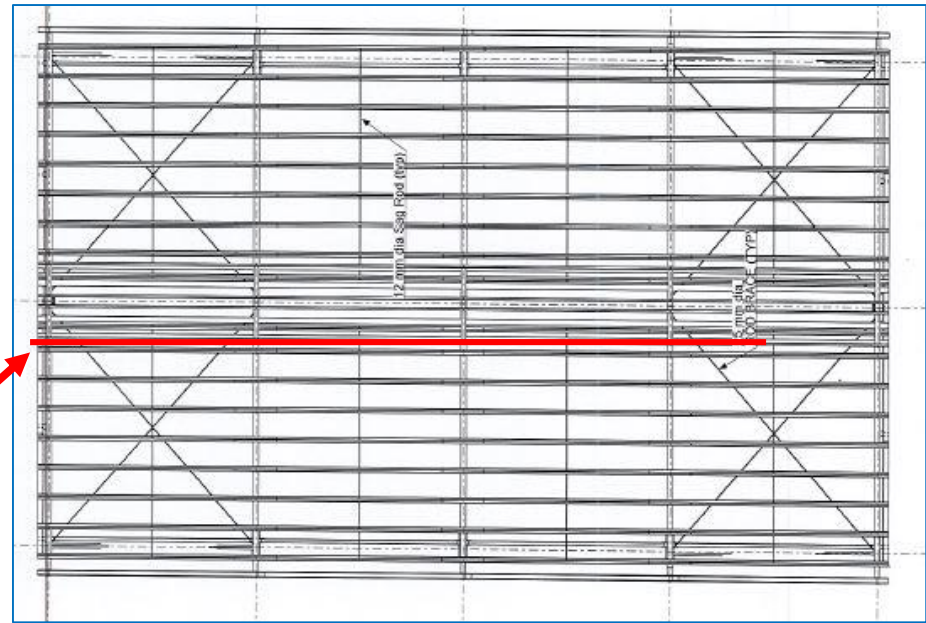
No design reports were available for power plant building

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 no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

## **Lack of documents in as-built drawing**



Strut tube found at Ridge



Strut tube layout

Strut tubes were found at red marked area which is not shown in drawing. Building engineer is required to update the as-built drawing.

**Structural design report not available**



No design reports were available for  
Washing plant Building



No load plan was prepared for  
mezzanine floor

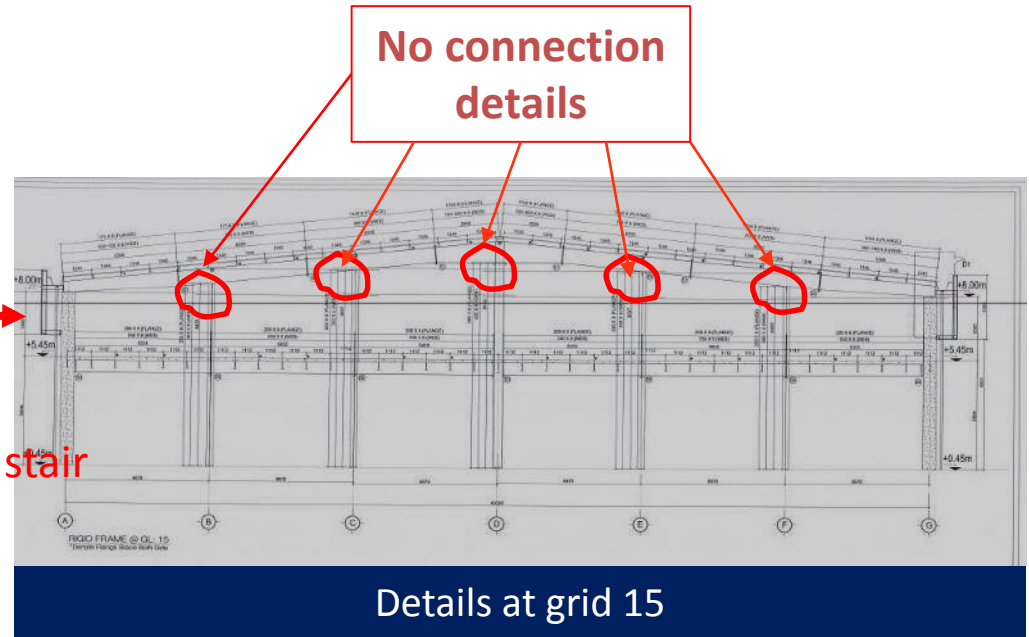
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# **Lack of documents and Discrepancy in as-built drawing**

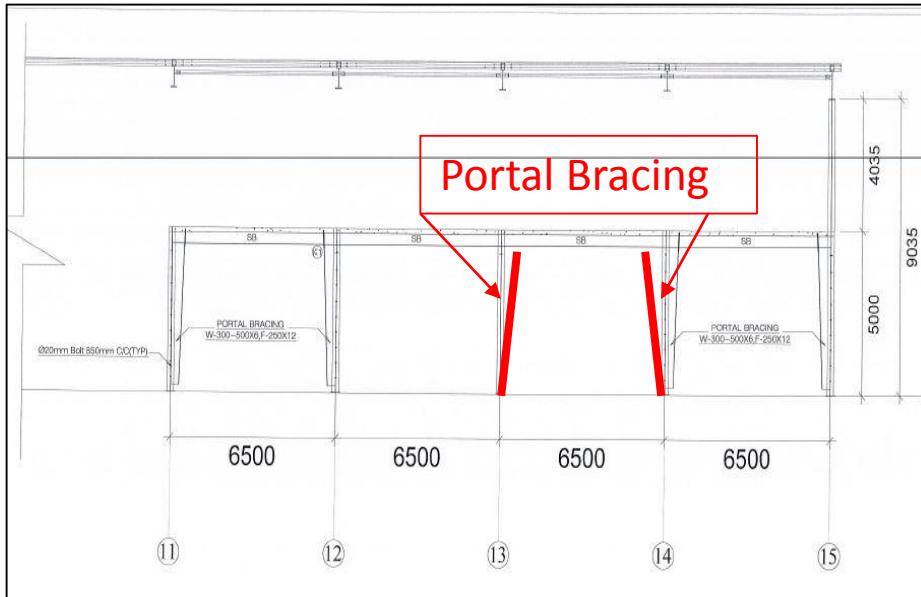


Outside stair & pedestrian platform

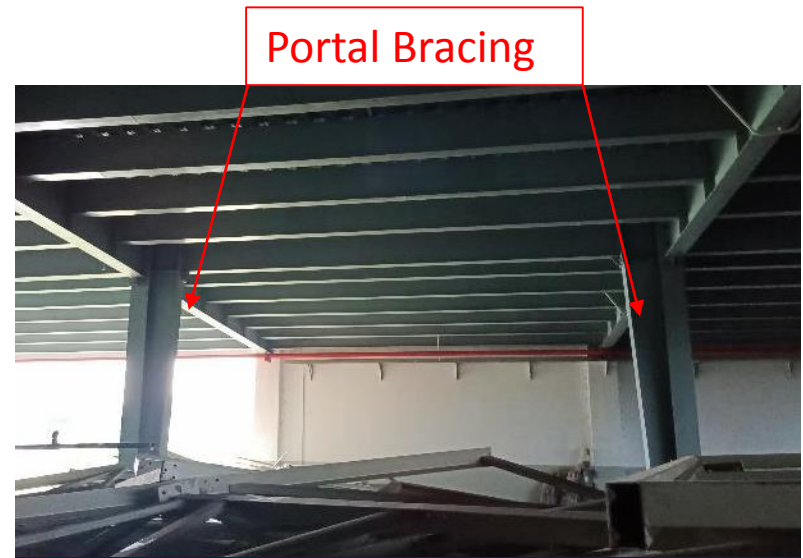
Outside stair



At grid 15, column & rafter connection is not shown in drawing as well as outside stair details not found in drawing. Building engineer is required to update the as-built drawing.



Portal bracing layout



Portal bracing found



Steel beam connected with RC Beam

Portal bracing were found at grid 13~14 whereas in drawing there is shown at 14~15. Also, Steel main beam is connected to RC beam at Grid-15. But as per drawing steel main beam is connected to RC column. Building engineer is required to update the as-built drawing.

## Observations: Washing plant Building

**Structural design report not available**



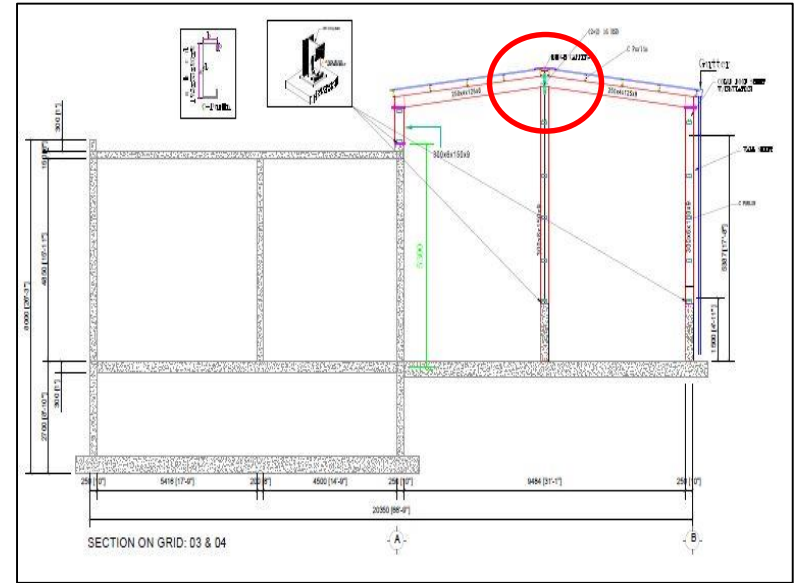
No design reports were available for WTP Building

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, no design report was available which is required to be prepared in compliance with section 1.9.1.1 (part-6, BNBC).

# Discrepancy in as-built drawing



Gable frame ridge point connection



Gable frame section

Connection mismatch found red marked area in both gable frames.  
Building engineer is required to update the as-built drawing.

**Apparently lack of lateral stability system**



No vertical bracings/ compression struts were provided in the long direction. Apparently lack of lateral stability observed. The building engineer is required to check the lateral stability system of the shed.

# Undocumented and apparently Non-engineered steel shed



Undocumented and apparently non-engineered Steel Shed found used as generator shed. No as-built drawing was found. The factory engineer is required to prepare as-built drawing and check the structural integrity for the steel shed or replace the shed.

# Problems Observed

## **Block-1 & 2:**

Item 01: Structural design report not available.

Item 02: Water ponding on roof.

Item 03: Crack in brick wall.

## **Link Bridge & Canteen Ramp:**

Item 04: Lack of design documents

Item 05: Missing Bolts

## **Dormitory:**

Item 06: Lack of design documents

## **Main Office Building:**

Item 07: Column stress exceeds normal design limit

## **General office Building:**

Item 08: Structural design report not available.

Item 09: Improve roof drainage system

## **Canteen:**

Item 10: Lack of design documents

Item 11: Undocumented and apparently non-engineered steel shed at roof top.

## **Boiler Building:**

Item 12: Structural design report not available.

Item 13: Lack of documents and Discrepancy in as-built drawing

## **Power plant Building:**

Item 14: Structural design report not available.

Item 15: Lack of documents in as-built drawing

# Problems Observed

## **Washing plant Building:**

Item 16: Structural design report not available.

Item 17: Lack of documents and discrepancy in as-built drawing.

## **WTP:**

Item 18: Structural design report not available.

Item 19: Discrepancy in as-built drawing

Item 20: Apparently lack of lateral stability system

## **Generator Shed:**

Item 21: Undocumented and apparently non-engineered steel shed

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Structural design report not available. (Block 1 & 2)	Building engineer to prepare the design document including a design report, and a set of structural drawings in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.	6-weeks
02	Structural design report not available. (Block 1 & 2)	Consider and check the slenderness effect of column.	6-weeks
03	Structural design report not available. (Block 1 & 2)	Complete implementation of any remedial works deemed necessary by the design review.	6-months
04	Water ponding on roof (Block 1 & 2).	Building engineer is required to develop proper drainage system on roof with adequate slope or apply water proofing compound on roof slab to resist water ingress.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
05	Crack in brick wall (Block 1 & 2).	Building engineer is required to investigate the cause of crack and repair the crack as per recommendation from investigation report.	6-weeks
06	Lack of design documents. (Link Bridge & Canteen Ramp)	Building engineer is required to prepare a set of design documents for all structures as per BNBC part-6, section 1.9.1	6-weeks
07	Lack of design documents. (Link Bridge & Canteen Ramp)	<ul style="list-style-type: none"> <li>Carry out remedial works where necessary.</li> </ul>	6-months
08	Missing Bolts (Canteen Ramp & Link Bridge)	Building engineer is required to install the missing bolts	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
09	Lack of design documents. (Dormitory)	Building engineer is required to prepare a set of design documents for all structures as per BNBC part-6, section 1.9.1	6-weeks
10	Lack of design documents. (Dormitory)	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor, column and foundation capacity.	6-weeks
11	Lack of design documents. (Dormitory)	Carry out remedial works where necessary.	6-months
12	Lack of design documents. (Dormitory)	Implement floor live load plan.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
13	Column stress exceeds normal design limit.(Main Office Building)	As part of Engineering Assessment (EA), building engineer is required to verify the in-situ concrete strength, check the column capacity and suggest proper remedial actions accordingly.	6-weeks
14	Column stress exceeds normal design limit.(Main Office Building)	Produce and actively manage a loading plan for all floor plates considering floor, column and foundation capacity..	6-weeks
15	Column stress exceeds normal design limit.(Main Office Building)	Building engineer is required to prepare a set of design documents for all structures as per BNBC part-6, section 1.9.1	6-weeks
16	Column stress exceeds normal design limit.(Main Office Building)	Carry out remedial works if suggested in the EA report.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
17	Column stress exceeds normal design limit.(Main Office Building)	Continue to implement the load management plan.	6-months
18	Structural design report not available.(General office building )	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 as per BNBC part 6 and submit to RSC for review.	6-weeks
19	Structural design report not available.(General office building )	Produce and actively manage load plan for all floors considering floor, column and foundation capacity.	6-weeks
20	Structural design report not available.(General office building )	Complete remedial works arising from design report.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
21	Column stress exceeds normal design limit.(Main Office Building)	Implement floor loading plan.	6-months
22	Improve roof drainage system (General office building)	Building engineer is required to improve roof drainage system to prevent stagnant water.	6-weeks
23	Lack of design documents. (Canteen)	Building engineer is required to prepare a set of design documents for all structures as per BNBC part-6, section 1.9.1	6-weeks
24	Lack of design documents. (Canteen)	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor, column and foundation capacity.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
25	Lack of design documents. (Canteen)	Carry out remedial works where necessary.	6-months
26	Lack of design documents. (Canteen)	Implement floor live load plan.	6-months
27	Undocumented and apparently non-engineered steel shed at roof top. (Canteen)	Building engineer is required to prepare as-built documents and check the structural integrity as part of Engineering Assessment (EA) for the steel shed.	6-weeks
28	Undocumented and apparently non-engineered steel shed at roof top. (Canteen)	Implement necessary remediation works as per EA Report.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
29	Structural design report not available.(Boiler Building)	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 as per BNBC part 6 and submit to RSC for review.	6-weeks
30	Structural design report not available.(Boiler Building)	Complete remedial works arising from design report after reviewed by RSC.	6-months
31	Lack of documents and discrepancy in as-built drawing. (Boiler Building)	Building engineer is required to survey the structure & prepare complete as-built drawings.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
32	Structural design report not available.(Power plant Building)	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 as per BNBC part 6 and submit to RSC for review.	6-weeks
33	Structural design report not available.(Power plant Building)	Complete remedial works arising from design report after reviewed by RSC.	6-months
34	Lack of documents in as-built drawing. (Power plant Building)	Building engineer is required to survey the structure & prepare as-built drawings.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
35	Structural design report not available.(Washing plant Building)	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 as per BNBC part 6 and submit to RSC for review.	6-weeks
36	Structural design report not available.(Washing plant Building)	Produce and actively manage a loading plan for all floor plates within the factory, considering floor, column and foundation capacity.	6-weeks
37	Structural design report not available.(Washing plant Building)	Complete remedial works arising from design report after reviewed by RSC.	6-months
38	Structural design report not available.(Washing plant Building)	Continue to implement loading plan.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
39	Lack of documents and discrepancy in as-built drawing. (Washing plant Building)	Building engineer is required to survey the structure & prepare as-built drawings.	6-weeks
40	Structural design report not available. (WTP)	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 as per BNBC part 6 and submit to RSC for review.	6-weeks
41	Structural design report not available. (WTP)	Complete remedial works arising from design report after reviewed by RSC.	6-months
42	Discrepancy in as-built drawing. (WTP)	Building engineer is required to survey the structure & prepare as-built drawings.	6-weeks

Item No.	Observation	Recommended Action Plan	Recommended Timeline
43	Apparently lack of lateral stability system. (WTP)	Building engineer is required to check the lateral stability of the shed.	6-weeks
44	Apparently lack of lateral stability system. (WTP)	Carryout remedial works where necessary.	6-months
45	Undocumented and apparently non-engineered steel shed. (Generator Shed)	Building engineer is required to prepare as-built documents and check the structural integrity as part of Engineering Assessment (EA) for the steel shed or replace the shed.	6-weeks
46	Undocumented and apparently non-engineered steel shed. (Generator Shed)	Implement necessary remediation works as per EA Report.	6-months