



# Purbachal Apparel Ltd.

South Panjora, Ward#05, Nagori, Gazipur  
(23.888930N, 90.502231E)  
10<sup>th</sup> June 2018



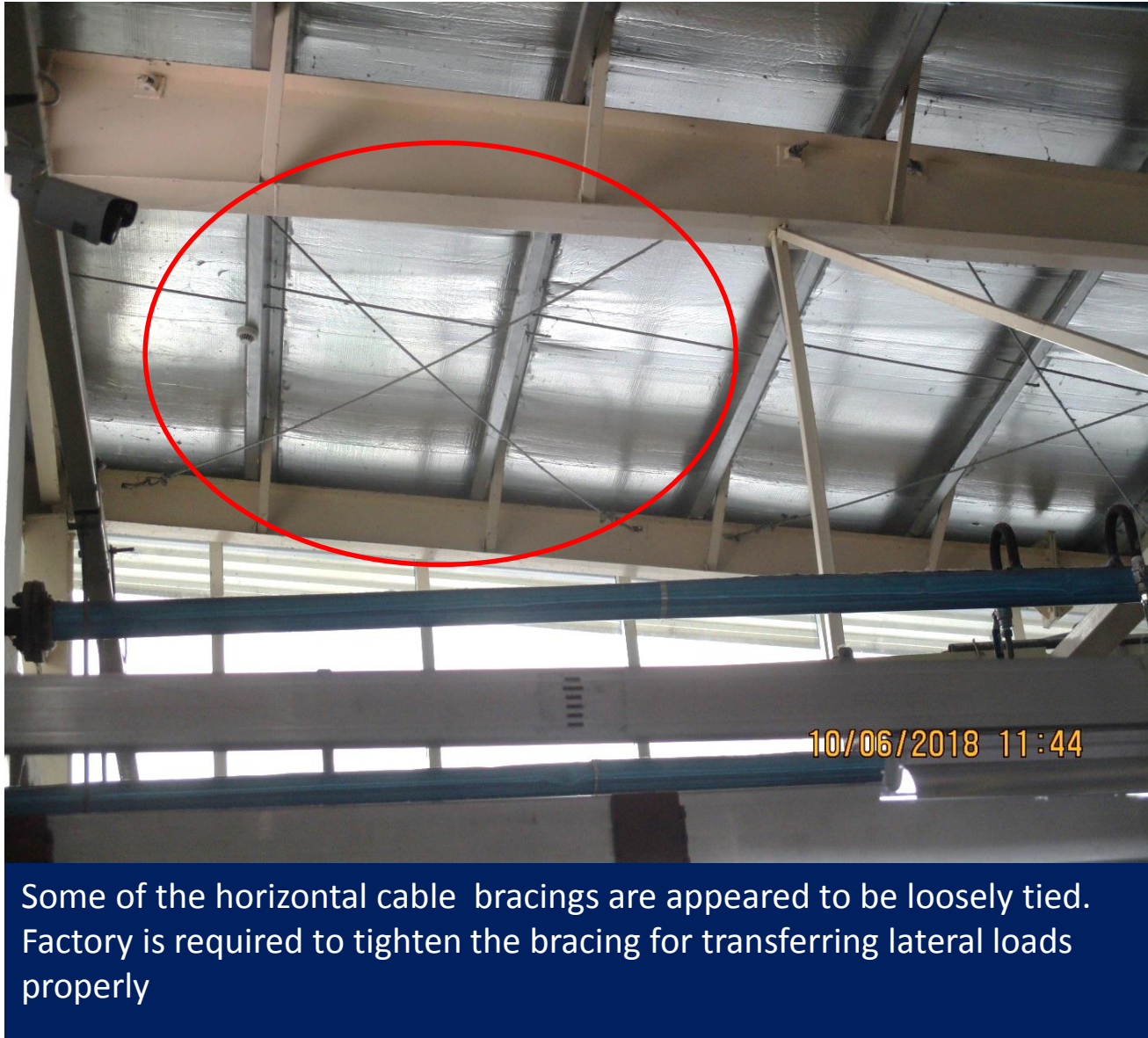


# Observations



# Loose cable bracing

3 **Observation: Garments building**



Some of the horizontal cable bracing are appeared to be loosely tied. Factory is required to tighten the bracing for transferring lateral loads properly

## 4 Observation: Garments building



# Improper bolted connection between rafter and columns

5 **Observation: Garments building**



Beam & column joints at ground floor and rafter & column joint at 1<sup>st</sup> floor joints are appears to be improper as there is large bolt hole than the bolt diameter. The faulty connection is to be repaired as per suggestion of factory engineer.



Improper connection was observed in ground floor at column and beam joint

## Observation: Garments building



# Corrosion observed at steel sections

7 **Observation: Garments building**



Corrosion was observed at joint of deck slab and steel column of 1<sup>st</sup> floor in production areas.



Corrosion was observed at joint of pedestal column and steel column.

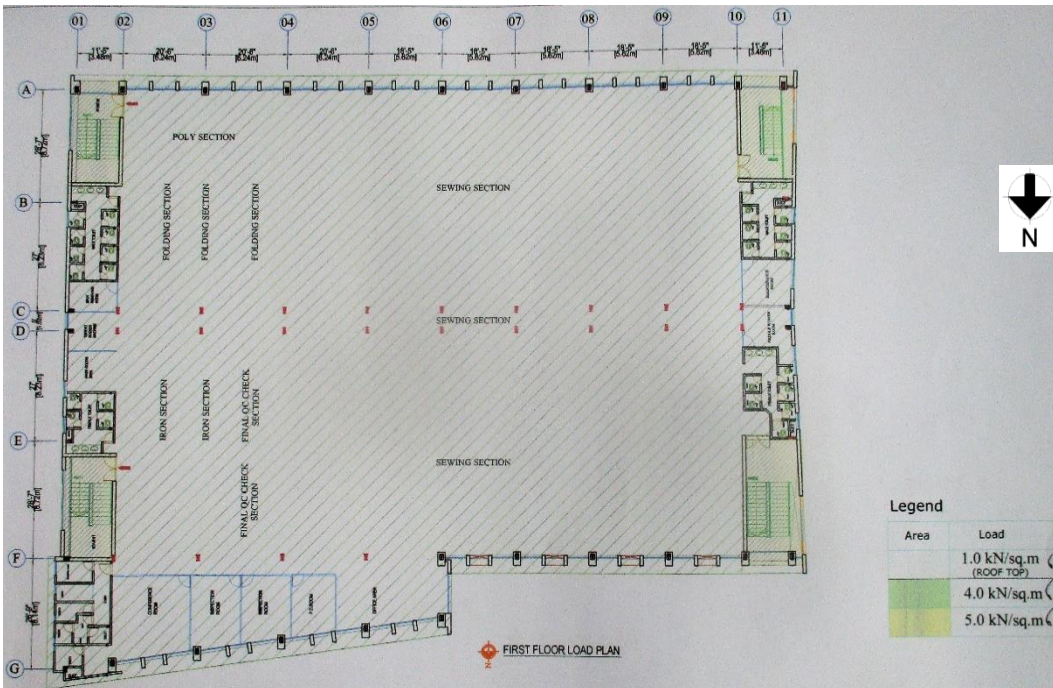
Corrosion was observed on steel columns on different locations of 1st and ground floor areas. Factory is required to identify the corroded locations and take proper remedial measures.

## 8 Observation: Garments building



**Prepared load plan is required to be verified**

**Observation: Garments building**



Sewing area

Factory engineer prepared a load plan for 1<sup>st</sup> floor considering 4.0 kPa as allowable load but no analysis or calculation was available for ensuring that the columns and beam have adequate capacity to carry the proposed floor loads. Factory is required to verified the load plan if factory management intends to maintain the load plan.

Load was measured below 2Kpa on every floor and FOS calculation for internal column was found satisfactory considering 3kPa allowable floor live loading.

Factory is required to maintain the floor live load 3 kPa until further verification of the load plan.

## Observation: Garments building



# Water clogging on roof top and 1st floor

**Observation: Utility building**



During inspection, water clogging was observed on roof top and 1st floor. Factory is required to improve the water drainage system for preventing water clogging.

## Observation: Utility building



# Capacity check of cantilever beam supporting stair

**Observation: Utility building**



Concerns on cantilever beam supporting external stair case. A capacity check of the cantilever beam need to be carried out.



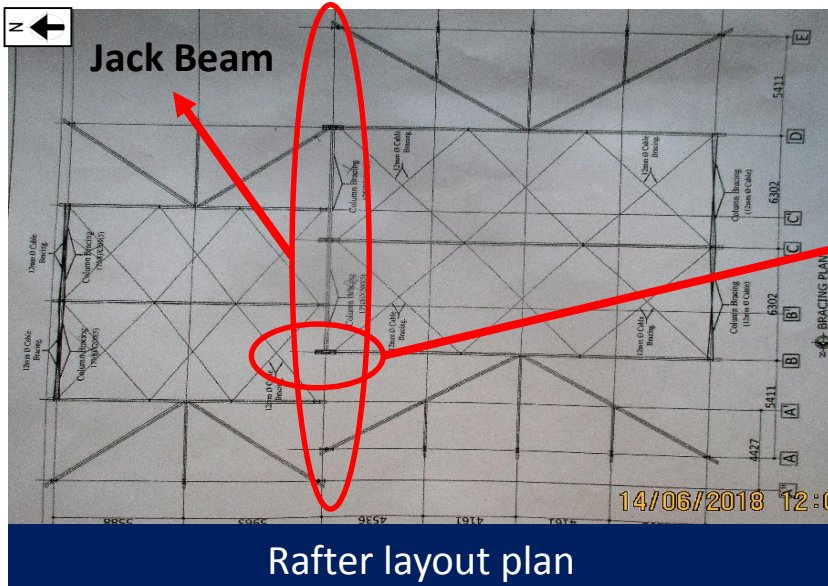
The external stair is supported by cantilever beam

## Observation: Utility building



**Lateral stability system to be verified**

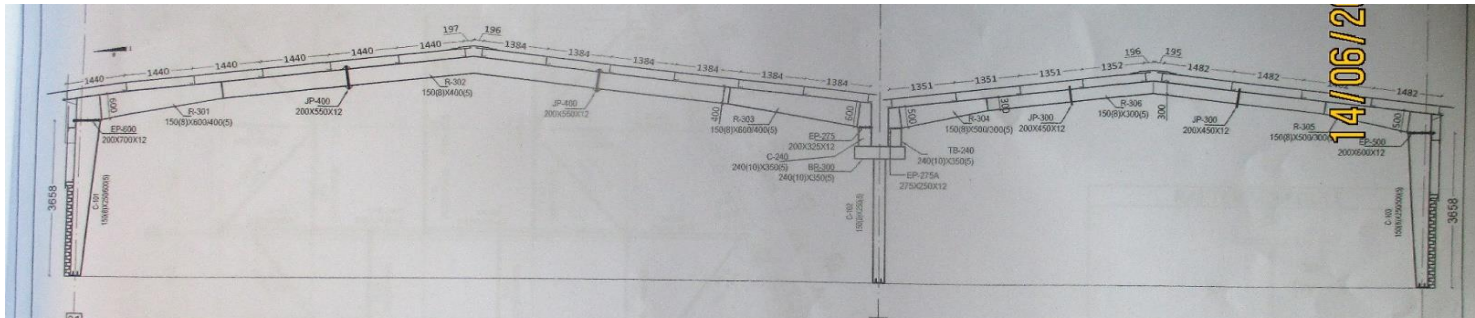
**Observation: Welfare Shed**



Rafter layout plan



Jack beam supporting rafters



Typical portal frame

From the layout plan and visual inspection it was observed that the lateral stability of the structure partly depends on the jack beam as some of the rafter are resting on it. Apparently no obvious lateral load resisting system on north-south direction due to insufficient of lateral load transfer media. Factory engineer is require to verify the lateral stability of the structure against the horizontal and vertical loads.

## Observation: Welfare Shed



# Loose cable bracing



Loosely tied vertical cable bracing at east side



Loosely tied vertical cable bracing at west side



Loosely tied roof cable bracing

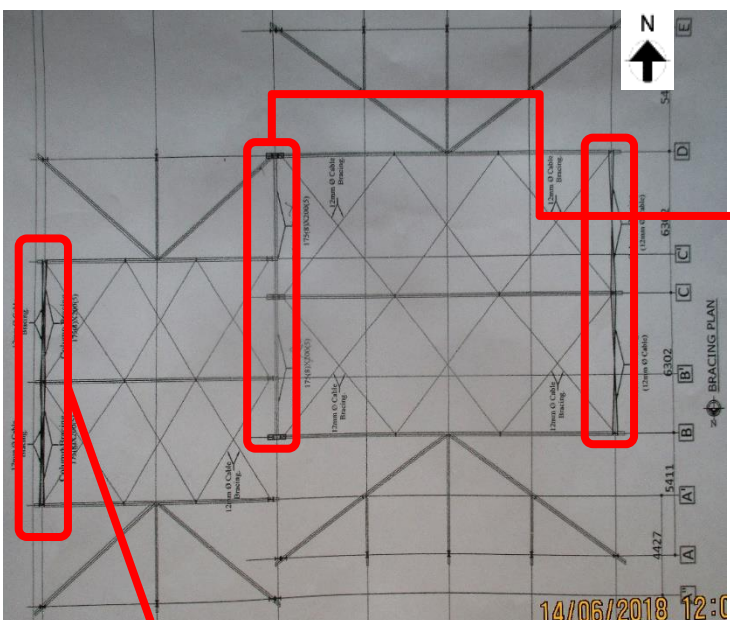
Some of the horizontal and vertical cable bracings are appeared to be loosely tied. Factory is required to tighten the bracing for transferring lateral loads properly

# 18 Observation: Welfare Shed



# Discrepancy observed between As built drawing and on site condition

**Observation: Welfare Shed**



As-built drawing Bracing Layout

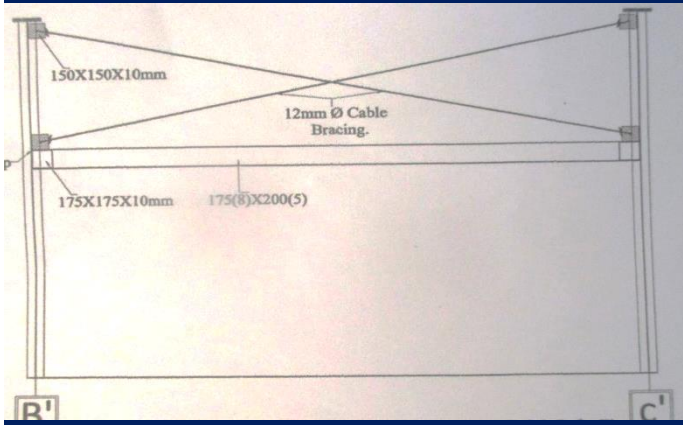


No column bracing was found on site in grid 5B-5C, 5C-5D, 7A'-7B' & 7B'-7C'

The location of column to column vertical bracing didn't match with provided bracing layout drawings. Factory is require to install the bracings as per bracing layout drawings.

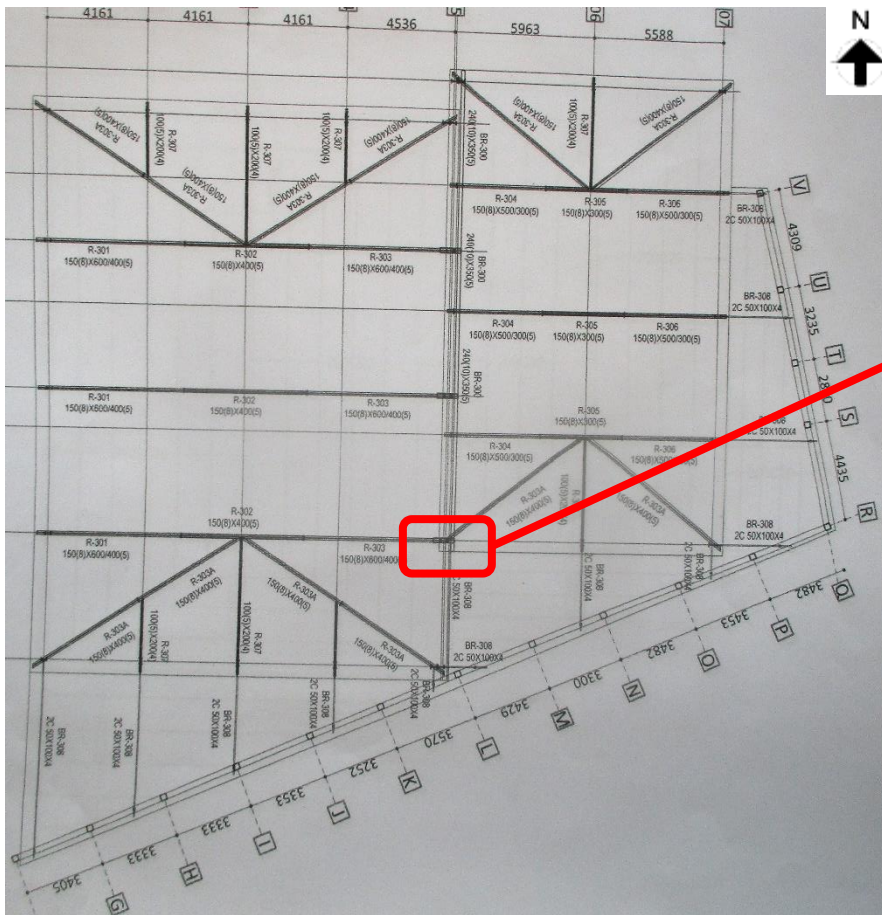


Only cable bracing was found in grid 1B-1C & 1C-1D but no compression strut was observed.



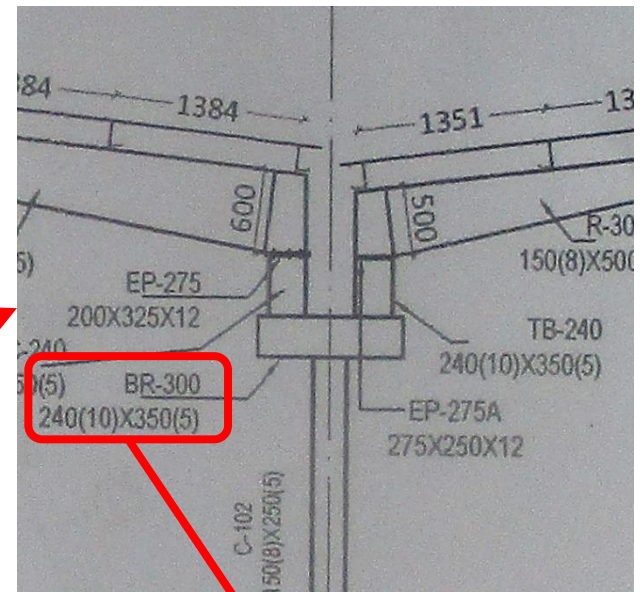
Vertical bracing with compression strut in as-built drawing

# Observation: Welfare Shed



Rafter Layout in as-built drawing

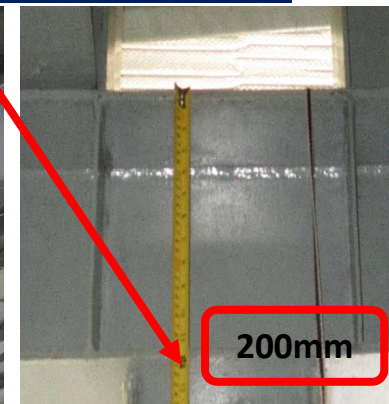
The size of Jack beam at grid B-5 was found F200mm (10mm) X W300mm(5mm) which was supposed to be F240mm (10mm) X W350mm(5mm) as per provided as-built structural drawing.



Section at grid B-5



Jack beam BR-300 at grid B-5



Depth of Jack beam measured on site

## Observation: Welfare Shed



# Problems Observed

## Garments building :

**Item 1:** Loose cable bracing.

**Item 2:** Improper bolted connection between rafter and columns.

**Item 3:** Corrosion observed at steel sections.

**Item 4:** Prepared load plan is required to be verified

## Utility building:

**Item 5:** Water clogging on roof top and 1<sup>st</sup> floor.

**Item 6:** Capacity check of cantilever beam supporting stair.

## Welfare shed:

**Item 7:** Lateral stability system to be verified.

**Item 8:** Loose cable bracing.

**Item 9:** Discrepancies between drawings and on-site observation.



Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	(Garments building) Loose cable bracing	Loose bracings are required to be tighten as per suggestion of the factory engineer.	6-weeks
2	(Garments building) Improper bolted connection between rafter and columns	Repair bolted connection according to the suggestion of factory engineer.	6-weeks
3	(Garments building) Corrosion observed at steel sections	Factory Engineer to suggest and implement proper remedial measures to protect steel sections from corrosion.	6-weeks
4	(Garments building) Prepared load plan is required to be verified	Maintain maximum 3 Kpa load on all floors.	6-weeks
5	(Garments building) Prepared load plan is required to be verified	Factory Engineer to verify the load plan if factory management intends to maintain the load plan (4.0 Kpa).	6-weeks
6	(Utility building) Water clogging on roof top and 1st floor	Factory is required to improve drainage system.	6-weeks
7	(Utility building) Capacity check of cantilever beam supporting stair	Factory Engineer to review design, loads and related elements in area identified above to confirm capacity for the stair.	6-weeks
8	(Utility building) Capacity check of cantilever beam supporting stair	Carry out remedial works resulting from capacity check if necessary.	6-months



Item No.	Observation	Recommended Action Plan	Recommended Timeline
9	(Welfare shed) Lateral stability system to be verified	Factory engineer to check the stability of the structure under vertical and horizontal loads.	6-weeks
10	(Welfare shed) Lateral stability system to be verified	Carry out remedial works resulting from engineering assessment if necessary.	6-months
11	(Welfare shed) Loose cable bracing	Loose bracings are required to be tighten as per suggestion of the factory engineer.	6-weeks
12	(Welfare shed) Discrepancies between drawings and on-site observation	Factory is require to install the bracings as per bracing layout drawings.	6-weeks
13	(Welfare shed) Discrepancies between drawings and on-site observation	Factory engineer is required to update as-built documentation reflecting the actual condition.	6-weeks