

# Ratul Fabrics Ltd. Ratul Accessories Ltd.

Zohar Sanda, Ashulia, Savar, Dhaka region

(23.900835 N, 90.291583 E)

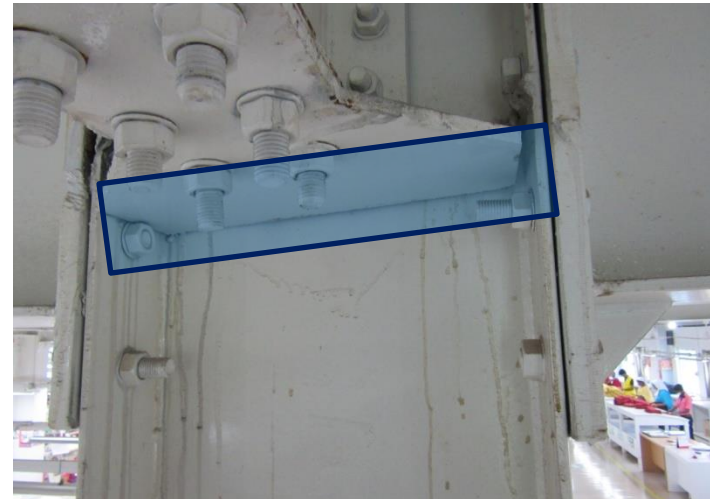
12 April 2015



# Observations

# Building 1

# Apparently non-engineered structural details and connections



Some of the connections between different steel members were non-welded

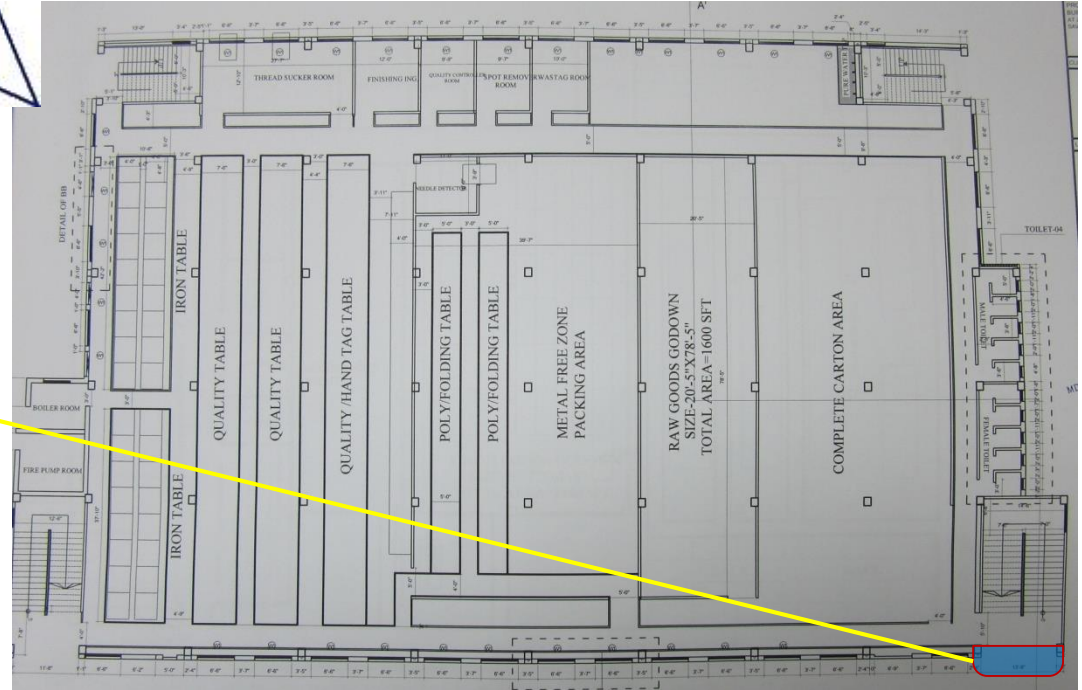


Rusting observed in some of the steel elements as well as not a full contact on the connections plates.

# Apparently non-engineered canopy



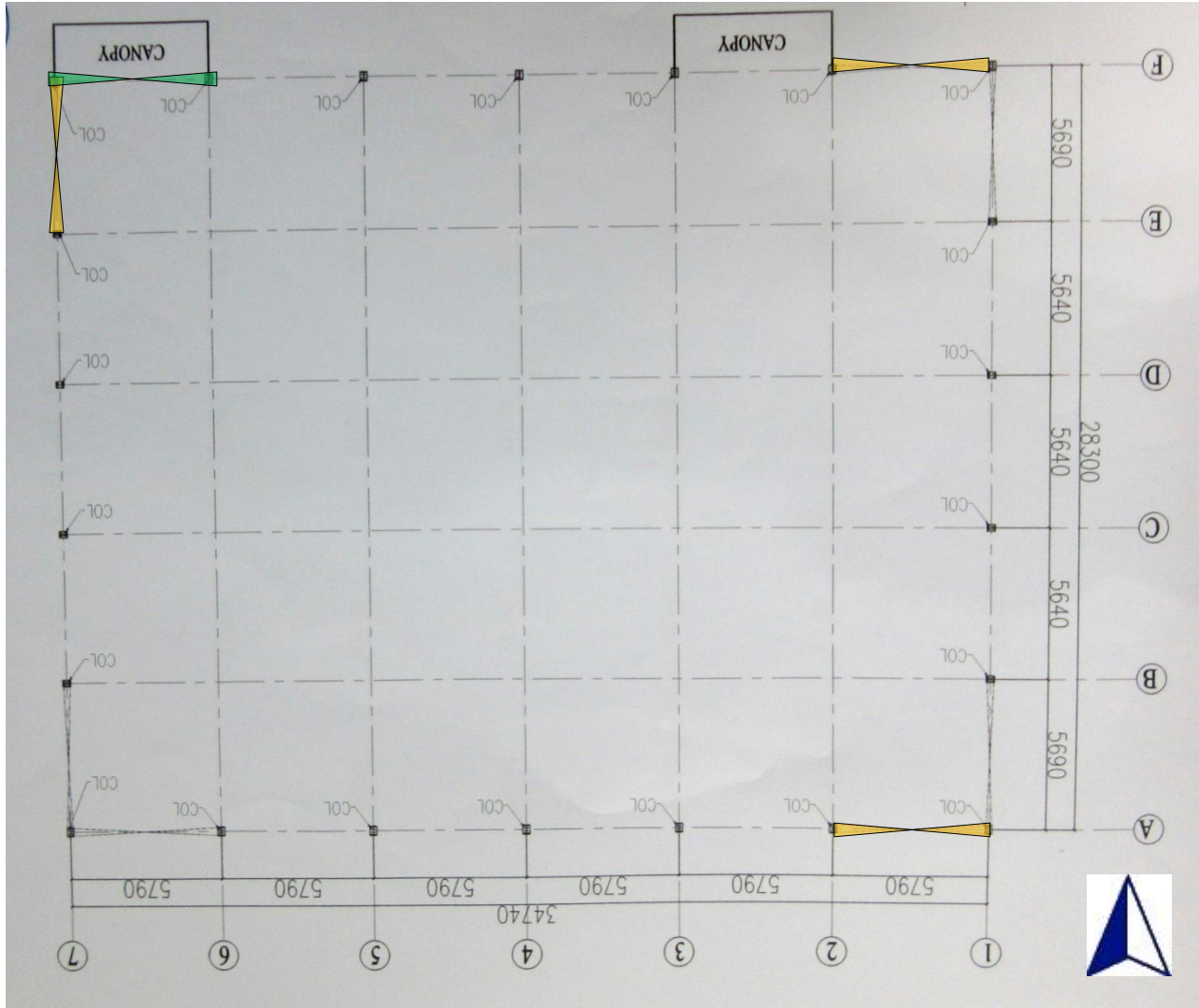
Apparently non-engineered canopy



Ground floor layout plan without showing any canopy in the drawings

# Building 2

# Non apparent lateral stability system

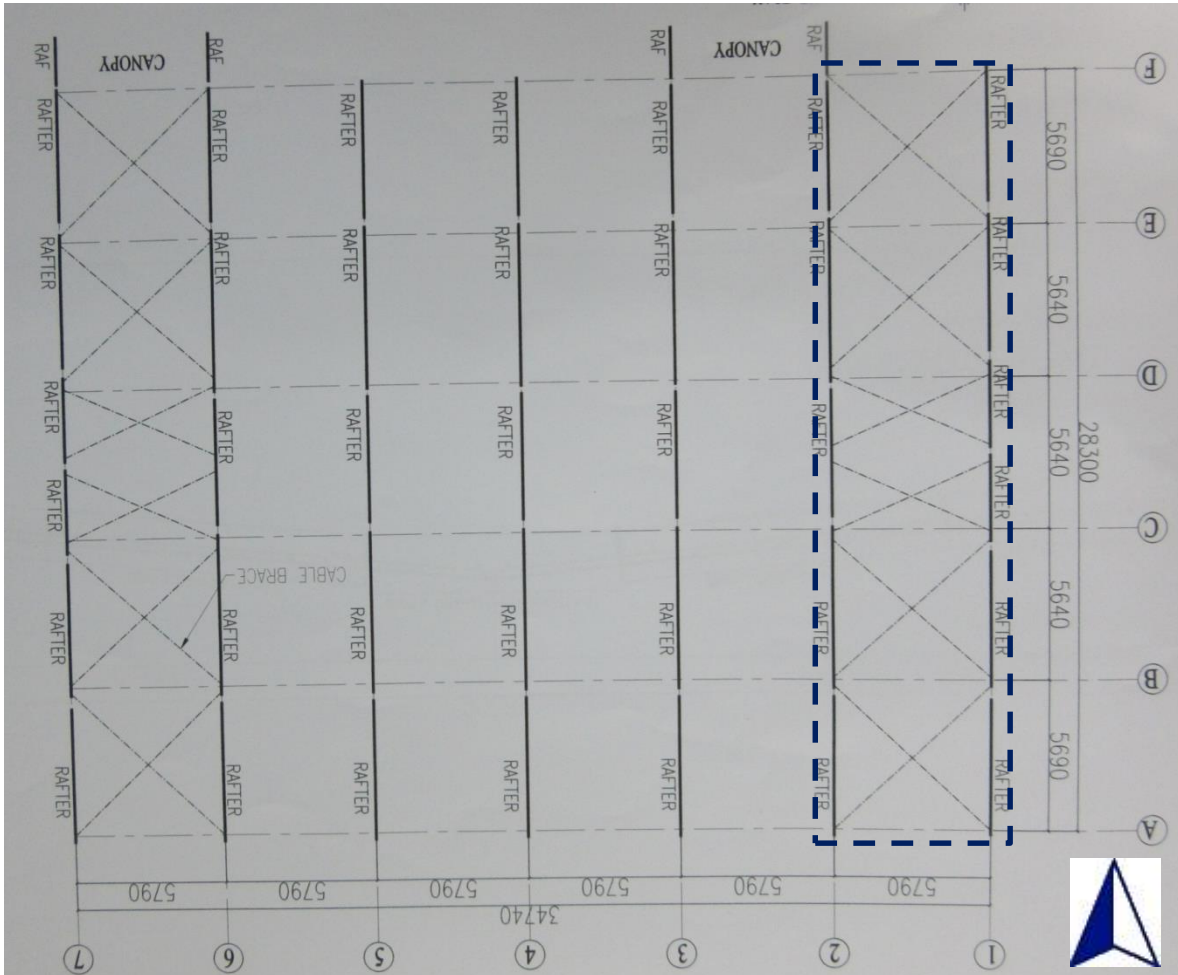


Observed missing bracing on-site (as per drawing)

Logically should have bracing present in drawings and on site

Apparently irregular lateral stability system due to missing bracings

# Apparently loosely tied bracing



Layout of vertical bracing



Apparently some of the bracing are tied very loosely

# Apparently non-engineered structural details and connections



Missing steel rib for the transfer of the vertical load to the column

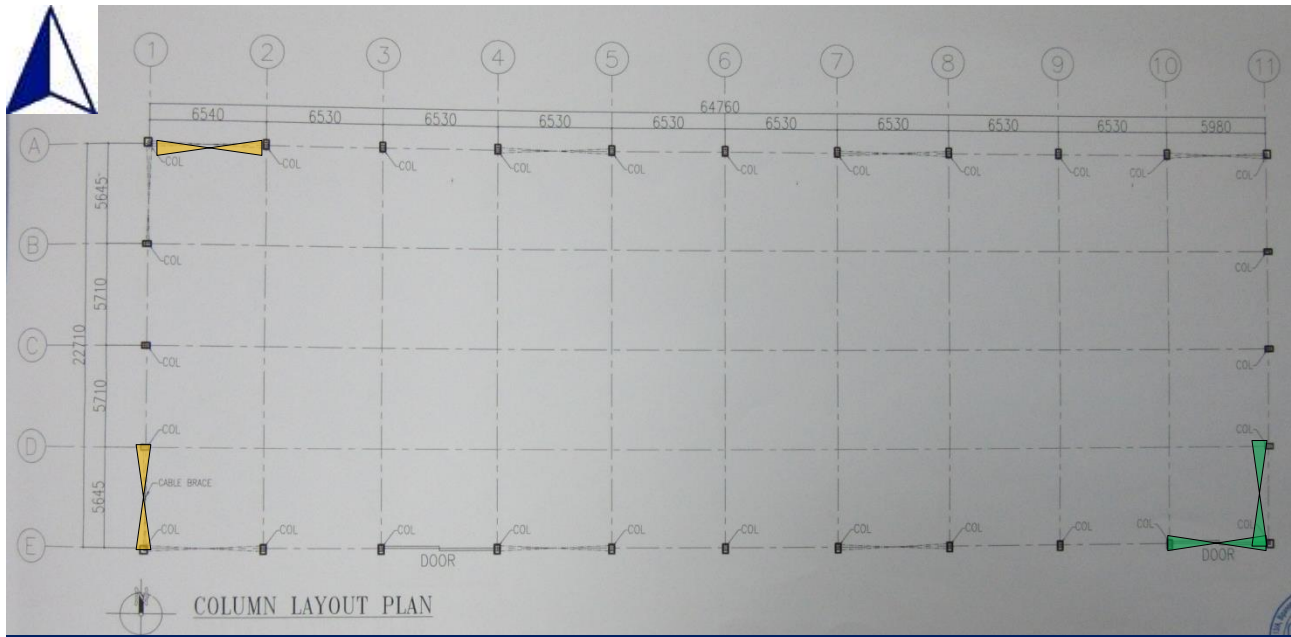


Steel member with rib to transfer vertical load to supporting column

Apparently some of the perimeter members lacked the highlighted ribs to transfer vertical effort to the facade frame

# Building 5

# Non apparent lateral stability system



Observed missing bracing on-site (as per drawing)

Logically should have bracing present in drawings and on site

Apparently irregular lateral stability system due to missing bracings

# Apparently loosely tied bracing



Most of the bracing are apparently not sufficiently tight

# Priority Actions

# Problems Observed

## Building 1

1. Apparently non-engineered structural details and connections
2. Apparently non-engineered canopy

## Building 2

3. No-apparent lateral stability system
4. Apparently loosely tied bracing
5. Apparently non-engineered structural details and connections

## Building 5

6. No-apparent lateral stability system
7. Apparently loosely tied bracing

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Building 1 (B1) - Apparently non-engineered structural details and connections	Building Engineer to survey the connection details in the as built structure.	6-months
2	Building 1 (B1) - Apparently non-engineered structural details and connections	Code adequacy to be ensured.	6-months
3	Building 1 (B1) - Apparently non-engineered structural details and connections	Complete any structural alterations as advised by Building Engineer. Omissions to be eliminated.	6-months
4	Building 1 (B1) - Apparently non-engineered canopy	Building Engineer to survey and investigate the canopy structure and to ensure adequacy for code vertical and horizontal loads including wind up-lift.	6-months
5	Building 1 (B1) - Apparently non-engineered canopy	Connections to the main structure to be defined.	6-months
6	Building 1 (B1) - Apparently non-engineered canopy	Complete any structural alterations as advised by Building Engineer.	6-months
7	Building 2 (B2) - No-apparent lateral stability system	Building Engineer is to investigate the lateral stability of the building. Code adequacy to be ensured.	6-weeks
8	Building 2 (B2) - No-apparent lateral stability system	Eventual remedial works to be defined.	6-weeks
9	Building 2 (B2) - No-apparent lateral stability system	Make any structural alterations as advised by Building Engineer.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
10	Building 2 (B2) - Apparently loosely tied bracing	Building Engineer to survey the bracing in whole the building and to ensured code adequacy	6-months
11	Building 2 (B2) - Apparently loosely tied bracing	Carry out any structural alterations as advised by Building Engineer.	6-months
12	Building 2 (B2) - Apparently non-engineered structural details and connections	Building Engineer to survey the connection details in the as built structure.	6-months
13	Building 2 (B2) - Apparently non-engineered structural details and connections	Code adequacy to be ensured.	6-months
14	Building 2 (B2) - Apparently non-engineered structural details and connections	Complete any structural alterations as advised by Building Engineer. Omissions to be eliminated.	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
15	Building 5 (B5) - No-apparent lateral stability system	Building Engineer is to investigate the lateral stability of the building. Code adequacy to be ensured.	6-weeks
16	Building 5 (B5) - No-apparent lateral stability system	Eventual remedial works to be defined.	6-weeks
17	Building 5 (B5) - No-apparent lateral stability system	Make any structural alterations as advised by Building Engineer.	6-months
18	Building 5 (B5) - Apparently loosely tied bracing	Building Engineer to survey the bracing in whole the building and to ensured code adequacy	6-months
19	Building 5 (B5) - Apparently loosely tied bracing	Carry out any structural alterations as advised by Building Engineer.	6-months