Geebee (Bangladesh) Ltd.

Plot # 74~77, sector # 02, KEPZ, North Patenga, Chittagong-4204.
(22.27807N,91.79158E)
10th June 2014

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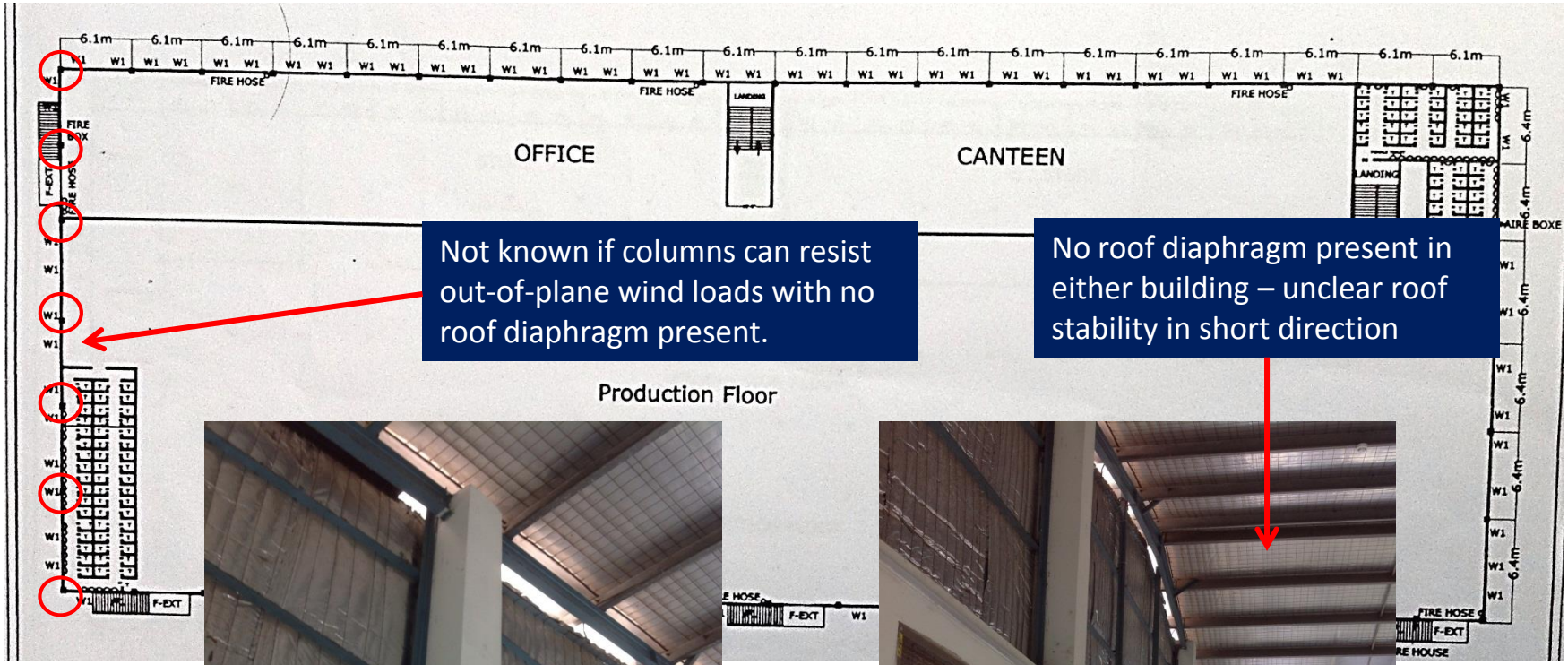
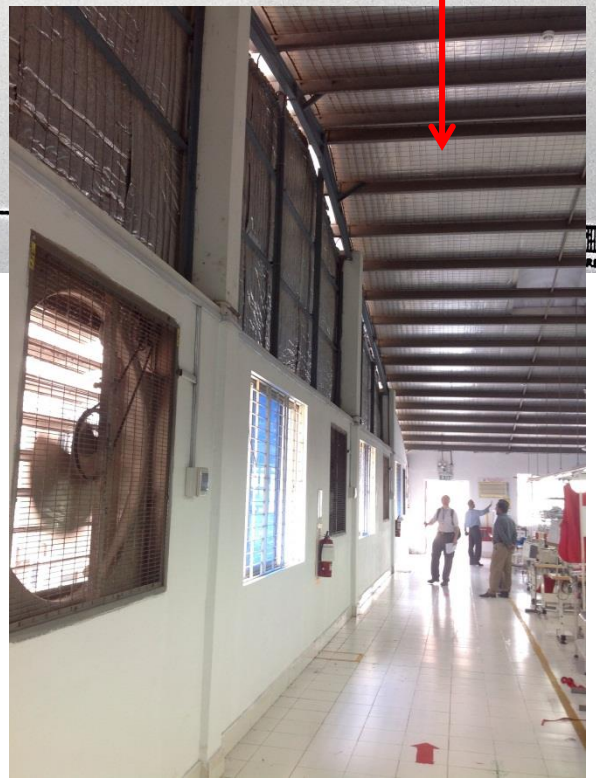
Observations

Global stability



Not known if columns can resist out-of-plane wind loads with no roof diaphragm present.

No roof diaphragm present in either building – unclear roof stability in short direction



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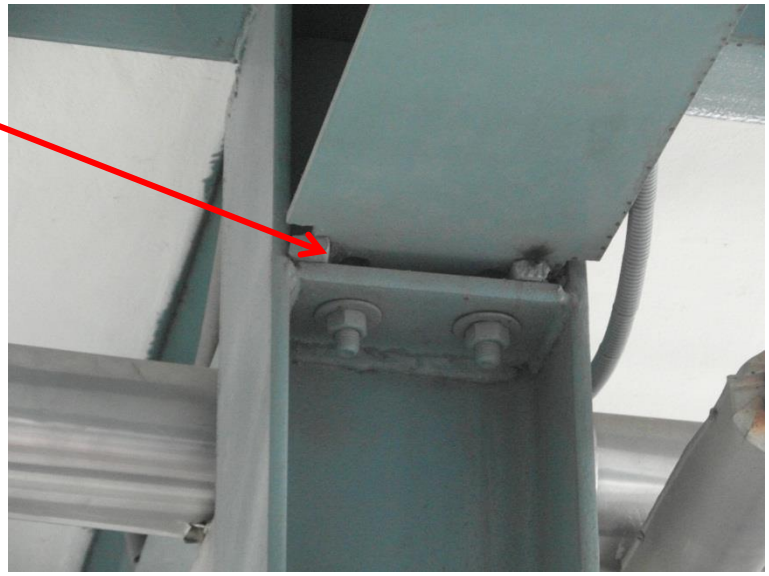
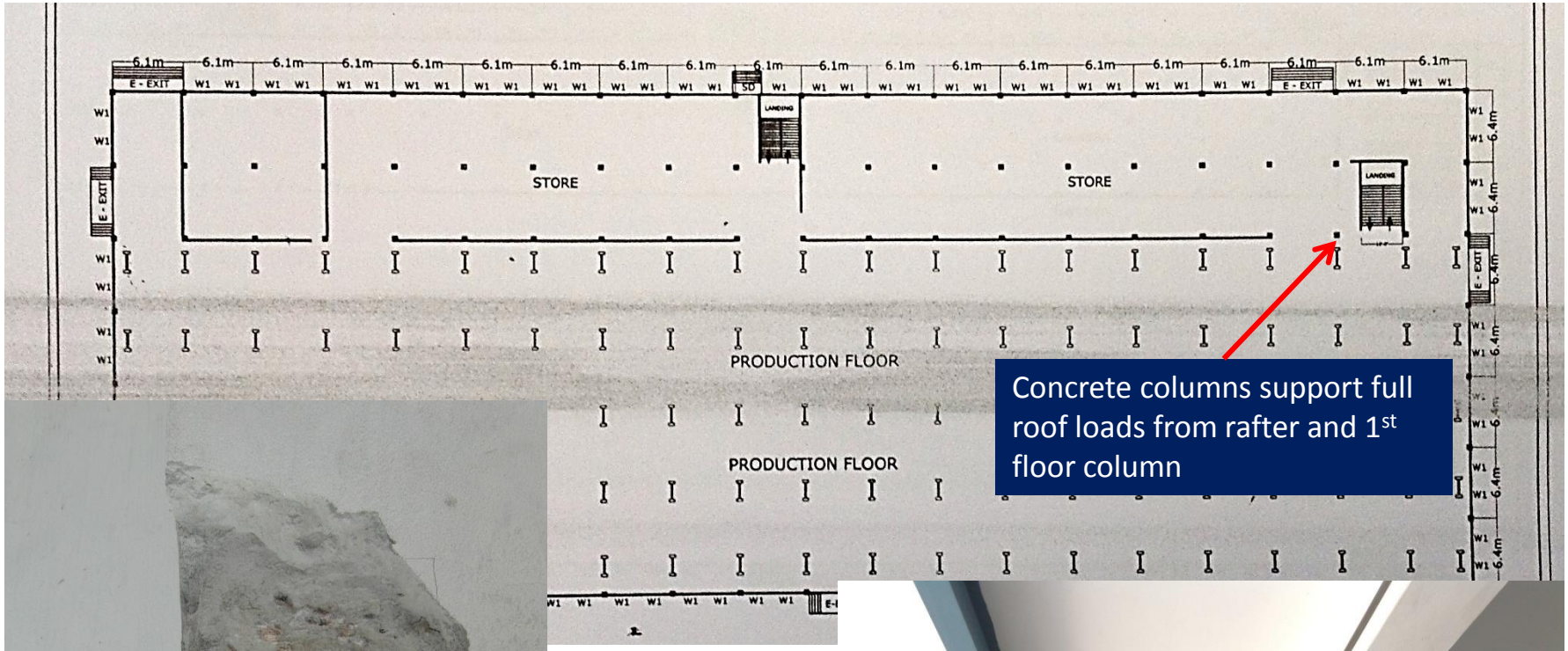
Packers placed under flange instead of under entire section – reduces moment capacity of joint

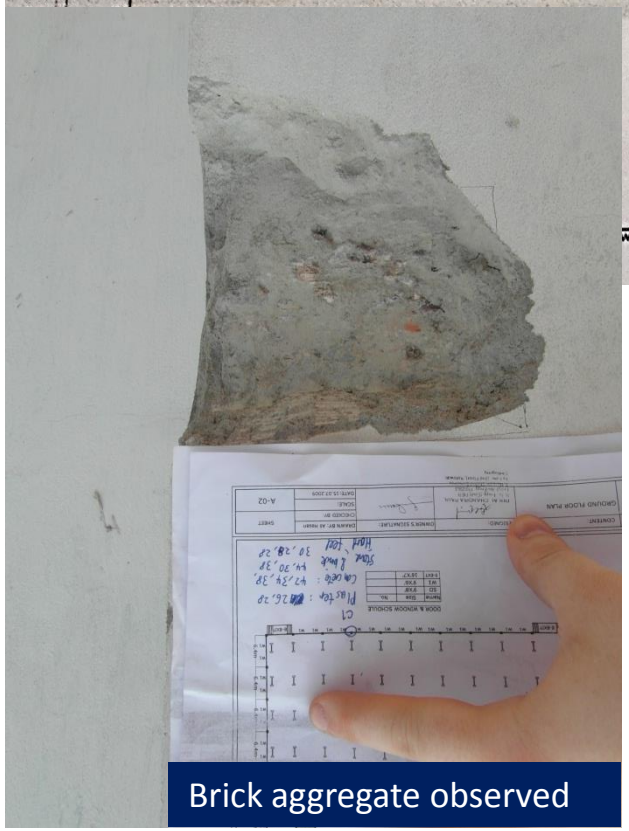


Few internal masonry walls at ground floor to act as shear walls – lateral stability of upper floors unclear

Top flange cut away and additional angle poorly welded with poor detailing – reduced flexural and shear capacity of beam

High column stresses





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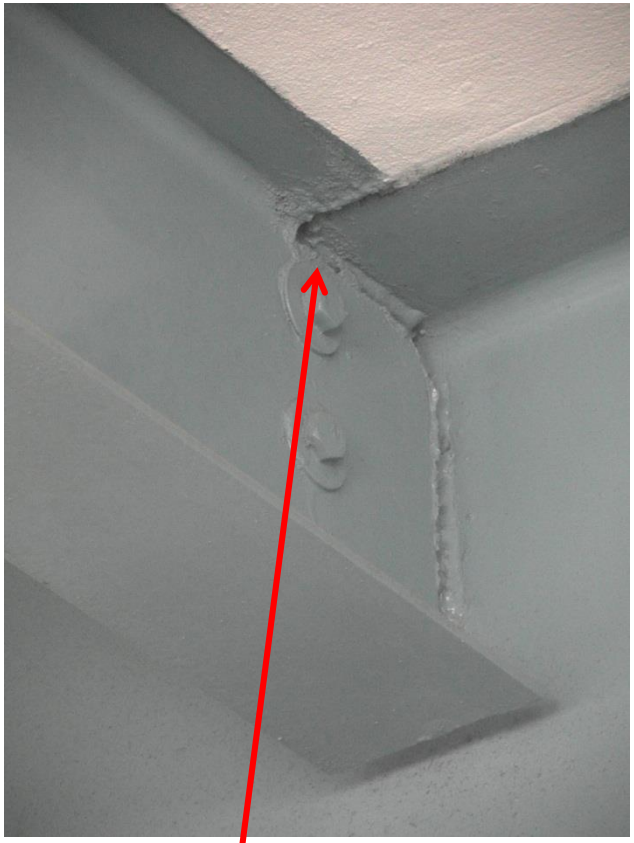
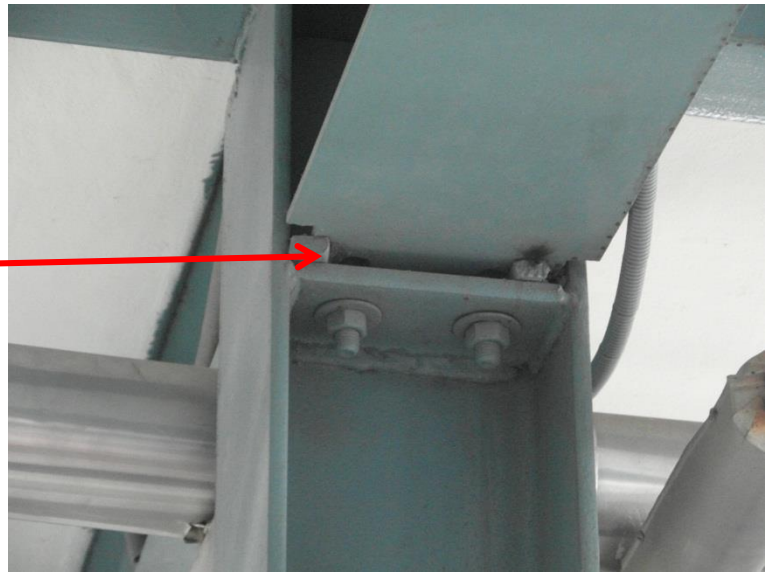
Poor steel detailing



Edge distance to bolts appears too low

Packers placed under flange instead of under entire section – reduces vertical capacity of connection

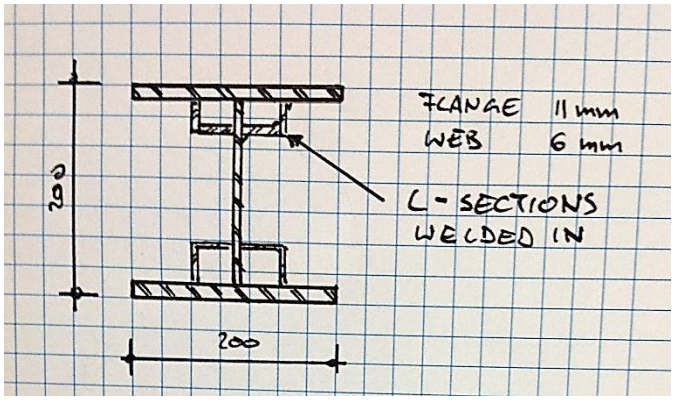


Top flange cut away and additional angle poorly welded with poor detailing – reduced flexural and shear capacity of beam

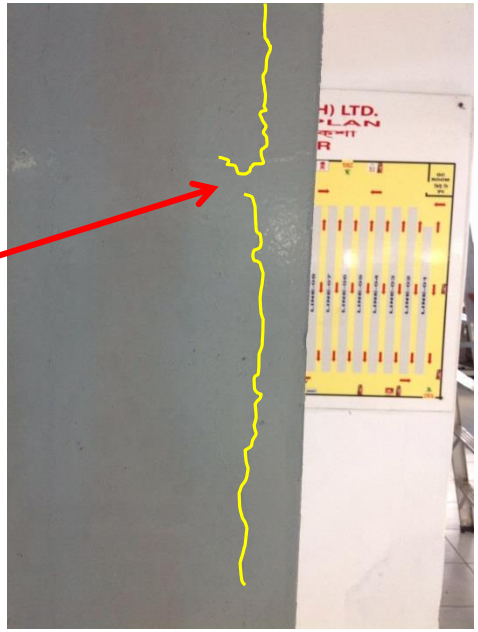
Poor portal frame haunch detailing

Column does not appear large enough to resist bending moments from haunch and rafter for vertical loads.

Poor haunch detailing (no stiffeners, no tension plate, welding very poor quality)



Cracks to paint and bowing of plates suggest flanges may have locally buckled slightly. L-sections were apparently welded on later to strengthen the column



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Apparently non-engineered external structures

Fire escape stairs outside the building (5 no.): poor structural details and weld quality

Apparently non-engineered steel structure outside the building

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Generator room outside the building

Lightweight roof structure over main entrance

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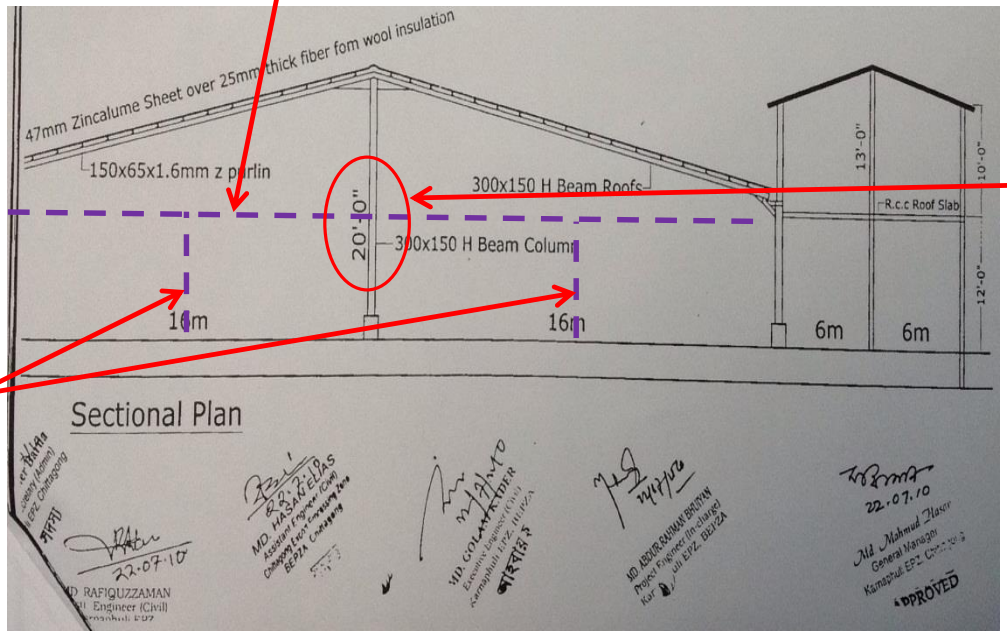
Inconsistencies between drawings and as-built construction

1st floor not shown



Incorrect dimension

Ground floor columns not shown

Incorrect details on Permit drawings

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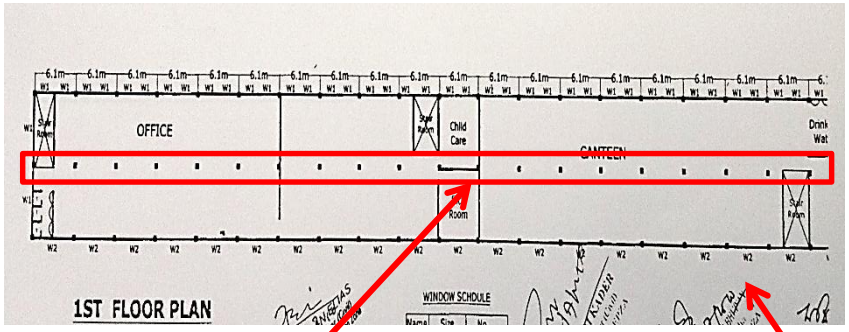
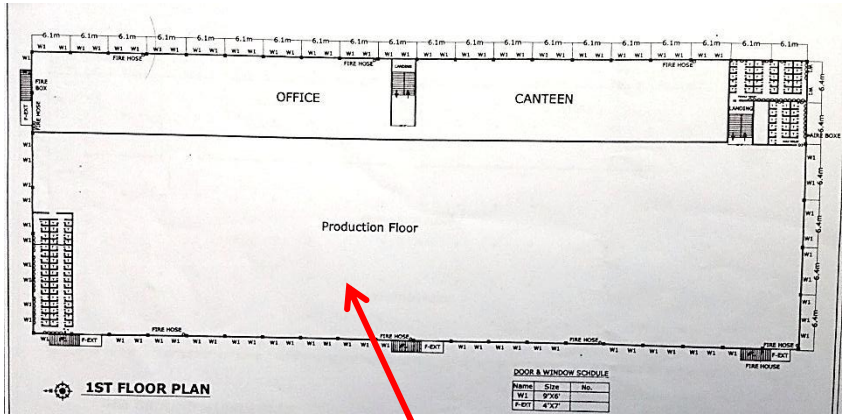


Columns on 1st floor not existent



Two different floor plans provided. Some column sizes shown are different from as-built

Support structure for concrete water tank (not connected to the building)

No information available for these apparently engineered structures

Elevator shafts

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No information available for these apparently engineered structures

Northern Guard room

Chimneys outside the building (2 no.)

Priority Actions

Problems Observed

1. Global stability
2. High stresses in ground floor RC columns
3. Poor portal frame haunch detailing
4. Poor steel detailing
5. Apparently non-engineered external structures
6. Absence of structural information and inconsistencies between drawings and as-built construction

Item No.	Observation	Recommended Action Plan	Recommended Timeline
1	Global stability	Building Engineer to conduct a full global stability review of both parts of the building in both directions for wind and seismic loads, based on as-built structure	**6-weeks**
2	Global stability	Provide remedial details as appropriate	**6-weeks**
3	Global stability	Carry out remedial work as required	**6-months**
4	High stresses in ground floor RC columns	Building Engineer to review design, loads and columns stresses for ground floor RC columns.	**6-weeks**
5	High stresses in ground floor RC columns	Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from min. 4 columns.	**6-weeks**
6	High stresses in ground floor RC columns	Produce and actively manage a loading plan for all floor plates within the factory, giving consideration to floor capacity and column capacity. Incorporate any limitations stated in the 'Next' report dated January 2014.	**6-weeks**
7	High stresses in ground floor RC columns	Continue to implement loading plan	**6-months**

Item No.	Observation	Recommended Action Plan	Recommended Timeline
8	Poor portal frame haunch detailing	Building Engineer to review portal frame design as built, including haunches, column sizes and weld quality	**6-weeks**
9	Poor portal frame haunch detailing	Provide remedial details as appropriate	**6-weeks**
10	Poor portal frame haunch detailing	Carry out remedial work as required	**6-months**
11	Poor steel detailing	Building Engineer to review steel detailing and weld quality	**6-weeks**
12	Poor steel detailing	Provide remedial details as appropriate.	**6-weeks**
13	Poor steel detailing	Carry out remedial work as required	**6-months**
14	Apparently non-engineered external structures	Building Engineer to review design of ancillary steel structures with regard to their capacity to support code vertical and wind loads	**6-months**
15	Apparently non-engineered external structures	Carry out remedial works as necessary, or replace structures	**6-months**
16	Absence of structural information and inconsistencies between drawings and as-built construction	Building Engineer to carry out as-built survey of building and produce accurate and complete as-built drawings	**6-months**
17	Absence of structural information and inconsistencies between drawings and as-built construction	Building Engineer to provide structural documentation for external steel structures.	**6-months**