Union Knitwear Ltd.
Union Garments ltd.

M.C Bazar, Shishu Palli Plus Road, Mulaid, Tengra, Sreepur, Gazipur
(24.24376N, 90.41008E)

15 March 2014

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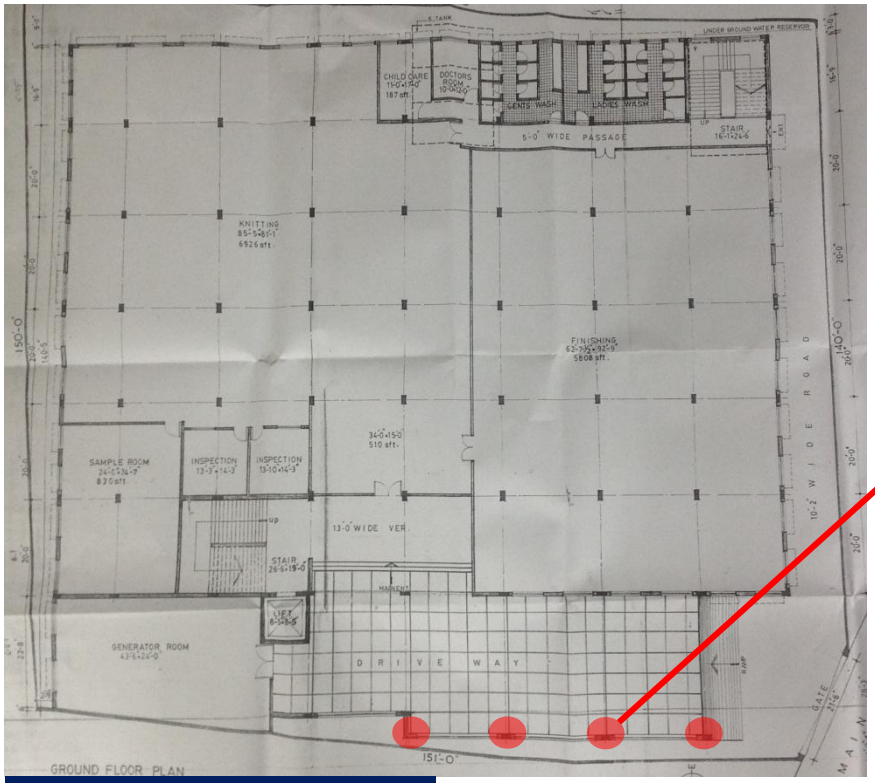
Observations

The columns at the front entrance to the building are at risk of being accidentally struck by a vehicle



Ground Floor Plan

Delivery Area

4No columns in delivery area at risk of being struck by vehicle.

Building Engineer to check that the columns have been designed for vehicle impact loading or provide adequate protection to the columns at risk of damage due to impact loading.

Columns at risk

Column Impact Loading

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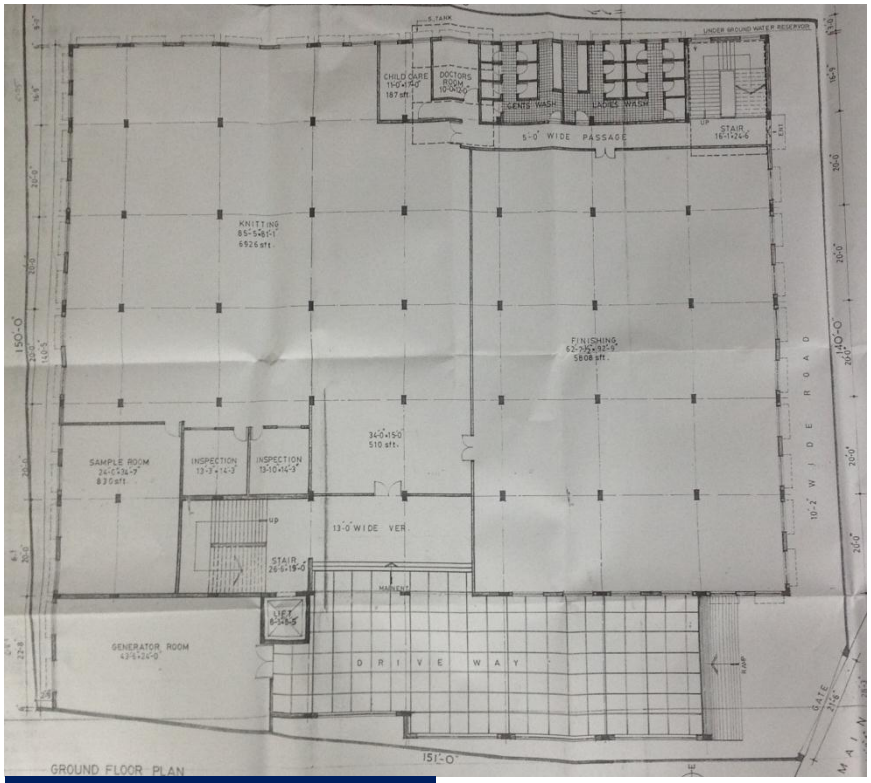
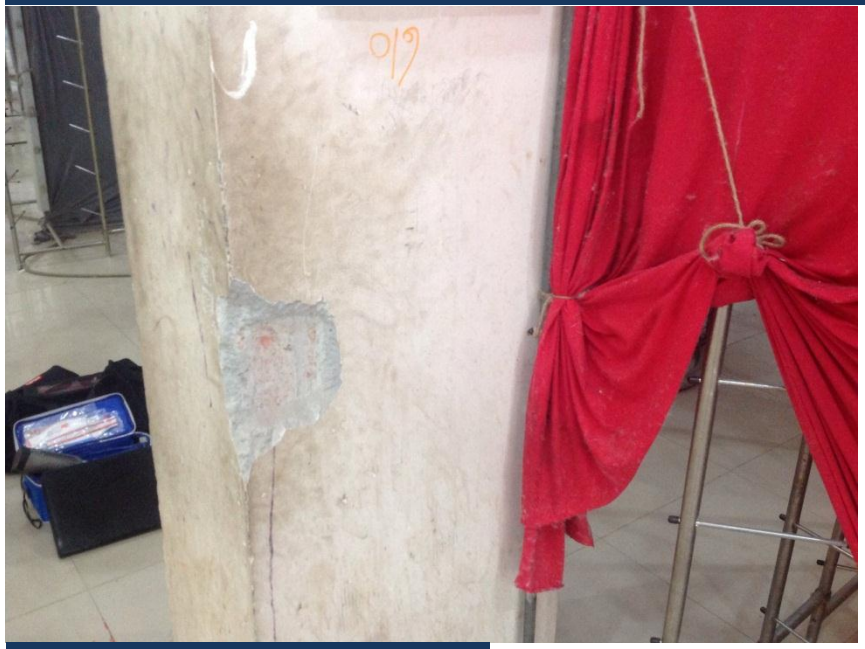
Columns at ground floor appear to be stressed in excess of normal design limits



Typical Column Layout

Cursory calculations indicate that the columns are highly stressed and appear smaller than required by Design Codes for the applied loads.

Building Engineer to verify that columns have been designed to support the applied loads.



Ground Floor Column

Columns Capacity

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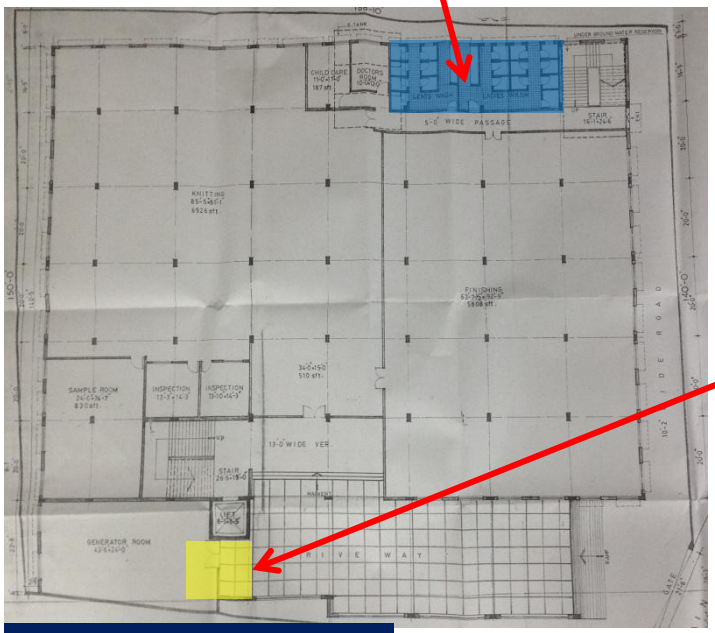
Design check required for floor build-ups under water tank and in wash and toilet areas at roof level

Floor Build Up

450mm (avg) high floor build-up in toilet area supported by concrete slab and beam arrangement.

Building Engineer to verify that the slab and beams have been adequately designed to carry floor build-up loads

Floor Build Up



Typical Floor Plan

1st – 3rd Floor Employee Toilet Area

1st Floor Office Toilet Area

Floor build-up

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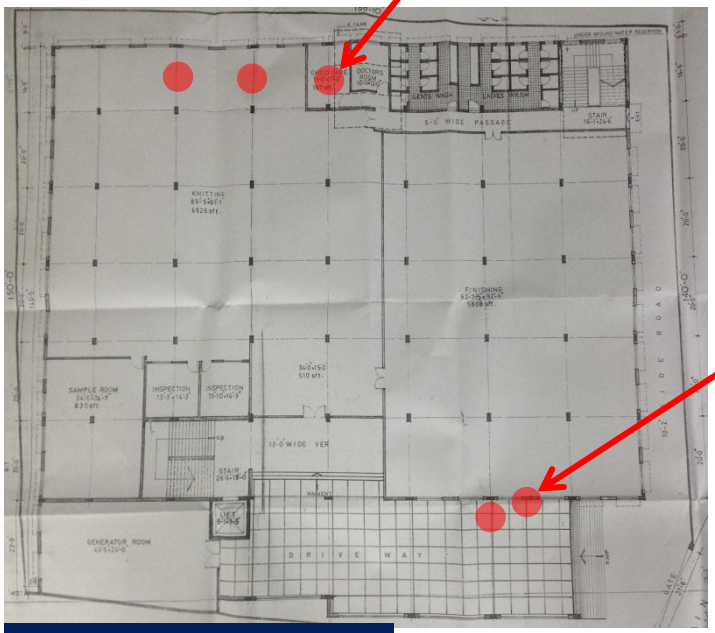
Water Tanks



Roof Plan

5No plastic water tanks on 225mm (avg) concrete plinths supported by concrete slab and beam arrangement at roof level.

Building Engineer to verify that the slab and beams have been adequately designed to carry loading due to water tanks

Water Tanks

Water Tank Locations

Water Tank Loading

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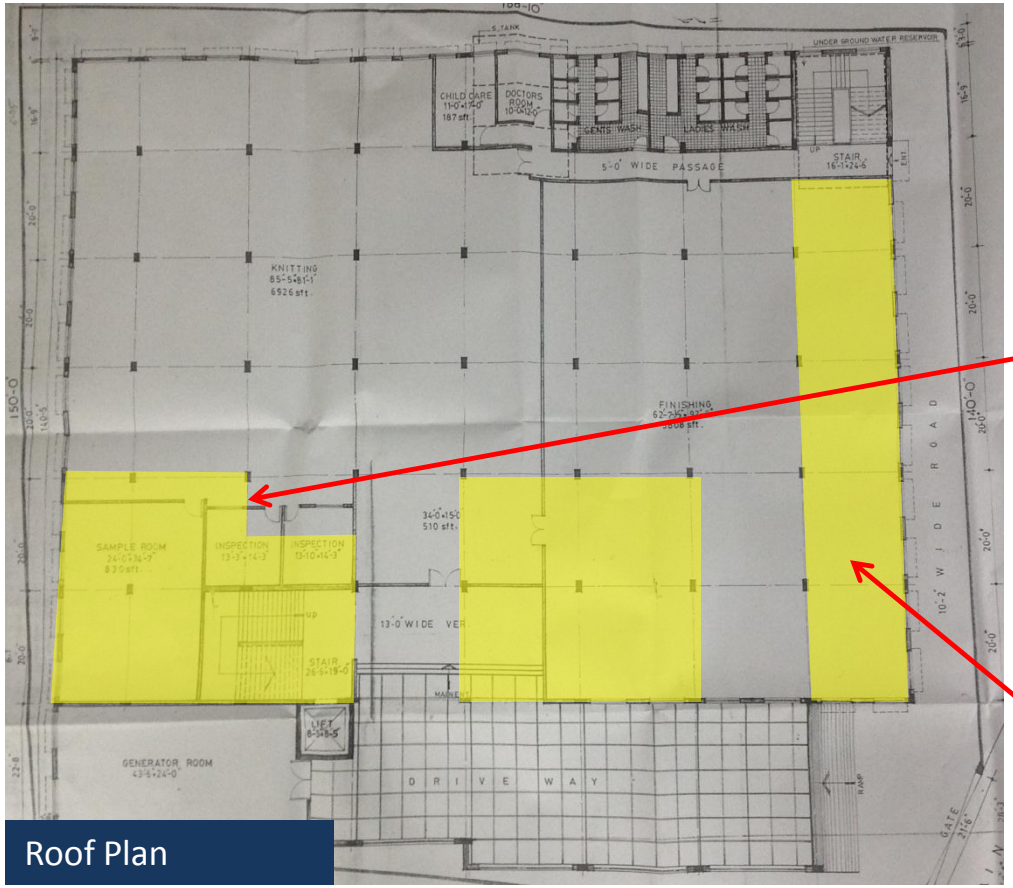
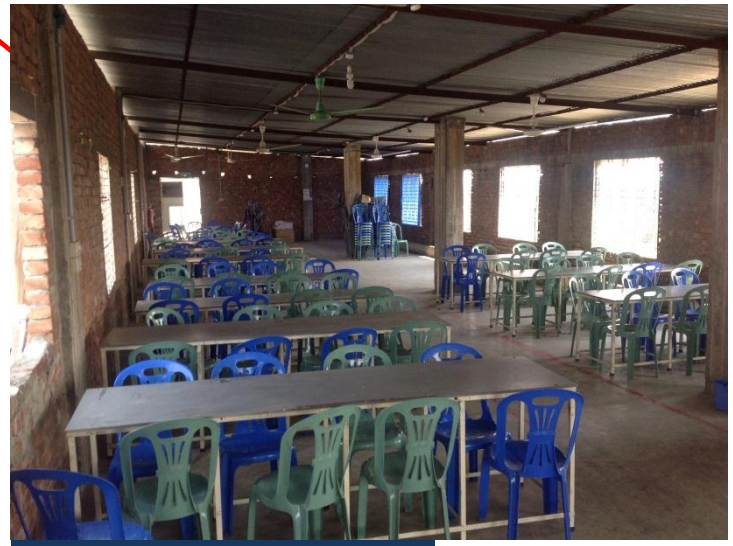
Design check required for the temporary steel structures constructed at 4th Floor Level



Roof Plan

Additional roof structure



Additional roof structure

Steel framed structures not on permit drawings.
Building Engineer to verify design of additional steel structure, including stability, and capacity of RC structure to support additional structure.

Steel roof structures

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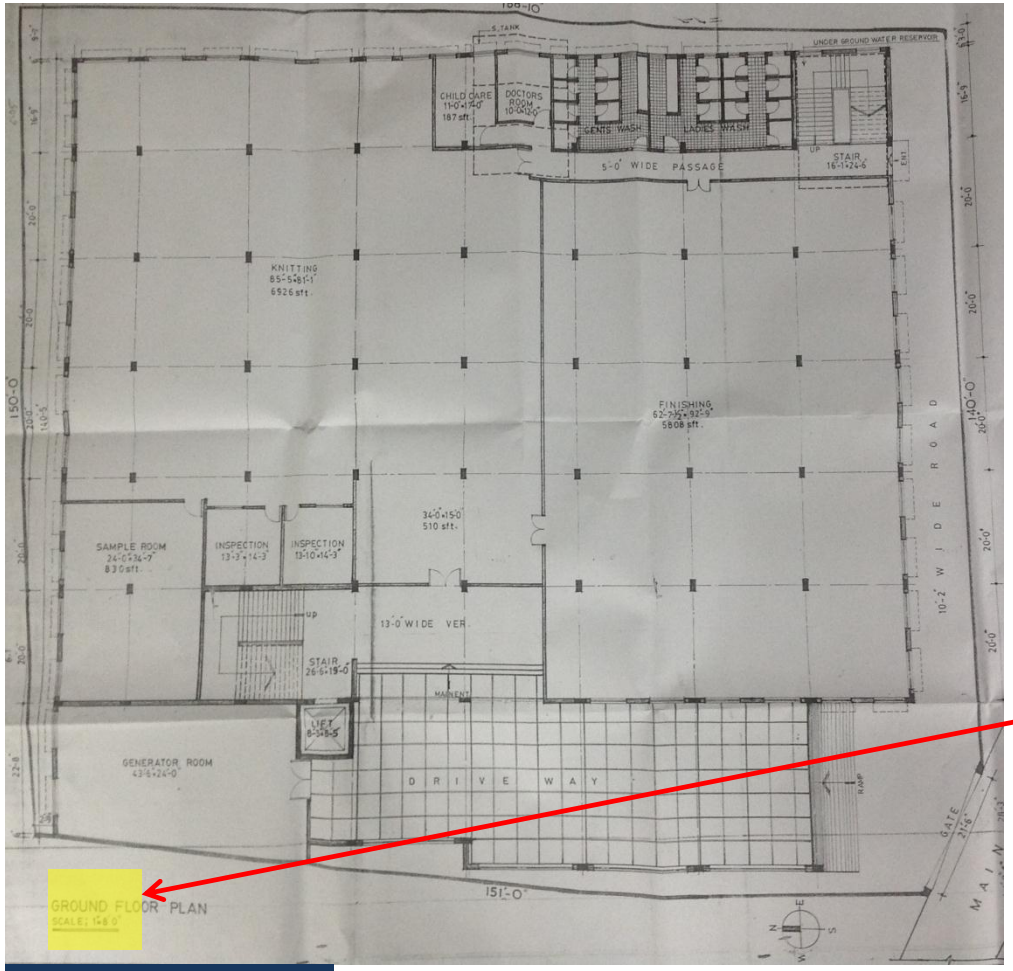
Excavation at the North West Corner perimeter of the building should be filled in



Site Plan

Excavation at building perimeter

Excavation at location shown to be filled with compacted engineering fill material to prevent settlement / subsidence of building foundations

Excavation

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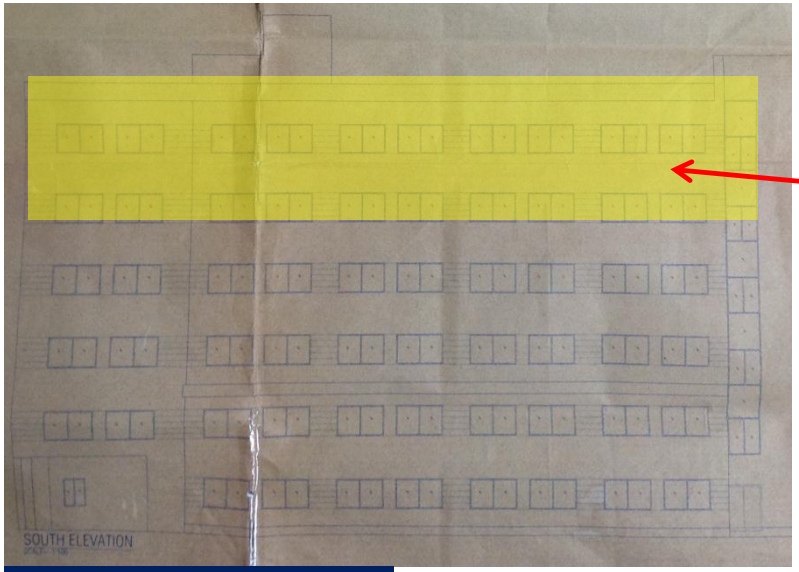
Potential Vertical Extensions to the existing building structure should be reviewed by the Building Engineer



Typical Elevation

Proposed additional storeys at location shown should be reviewed by the Building Engineer to verify the capacity of the existing support structures.

Typical Plan

Additional Stories

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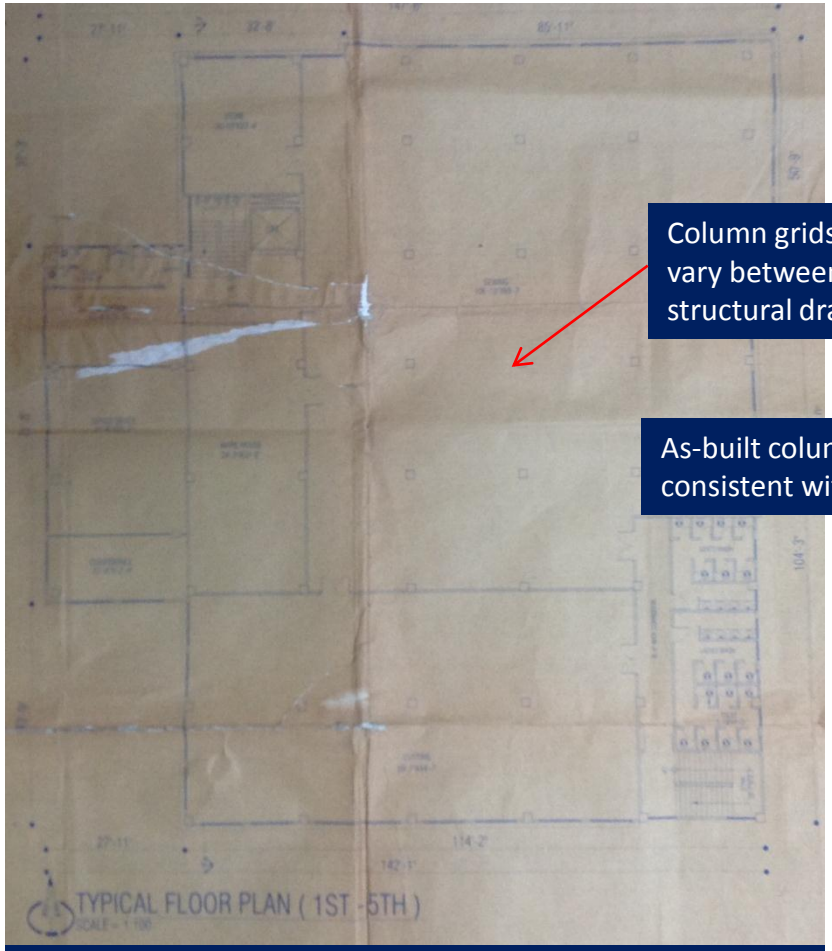
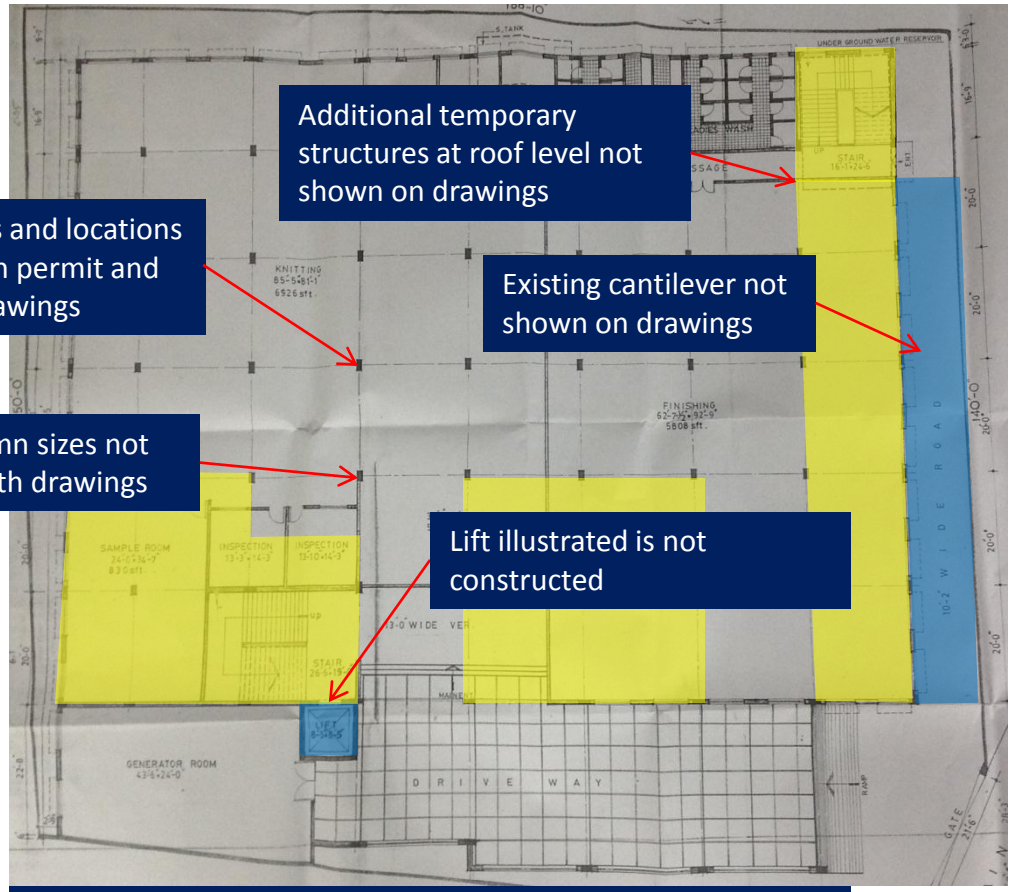
Inconsistencies between permit drawings, structural drawings and as-built structure



Permit Drawing – Typical Floor Plan



Structural Drawing – Typical Floor Plan

Permit / Structural Drawings

Discrepancies between permit drawings, structural engineers' drawings and as-built structure.

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Priority Actions

Problems Observed

ITEM 1: The Columns at the front entrance to the Building are at risk of being accidentally struck by a vehicle. Column protection barriers need to be provided.

ITEM 2: Columns appear to be highly stressed – Building Engineer to verify concrete stresses and in-situ concrete strength.

ITEM 3: Design check required to verify capacity of structure supporting the water tanks and the floor build-ups in the wash and toilet areas at roof level.

ITEM 4: Design check required for the temporary steel structures constructed at 4th Floor Level.

ITEM 5: Excavation at the North West Corner perimeter of the building should be filled in.

ITEM 6: Any potential vertical extension should be reviewed by the Building Engineer to confirm the structural capacity of the as-built structure regardless of the existing Permit drawings

ITEM 7: Inconsistencies between Permit drawings, structural drawings and what is actually constructed. Accurate Structural Drawings should be produced.

Item No.	Observation	Recommended Action Plan	Priority
1	The Columns at the front entrance to the Building are at risk of being accidentally struck by a vehicle. Column protection barriers need to be provided.	Building Engineer to verify that the columns have been adequately designed for impact loading	**6-weeks**
2	The Columns at the front entrance to the Building are at risk of being accidentally struck by a vehicle. Column protection barriers need to be provided.	Suitable column protection barriers to be designed and constructed if necessary to protect the columns	**6-weeks**
3	Columns appear to be highly stressed – Building Engineer to verify concrete stresses and in-situ concrete strength.	Factory Engineer to review design, loads and columns stresses for all internal columns.	**6-weeks**
4	Columns appear to be highly stressed – Building Engineer to verify concrete stresses and in-situ concrete strength.	Verify insitu concrete stresses either by 100mm diameter cores or existing cylinder strength data for cores from 4 columns.	**6-weeks**
5	Columns appear to be highly stressed – Building Engineer to verify concrete stresses and in-situ concrete strength.	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity.	**6-months**

Item No.	Observation	Recommended Action Plan	Priority
6	Design check required for floor build-up loading in wash and toilet areas and for the water tank loading at roof level to confirm slab load capacity	Extent of build-up loading in toilet and wash areas to be surveyed and weight of water tanks on roof to be assessed. The capacity of the supporting structure slabs and beams to be assessed to verify that the structure is capable of supporting the applied loads.	**6-weeks**
7	Design check required for floor build-up loading in wash and toilet areas and for the water tank loading at roof level to confirm slab load capacity	Produce and actively manage a loading plan for all floor plates within the factory giving consideration to floor capacity and column capacity. Loading plans to be put on each factory floor.	**6-weeks**
8	Design check required for floor build-up loading in wash and toilet areas and for the water tank loading at roof level to confirm slab load capacity	Continue to implement the loading plan.	**6-months**
9	Design check required for the temporary steel structures constructed at 4th Floor Level	Building Engineer to provide detailed calculations for the temporary roof structures and the associated light steel roof. These should confirm their ability to withstand all design wind loadings - pressure, suctions and uplift forces.	**6-weeks**

Item No.	Observation	Recommended Action Plan	Priority
10	Excavation at the North West Corner perimeter of the building should be filled in.	Excavation needs to be filled in with compacted material to match the consistency of the surrounding ground conditions. Building Engineer to confirm material and proposed method of compaction, or fill with concrete.	**6-weeks**
11	It is noted that the building has permit approval for an additional storey.	If any additions to the building structure are proposed, the Building Engineer shall carry out detailed calculations verifying the structural capacity of the existing structure taking into account any increased loading, the loading plans and existing as built structure, based on insitu concrete strength verification.	**6-months**
12	Inconsistencies between Permit drawings, structural drawings and what is actually constructed	Building engineer to check, collect information and produce accurate and fully complete as-built documentation.	**6-months**