

Scarlet Knitwears Ltd. (Extension)

Plot # B 160-163, BSCIC I/E, Fatullah

(23.626277, 90.480489)

10 January 2024

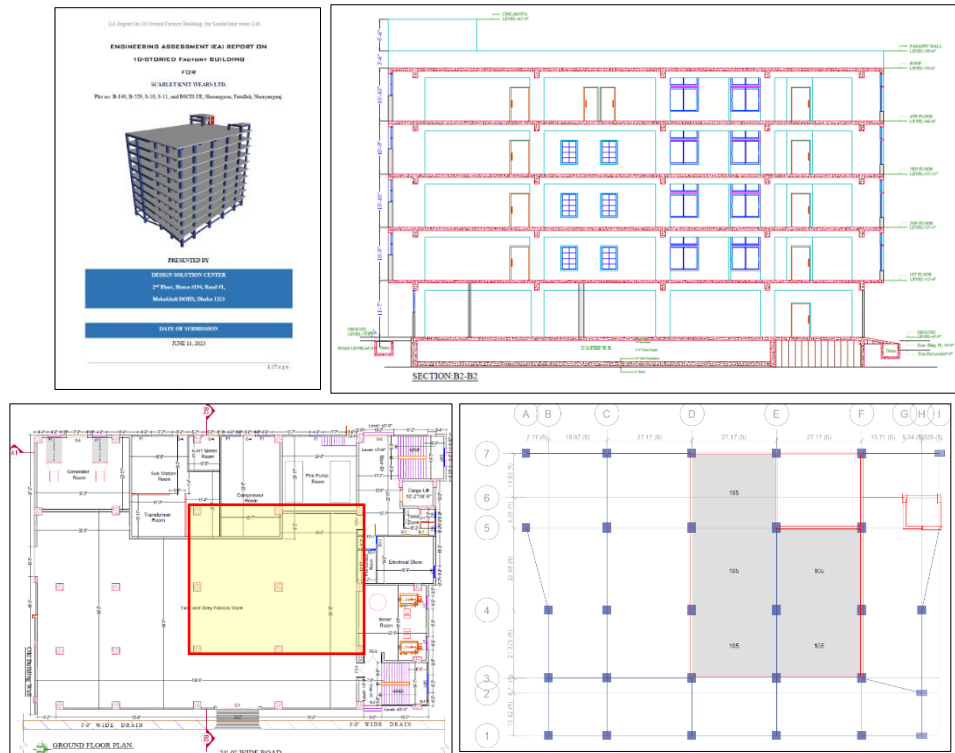


1. Building Information

Building-2: is a five (G+4) storied RC building with underground water reservoir and fire pump room.

2. Observations:

Observation-1: Design documents need to be submitted to RSC for detail review against lateral loadings. (Building-2)



The floor loading has been considered 5kPa in FEA model instead of 6kPa at ground floor (marked location) for yarn and grey fabric store which is suspended slab over the underground water reservoir.

iii) MATERIALS USED IN CONCRETE WITH DESIRED COMPRESSIVE STRENGTH:

- f_c = 4000 Psi UNDER THE FOLLOWING AREA:**
- TYPE: A) ONLY FOR FOUNDATION, COLUMN, GRADE BEAM.
COARSE AGGREGATE :- 3/4" DOWN STONE CHIPS
SYLHET SAND (ANGULAR SHAPE) F.M = 2.3-2.8 TO BE USED ALL R.C.C WORK.
- f_c = 3500 Psi UNDER THE FOLLOWING AREA:**
- TYPE: B) FOR LINTEL, FALSE SLAB, ROOF SLAB, BEAM ETC.
COARSE AGGREGATE :- 3/4" DOWN BRICK CHIPS
SYLHET SAND (ANGULAR SHAPE) F.M = 2.3-2.8 TO BE USED ALL R.C.C WORK.
- MINIMUM CYLINDER STRENGTH:**
- C) FOR PORTLAND COMPOSITE CEMENT (BASED ON CYLINDER TEST OF DIA METER (D) = 6" & HEIGHT = 12")
- I) 28 DAYS STRENGTH = 4000 Psi FOR TYPE A (at Lab Test)
II) 28 DAYS STRENGTH = 3500 Psi FOR TYPE B (at Lab Test)

6.4 MATERIALS CONSIDERED IN DESIGN

Concrete:

Concrete compressive strength, $f_c' = 3500$ psi (Based on Cylinder test reports)

Material Property Design Data

Material Name and Type

Material Name: 3500 psi

Material Type: Concrete, Isotropic

Design Properties for Concrete Materials

Specified Concrete Compressive Strength, f_c : 3500 lb/in²

☐ Lightweight Concrete

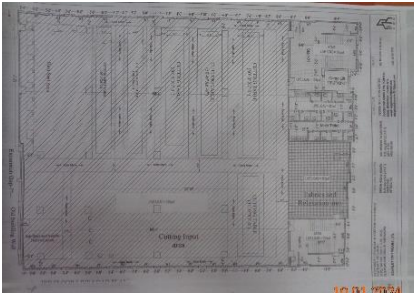
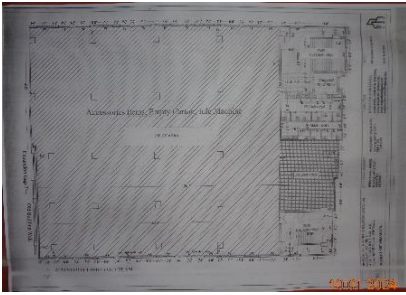
Shear Strength Reduction Factor:

Concrete strength in general note

Concrete strength in EA report and FEA model

Description: In general note of the drawing, design concrete strength has been considered 4000psi for the column, foundation, and grade-beam and 3500psi have been considered for the slab & beam. But in the EA report and FEA model 3500psi have been considered for all the structural members. During inspection, Total 35 numbers of concrete core test reports were available where 18 nos from Columns, 8 nos from beam and 9 nos from slab. The building engineer is required to determine the equivalent strength and confirm the design strength is achieved by the core test. Revise the design documents based on in-situ material strength and lateral loadings.

Observation-2: Load plan does not comply with BNBC requirement. (Building-2)



Posted load plan 5kPa at 3rd and 4th floor

INDUSTRIAL STORAGE & HAZARDOUS (Occupancy - G, H & J)	Workshop, factory, warehouse		Live Load (kPa)	
			Minimum	Maximum
1	Light workroom without storage		3.0	2.7
2	Machinery hall & circulation area		4.0	4.5
3	Factory, workshop etc.		5.0	4.5
4	Manufacturing : light		6.0	4.5
	heavy		12.0	9.0
	ice		15.0	9.0
5	Printing plant :			
	Press room		7.0	11.0
	Composing and linotype room		5.0	9.0
	Paper storage room		12.0	9.0
6	Motor room, fan room etc. including the weight of machinery		7.5	4.5
7	Cold storage, grain storage		15.0	9.0
8	Storage warehouses : light		6.0	4.5
	heavy		12.0	9.0
9	Foundries		20.0	12.0

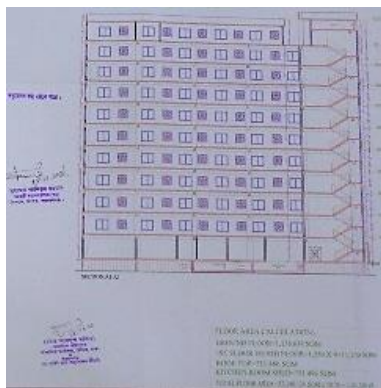
6kPa required for storage



Storage found on the 3rd and 4th floor

Description: During the inspection, storage was found on the 3rd and 4th floor. But in architectural drawing, sewing sections have been shown for the 3rd and 4th floor as well as loading has been considered 5kPa. As per BNBC-2006, 6kPa live load needs to be considered for the storage area. The building engineer is required to update the floor load plan for storage areas, revise the Engineering Assessment (EA) report and submit to the RSC for further review.

Observation-3: Possibility of Vertical Extension. (Building-2).



Proposed for the ten storied and constructed up to five storied.

Description: The building permission layout is for ten storied structures approved from BSCIC Narayanganj dated 28-Dec-2020. The construction of the building was started in December 2020 and completed up to five storied in July 2023. Extended columns were observed on the roof. So, there is a possibility of future vertical extension. The building engineer is required to conduct Detail Engineering Assessment (DEA) for the ten storied structure prior to commencement of further extension work. Submit to RSC for further review.

Observation-4: Exposed re-bar at roof. (Building-2)



Description: Exposed reinforcement was found on roof top for columns, beam and slab. The factory engineer is required to provide anti-corrosive coating in re-bar to prevent the corrosion in exposed rebar.

Observation-5: Non-structural elements not anchored or braced (Building-2)



Description: Racks on different floors are not adequately anchored or braced to resist lateral (earthquake) forces. Building is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.

3. Action Plan:

Serial No	Observation	Action Plan	Timeline
1	Design documents need to be submitted to RSC for detail review against lateral loadings. (Building-2)	Building engineers is required to revise the Engineering Assessment (EA) based on design/in-situ material strength. Submit EA to RSC for further review.	within 6 weeks
2	Design documents need to be submitted to RSC for detail review against lateral loadings. (Building-2)	Carry out remedial work if required.	within 6 months
3	Load plan does not comply with BNBC requirement. (Building-2)	Revise the floor loading plan following BNBC requirement.	within 6 weeks
4	Load plan does not comply with BNBC requirement. (Building-2)	Implement the floor load management plan.	within 6 months
5	Possibility of Vertical Extension. (Building-2).	Prior to the vertical extension, building engineer is required to conduct a Detailed Engineering Assessment (DEA) of the structure according to BNBC. Submit DEA to RSC for review.	within 6 months
6	Exposed re-bar at roof. (Building-2)	All exposed reinforcement is to be protected from corrosion which may cause degradation of the concrete.	within 6 months
7	Non-structural elements not anchored or braced (Building-2).	Building engineer is required to adequately anchor and brace all non-structural elements to resist earthquake forces to comply with the BNBC.	within 6 months