Hop Yick (Bangladesh) Ltd Unit-2 (New)

Plot # 44-46, DEPZ (West Zone), Ganakbari, Ashulia Savar
(23.949019N, 90.270028E)
22th December 2016

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Observation

Factory Building

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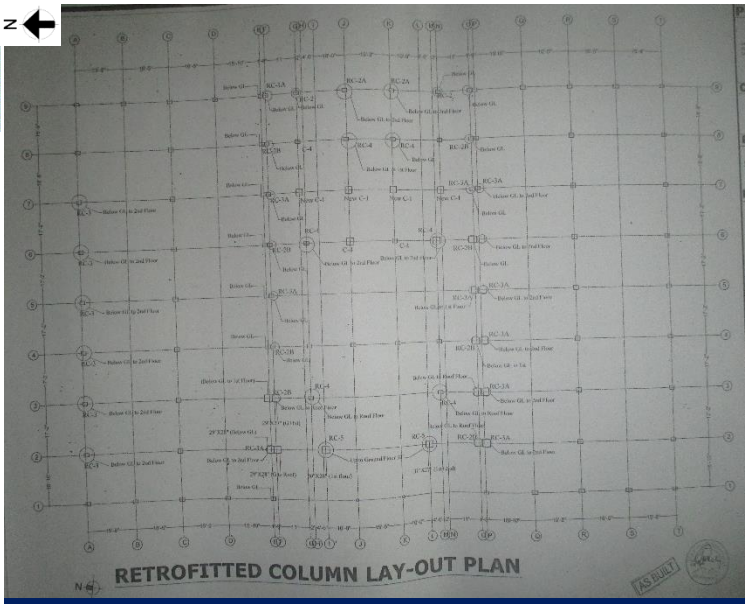
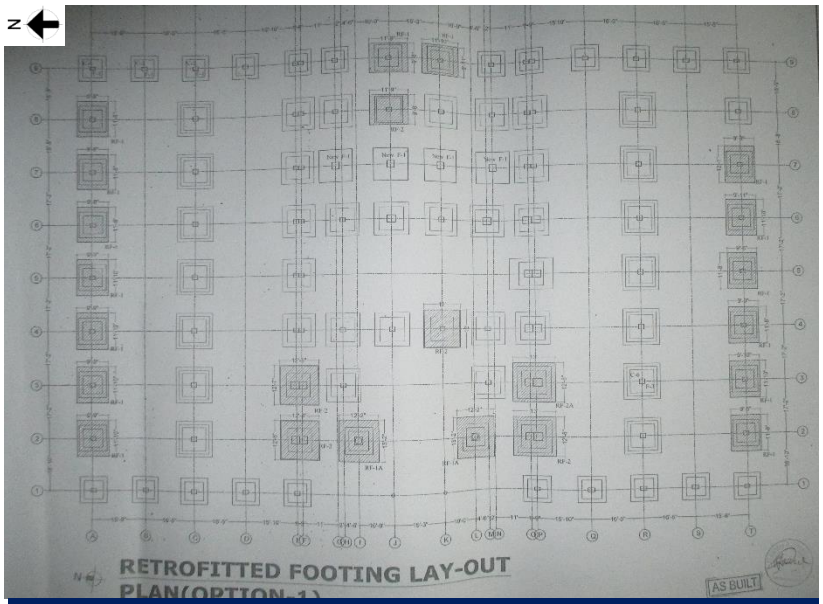
Design check required to be reviewed



Proposed retrofitting column layout in provided DEA report



Proposed retrofitting footing layout in provided DEA report

11.6 CONCLUDING REMARKS

Few existing columns are not safe against ALLIANCE load combinations with 63 psf life load.

Few footing seen unsafe.

Few floor beams are unsafe.

Grade Beams are safe.

Slab thickness and reinforcement are adequate.

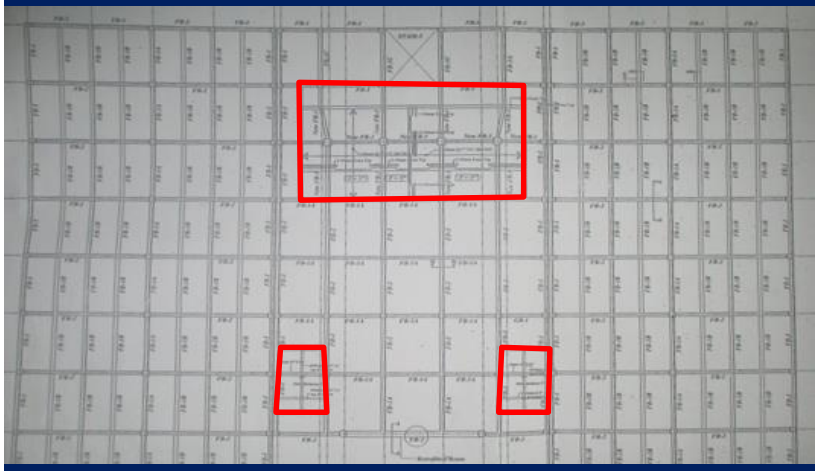
Drift and displacement are in allowable limit.

11.7 RECOMMENDATION:

Considering the concluding remarks it is recommended to retrofit the columns and pile caps according to retrofitting drawings. Details of the retrofitting are provided in the retrofitting part and drawing.

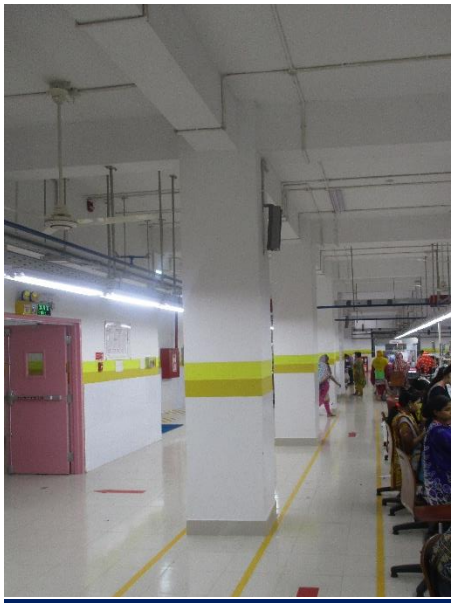
- The middle portion of buildings having a void area but it is filled with a steel structure without any foundation. So it should be removed for structural stability of R.C building. This is shown in below indicated by hatch symbol.

Retrofitting recommendation for columns, beams and foundation in provided DEA report



Proposed new slab on void position in provided DEA report

Factory Building

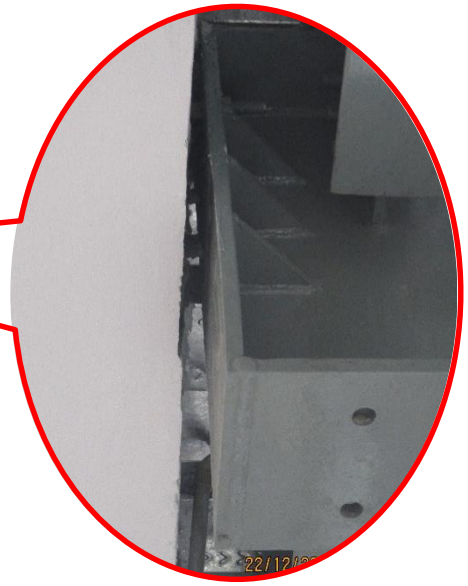


Newly constructed column

Three side retrofitted column on movement joint

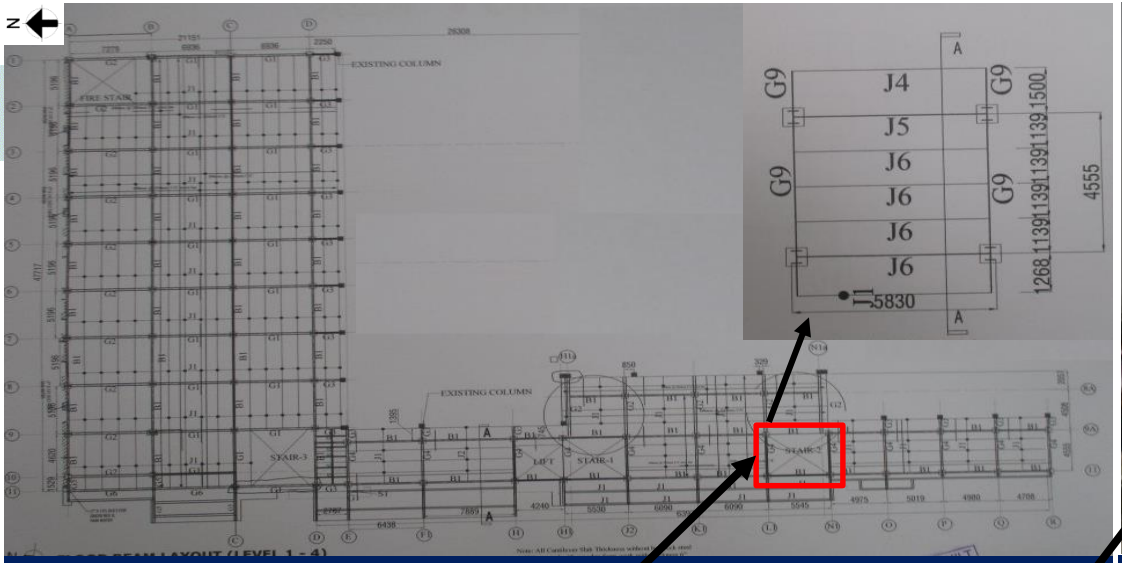
Bolted connection between RC column and steel beam

Bolted joint between Steel corbel with steel beam and RC column



Some columns, beams and slab found retrofitted in RC part according to the retrofitting scheme. Moreover, steel part is found connected by bolt with RC part. The factory is required to engage an engineer to evaluate the connection between two part and evaluate the whole structure to consider the horizontal and vertical load.

Inconsistent and missing documents



Typical beam layout plan

Beam layout plan for Stair-2

The marked beam was absent in beam layout but that beam was observed under the top slab of stair case-2

BEAM SCHEDULE

MARK	SECTION UP TO L-2	GRADE
G7	H-800X250X10X1	A572-50
G8	H-700X200X8X10	A572-50
G9	H-600X200X8X10	A572-50
J2	H-500X200X6X8	A572-50
J3	H-500X150X6X8	A572-50
J4	H-200X100X8X6	A572-50
J5	H-300X200X8X6	A572-50
J6	H-400X200X8X6	A572-50

Beam schedule for the stair case-2

Depth of 'H' section G9 beam was found 800mm instead of 600mm which was in beam

Factory Building : (Steel Part)

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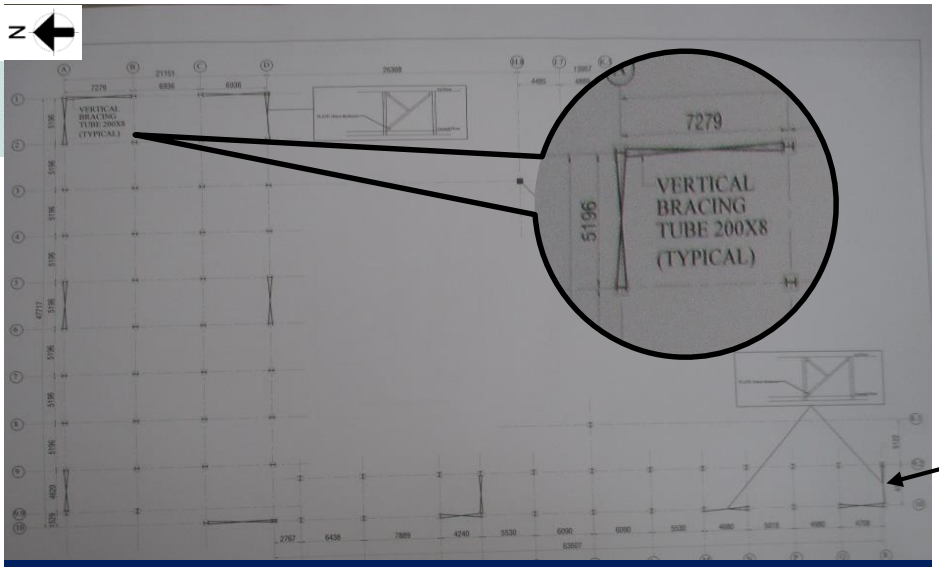
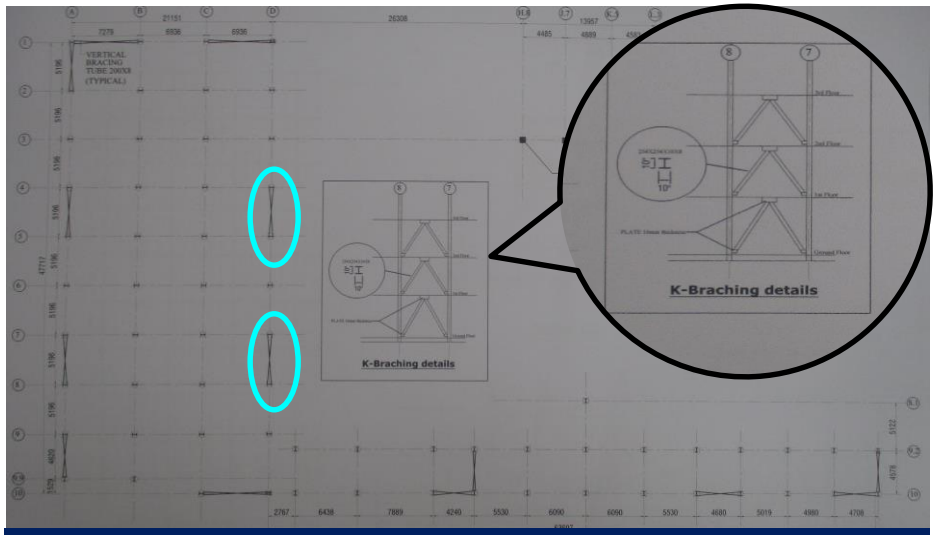


Bracing layout of Ground floor

'I' section was used as vertical bracing on every floor instead of tube bracing which was mention in provided drawing



Bracing layout of 1st & 2nd floor

'Inverted 'V' bracing was observed on 1st and 2nd floor on the marked zone but position of such bracing was not mention in provided drawing. Only bracing detail was found in drawing.

Factory Building : (Steel Part)

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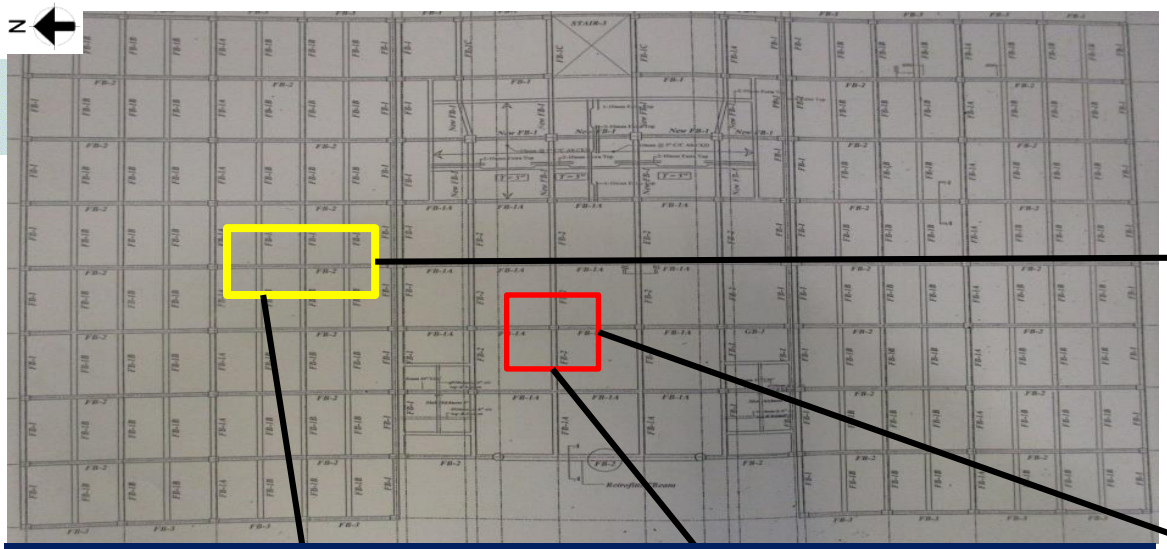
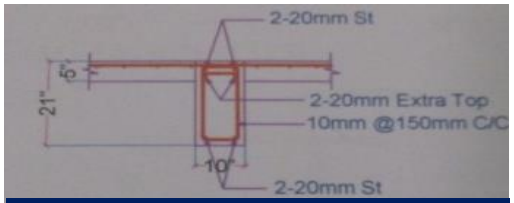
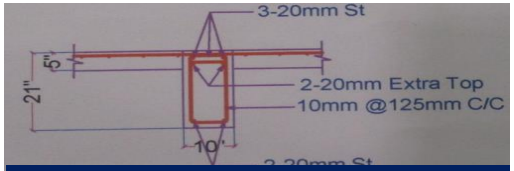


Typical floor beam layout plan



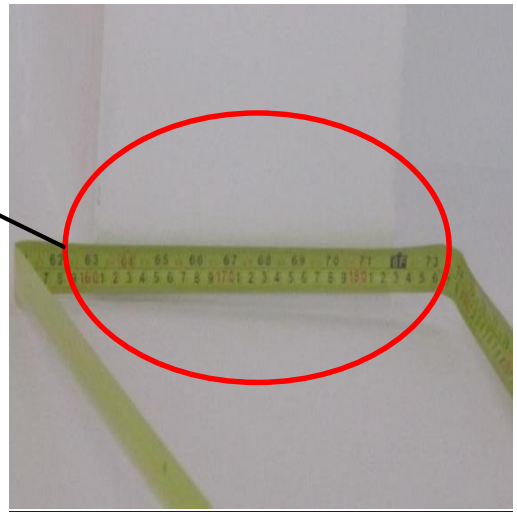
FB-1B beam schedule in provided drawing



FB-1A Beam schedule in provided drawing

Variation in depth of FB-1B was found in yellow marked area whereas all FB-1B beam depth was 21” including slab in provided drawing

Width of FB-1A beam in red marked area was found 9” instead of 10” in beam schedule



During inspection width of FB-1A was measured 9”

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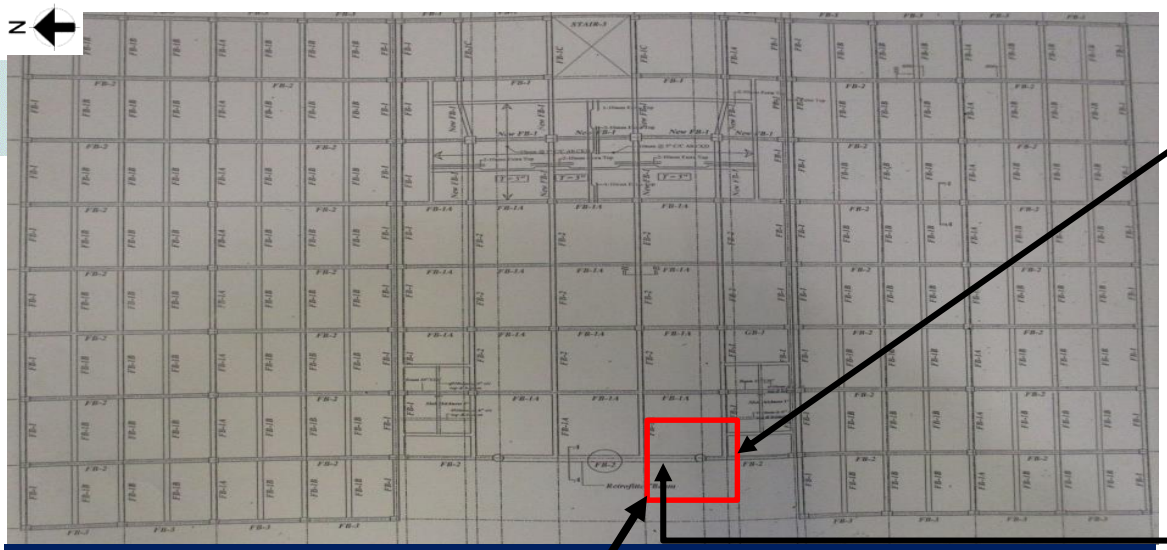
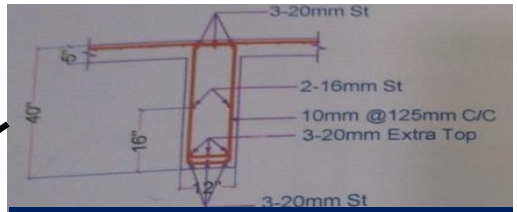
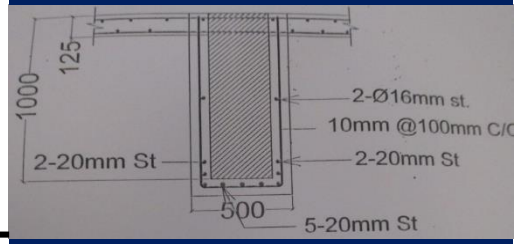


Typical floor beam layout plan



FB-2 beam schedule in provided drawing



Retrofitted FB-2 Beam schedule in provided drawing

In provided drawing, same depth was written for retrofitted and non retrofitted FB-2 beam whereas during inspection, depth was found different.

Factory Building : (RCC Part)

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Apparently inadequate connections at steel part

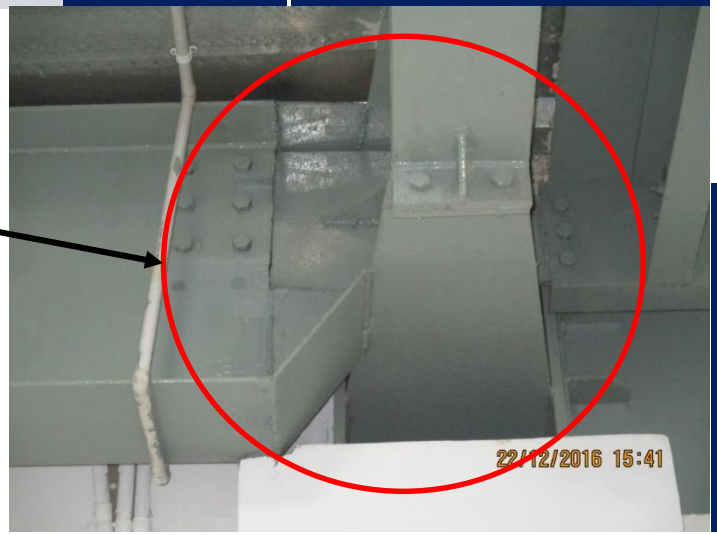
Beam connection between Steel and RCC part

Observed large gap in steel-RCC beam connection

No connection detail was found with corbel connection

Loose connection observed at beam joint on several area

No connection detail was found for the fire stair beam connection



Top flange of beam was found welded with top flange of another beam

Factory Building : (Steel Part)

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Apparently very poor connection between Column and Beam of Stair-3

Missing bolts were observed on Column connection

At Column beam connection, no bolt was found

Apparently non engineered connection between two structural members

No proper connection was observed among secondary & main beam with column

Welded connection was found between main & secondary beam

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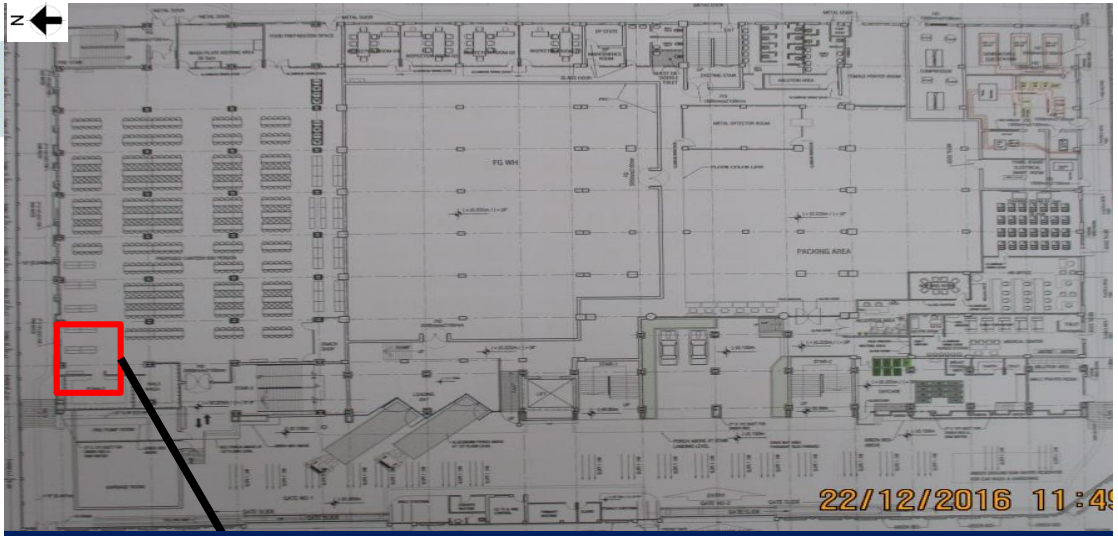
Damage on Deck Sheet



Typical beam layout plan

Damage observed on deck sheet due to fixing of Thai glass of the canteen room adjacent to the dining area. Factory is required to repair the deck sheet with appropriate method as per suggestion of Factory engineer.

Damage of deck metal sheet was observed near the dining area on ground floor

Damaged deck slab

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Corrosion observed on structural steel members

Corrosion was observed at joint of 'X' bracing with column on ground floor

Corrosion was observed on ground floor deck sheet

Corrosion was observed at joint of eccentric bracing with column on ground floor

Corrosion was observed on several area on ground floor steel part .Factory is required to identified the reason and repair with appropriate method

Factory Building : (Steel Part)

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Fire hydrant pump and wastage storage room

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Lack of lateral stability

Fire hydrant pump and wastage storage room

Truss on the most eastern side

The connection of the steel structures are non engineered. The steel trusses are connected with the brick wall in a non engineered way. The load path of the truss in the eastern portion of this shed is questionable.

Typical truss-column connection

Non engineered Truss-wall connection

Fire hydrant pump and wastage storage room

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Problems Observed

Factory Building:

Item1 : Design check required to be reviewed
Item2 : Inconsistent and missing documents
Item3 : Apparently inadequate connections at steel part
Item4 : Damage on Deck Sheet
Item5 : Corrosion observed on structural steel members

Fire hydrant pump and wastage storage room :

Item6 : Lack of lateral stability

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Design check required to be reviewed (Factory Building)	Building engineer to investigate the whole building and carry out an Detail Engineering Assessment considering the vertical and lateral loading as per BNBC provision.	**6-weeks**
2	Design check required to be reviewed (Factory Building)	Complete review of Detail Engineering Assessment.	**6-weeks**
3	Design check required to be reviewed (Factory Building)	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	**6-weeks**
4	Design check required to be reviewed (Factory Building)	Complete remedial works coming from detail engineering assessment after reviewing by Accord.	**6-months**
5	Design check required to be reviewed (Factory Building)	Continue to implement load plan.	**6-months**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
6	Inconsistent and missing of documents (Factory Building)	Building engineer to survey the whole building and produce as-built documentation reflecting the as constructed condition.	**6-weeks**
7	Inconsistent and missing of documents (Factory Building)	Carry out remedial works resulting from engineering assessment if necessary.	**6-months**
8	Apparently inadequate connections at steel part (Factory Building)	A part of engineering assessment, building engineer to check the capacity of connections.	**6-weeks**
9	Apparently inadequate connections at steel part (Factory Building)	Carry out remedial works resulting from engineering assessment if necessary.	**6-months**
10	Damage on Deck Sheet (Factory Building)	Building engineer investigate and provide necessary repair method.	**6-weeks**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
11	Corrosion observed on structural steel members (Factory Building)	Apply Anti corrosion paint on all the steel member as per suggestion of Building engineer.	**6-weeks**
12	Lack of lateral stability (Fire hydrant pump and wastage storage room)	Building engineer to check the capacity of the steel roofs under lateral and vertical loading.	**6-weeks**
13	Lack of lateral stability (Fire hydrant pump and wastage storage room)	Carry out remedial works resulting from engineering assessment if necessary.	**6-months**