

Scandex Textile Industries Ltd.

Uttar Gazaria, Kaliakoir, Gazipur

(23.633483, 90.483170)

31 December 2023

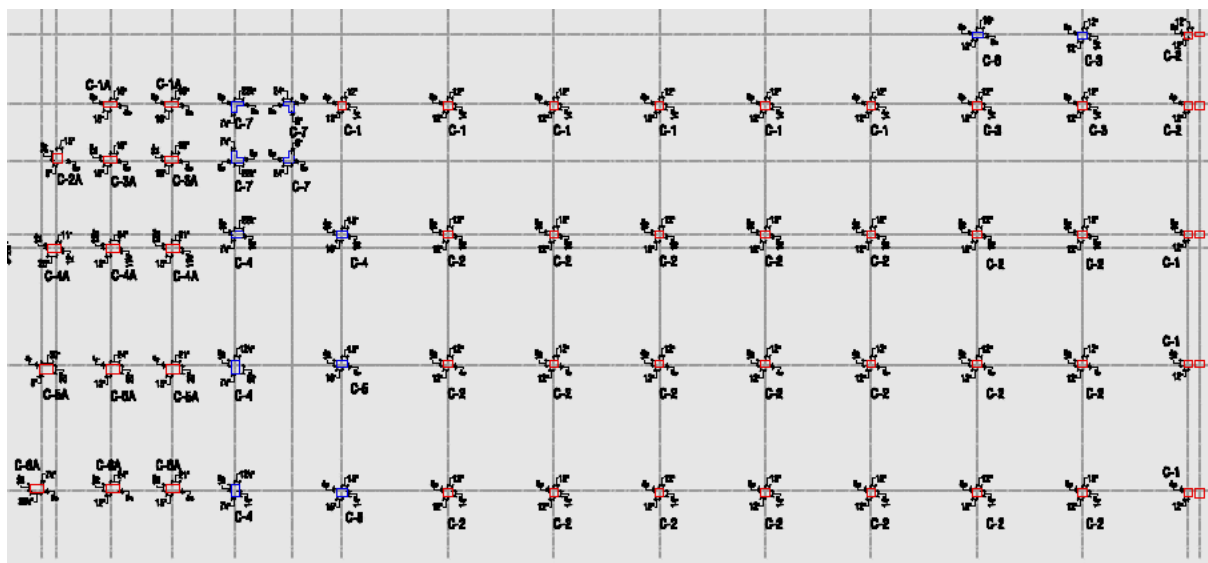


1. Building Information

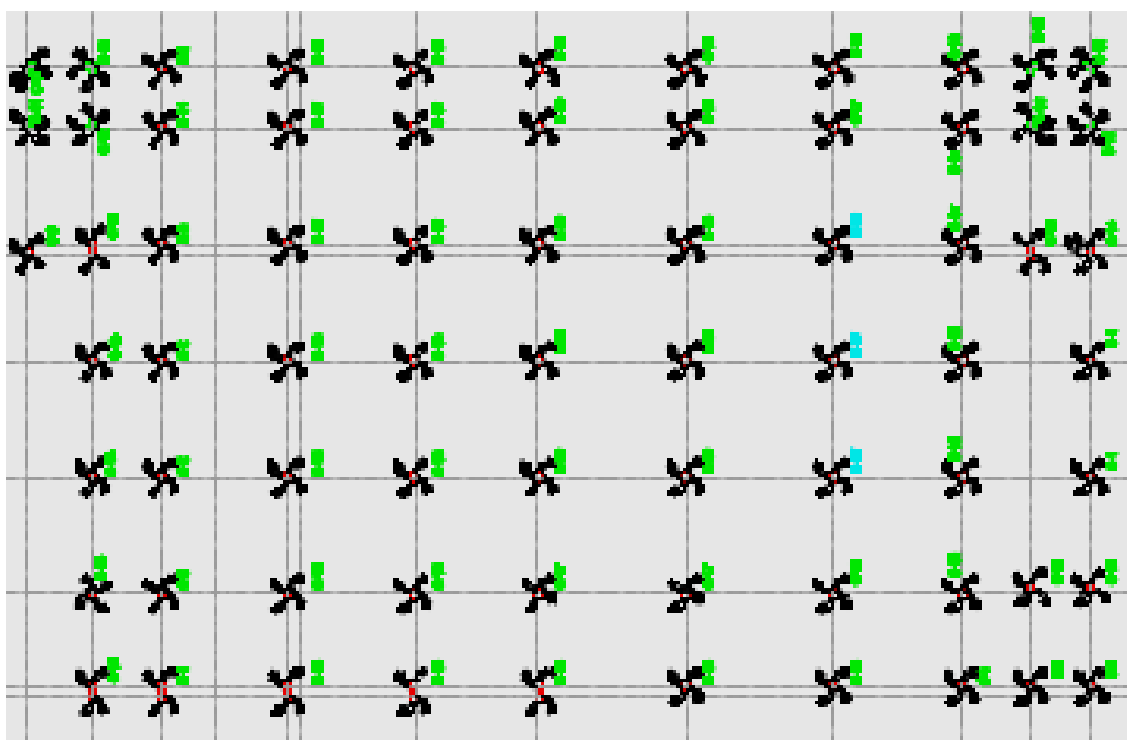
1. Building-1 & 4 (Knitting & Dyeing): Building 1 is a partial nine storied (G+M1+M2+8) RC building with two mezzanine at ground & 1st floor, and Building-4 is a nine storied (G+8) RC building.
2. Building-2 (Dyeing Shed): Single-storied prefabricated steel shed.
3. Building-3 (Yarn Dyeing Building): The building is a seven storied (G+6) reinforced concrete (RC) structure with a single storied (G+M+M) steel shed.
4. Building-5 (ETP Plant Building): The building is a five storied (G+4) reinforced concrete (RC) structure.
5. Building-6 (Utility Building-1): The building is a two storied (G+1) reinforced concrete (RC) structure.
6. Building-7 (Utility-2): The building is a four storied (G+3) reinforced concrete (RC) structure.
7. Building-8 (Chemical Store Shed): This structure is a single storied steel shed.
8. Building-9 (Utility Building-3): The building is a single-storied prefabricated steel shed.
9. Building-10 (33 kVa Sub-Station): This is a single storied RC structure.
10. Building-11 (Medical Building): The building is a two storied (G+1) reinforced concrete (RC) structure.
11. Building-12 (Wastage Godown): This is a single storied shed.
12. Building-13 (Security Shed): The building is a single-storied steel shed.
13. Building-14 (Lubricant Shed): This is a single storied shed.
14. Building-15 (Salt Soda Substore Shed): This is a single storied shed.
15. Building-16 (Hydroses Chemical Store Shed): This is a single storied shed.

2. Observations

Observation 1: Column stressed above normal design limit. (Building 1)



Column Layout (Building 1 – West Part)



Column Layout (Building 1 – East Part)

Description: Cursory calculation indicates that interior columns are stressed above the normal design limit considering 3kPa live load and minimum concrete strength (2370 psi) based on aggregate type (available test reports are insufficient to meet the evaluation and acceptance criteria of BNBC). The building engineer is required to carry out Detail Engineering Assessment (DEA) to review the design, loads and column stress based on in-situ material strength and floor live loads.

Observation-2: Lack of design documents. (Building 4)



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.

At the time of inspection, the design report and sufficient concrete compressive strength test reports were not available. The building engineer is required to evaluate concrete strength as per BNBC, produce design report accordingly and submit to RSC for review.

Observation-3: Non-structural elements found unbraced/not anchored. (Building 1 & 4)



Description: Non-structural elements suspended from, attached to, or resting top the structure shall be adequately anchored and braced to resist earthquake forces. Factory is required to brace/anchor all non-structural elements.

Observation-4: Lack of design documents (Building 2).



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. During the inspection, the design report and soil test report was not available on site.

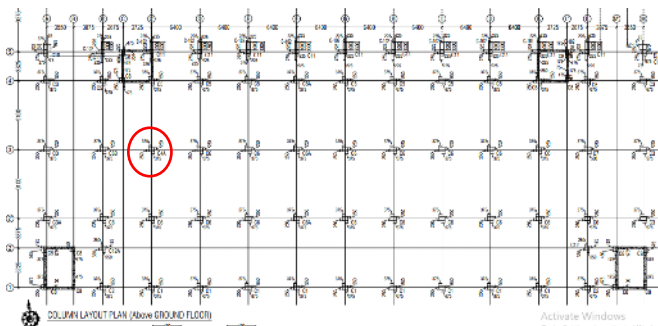
The building engineer is required to prepare a set of design documents including as built drawings and a design report based on in-situ material strength and software-based analysis which shall be prepared in compliance with section 1.9.1, part-6 of BNBC.

Observation-5: Faulty retrofitting works (Building 2).



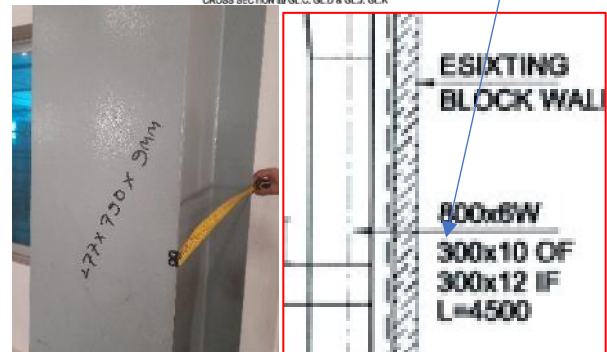
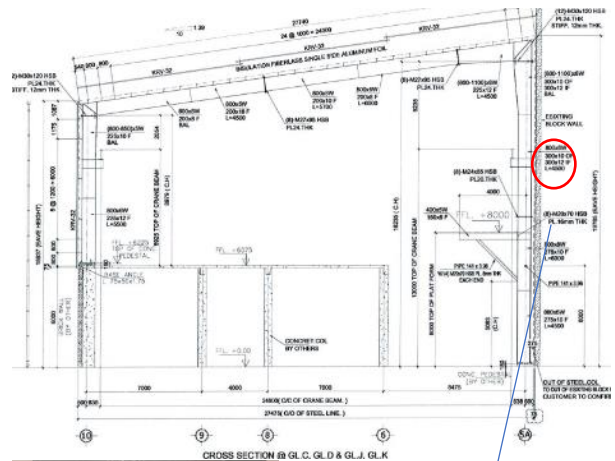
Description: During inspection, additional plate was observed shorter than the existing column size. Building engineer is required to check the column stress for actual effective area.

Observation-6: Discrepancies in the provided drawing (Building-3).



Column Number	Below Ground Level	Ground Floor Level	1st Floor Level	2nd/3rd Floor Level	4th to 5th Floor Level
C-4A					
Column Size	800X800	750X750	500X500	500X750	500X750
Number of Bars	24-25mm ϕ	24-25mm ϕ	24-25mm ϕ	12-25 + 12-20mm ϕ	24-20mm ϕ

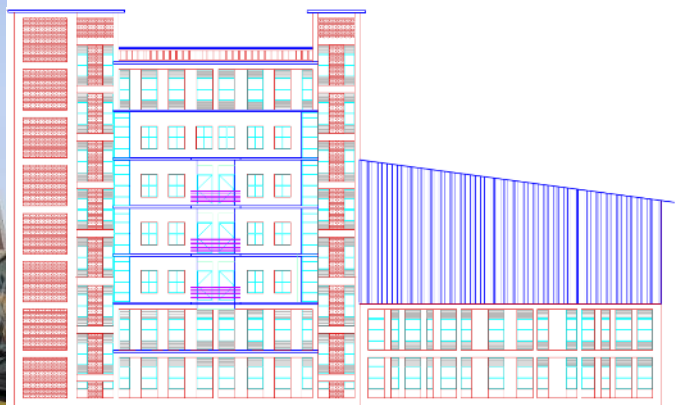
RC Column C4A (750X500) re-bar profile found by scanning 6/5 (18 no's) instead of 9/5 (24 no's)



Steel Column size observed F-277X9 W-790 instead of F-300X(10/12) W-800

Description: During the inspection, discrepancies were observed between the provided drawing and on-site conditions. RC column re-bar profile mismatch and steel column web-flange size & thickness mismatches were observed. The building engineer is required to survey the whole structure and update the drawing reflecting on-site condition.

Observation-7: Lack of Design Report (Building-3).



Description: The design report was not prepared for the mentioned structure. The building engineer is required to prepare a design report following BNBC (part-6, section 1.9.1)

Observation-8: Lack of material test report (Building-3).

TEST REPORT 1 (Left):

ERTC No.: 110-200775/19-20/CE; Dt: 21/11/2019
 Sent by: Md. Sarim Ullah, Sr. AGM (CH), SCANDIX TEXTILE INDUSTRIES LTD., Bangladesh, Kalakoti, Gazipur.
 Ref. No.: Letter: Dt: 18/11/2019
 Project: Yarn Dyeing Building-4 for Scandix Textile Industries Ltd.
 Sample: Cylinder (Mix proportion as quoted: Ready Mix, Aggregate Type: Stone chips)
 Location: 4th Floor Roof Slab & Beam
 Test: Compressive Strength (ASTM C39)
 Date of Test: 20/11/2019

Sl. No.	Date of Casting as per the Letter	Specimen Designation/ Frag. Mark	Specimen Area (sq. in.)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Mode of Failure
1	19/10/2019		12.67	73,837	5,833	5833 psi	Combined *
2	18/10/2019		12.67	71,261	5,587	5587 psi	Combined *
3			12.67	76,291	6,030	6030 psi	Combined *

Note: Samples were received in untested condition. * Combined = Mortar and Aggregate failure.

Countersigned by: [Signature] Test Performed by: [Signature]

TEST REPORT 2 (Middle):

ERTC No.: 1101-35489/19-20/CE; Dt: 11/02/2019
 Sent by: Md. Sarim Ullah, Sr. AGM (CH)
 Ref. No.: Letter: Dt: 11/02/2019
 Project: Yarn Dyeing Building-4 for Scandix Textile Industries Ltd.
 Sample: Cylinder (Mix proportion as quoted: 1:1.25:2.5), Aggregate Type: Stone chips
 Location: 4th Floor Column
 Test: Compressive Strength (ASTM C39)
 Date of Test: 10/02/2019

Sl. No.	Date of Casting as per the Letter	Specimen Designation/ Frag. Mark	Specimen Area (sq. in.)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Mode of Failure
1	09/02/2019		12.67	63,237	5,001	5001 psi	Combined *
2	08/02/2019		12.67	63,087	5,000	5000 psi	Combined *
3			12.18	87,986	7,230	7230 psi	Combined *

Note: Samples were received in untested condition. * Combined = Mortar and Aggregate failure.

Countersigned by: [Signature] Test Performed by: [Signature]

TEST REPORT 3 (Right):

ERTC No.: 1101-72070/19-20/CE; Dt: 30/10/2018
 Sent by: Md. Sarim Ullah, AGM, Chd, Scandix Textile Industries Ltd., Bangladesh, Kalakoti, Gazipur.
 Ref. No.: Letter: Dt: 26/10/2018
 Project: Yarn Dyeing Shed Building -04 for Scandix Textile Industries Ltd., Bangladesh, Kalakoti, Gazipur.
 Sample: Cylinder (Mix proportion as quoted: 1:1.5:3.0, Aggregate Type: Stone chips)
 Location: Floor casting
 Test: Compressive Strength (ASTM C39)
 Date of Test: 31/10/2018

Sl. No.	Date of Casting as per the Letter	Specimen Designation/ Frag. Mark	Specimen Area (sq. in.)	Maximum Load (lb)	Crushing Strength (psi)	Average Crushing Strength	Mode of Failure
1	23/10/2018		12.67	71,303	5,588	5588 psi	Combined *
2	18/10/2018		12.18	64,521	5,297	5297 psi	Combined *
3			12.67	62,080	4,982	4982 psi	Combined *

Note: Samples were received in untested condition. * Combined = Mortar and Aggregate failure.

Countersigned by: [Signature] Test Performed by: [Signature]

Description: During the inspection, 20 sets of cylinder test report (column=9, beam-slab=8, and foundation=3) and 1 set of re-bar test report. No test report was provided for the steel column, rafter, bracing, and strut members. The building engineer is required to verify the frequency of testing requirements as per BNBC (Part VI, Chapter 5 & 10) and update the analysis & design report if required. Also, verify in-situ material strength by further testing if required.

Observation-9: Lack of design documents. (Building 5)



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.

At the time of inspection, the design report and sufficient concrete compressive strength test reports were not available. The building engineer is required to evaluate concrete strength as per BNBC, produce design report accordingly and submit to RSC for review.

Observation-10: Possible falling hazard on roof. (Building-5)



Falling Hazard on 4th floor



Falling Hazard on roof level

Description: During inspection the barrier was observed in 4th floor and roof level. Factory is required to provide parapet/railing at all locations of roof and staircase to avoid possible falling hazard.

Observation-11: Lack of design documents. (Building 6)



Description: As per BNBC, every building or structure designed shall have its design documents prepared in accordance with the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC.

At the time of inspection, the design report and sufficient concrete compressive strength test reports were not available. The building engineer is required to evaluate concrete strength as per BNBC, produce design report accordingly and submit to RSC for review.

Observation-12: Lack of as-built structural drawings (Building-6).



Building-6

Description: During the inspection, no as-built drawings were available for Building-6. The building engineer is required to survey the full structure and produce accurate as-built drawings.

Observation-13: Lack of Design Report (Building-7).



Description: The design report was not prepared for the mentioned structure. The building engineer is required to review the design of the long columns. The building engineer is required to prepare a design report following BNBC (part-6, section 1.9.1)

Observation-14: Lack of material test report (Building-7).

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)	
DEPARTMENT OF CIVIL ENGINEERING	
CONCRETE LABORATORY	
BUTC No: 1102-28961/20-21/CE; Dt: 8/2/2021	
Sent by: Scandex Textile Industries Ltd., Bongaigaon, Kolkata, Odisha	
Ref. No: Letter: Dt: 8/2/2021	
Project: Utility building for Scandex Textile Industries Ltd.	
Sample: Cylinder (Mix proportion as quoted) RMC, Aggregate Type: Stone chips	
Location: 2nd floor roof slab & beam	
Specimens: Not mentioned	
Test: Compressive Strength (ASTM C39)	
Date of Test: 9/2/2021	

TEST REPORT									
S. No.	Date of Casting as per the letter	Specimen Designation	Specimen Area	Specimen Load	Maximum Load	Cracking Strength	Average Cracking Strength	Mode of Failure	
			(sq. in)	(kN)	(kN)	(psi)			
1	19/11/2020	19/11/2020	12.67	49.38	7.845		786 psi	Combined *	
2	07/02/2021	19/11/2020	12.67	67.191	7.886		(30.4 MPa)	Combined *	
3	19/11/2020	12.67	99.86	7.890			(344 kg/cm ²)	Combined *	

Note: Samples were received in UNSPALED condition. * Combined = Mortar and Aggregate failure.

Counter signed by: [Signature] Test Performed by: [Signature]

Dr. Md. Abdul Jalil, Professor

Description: During the inspection, 5 sets of cylinder test report (column=3 and beam-slab=2) and 1 set of re-bar test report was provided. The building engineer is required to verify the frequency of testing requirements as per BNBC (Part VI section 5.12) and update the analysis & design report if required. Also, verify in-situ material strength by further testing if required.

Observation-15: Possible horizontal expansion (Building-7).



Description: The factory has a plan to conduct horizontal expansion. Projected reinforcement left at west side which indicates possible future horizontal extension. The factory is required to prepare a Detailed Engineering Assessment (DEA) report prior conducting any horizontal expansion.

Observation-16: Exposed rebar left at roof level and all floor (Building-7).



Description: Exposed rebar is left at all floor level which was prone to corrosion. The factory is required to provide rust proof coating on exposed rebar to protect from corrosion.

Observation-17: Lack of Design Report (Building-8).



Description: The design report was not prepared for the mentioned structure. The building engineer is required to prepare a design report following BNBC (part-6, section 1.9.1)

Observation-18: Absence of design documents (Building 9)



(Buiding-9)

Description: As per BNBC, every building or structure designed shall have its design documents prepared following the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. At the time of inspection, a design report was not available which is required to be prepared in compliance with BNBC.

Observation-19: Lack of design documents (Building-10).



Description: As per BNBC, every building or structure designed shall have its design documents prepared following the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2, part 6 of BNBC.

Observation-20: Lack of as-built structural drawings (Building-11 & 13).



Building-11



Building-13

Description: During the inspection, no as-built drawings were available for Building-11 & 13. The building engineer is required to survey the full structure and produce accurate as-built drawings.

Observation-21: Absence of design documents (Building 11)



(Building-11)

Description: As per BNBC, every building or structure designed shall have its design documents prepared following the provision of Section 1.9.1. The design document shall include a design report, and a set of structural drawings, which shall be prepared in compliance with section 1.9.1.1 and section 1.9.1.2 as per BNBC. At the time of inspection, a design report was not available which is required to be prepared in compliance with BNBC.

Observation-22: Apparently non-engineered structure (Building-12).



Bamboo Supported Tin Shed

Description: During the inspection, apparently non-engineered roof and supporting member were observed. The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.

Observation-23: Apparently non-engineered structure (Building-14).



Description: During the inspection, apparently non-engineered roof framing, connections and inadequate member sizes were observed. The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.

Observation-24: Apparently non-engineered structure (Building-15).



Description: During the inspection, apparently non-engineered roof framing and connections were observed. The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.

Observation-25: Apparently non-engineered structure (Building-16).



Description: During the inspection, apparently non-engineered roof framing connections were observed. The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.

3. Action Plan

Observation	Action Plan	Timeline
Column stressed above normal design limit. (Building 1)	As part of Detailed Engineering Assessment (DEA), the building engineer is required to review the design load, column stresses.	within 6 weeks
	Verify in situ concrete strength (100mm dia. cores from 4 columns) from the lower tier of the building.	within 6 weeks
	Produce and actively manage a loading plan for all floor plates within the factory considering column capacity.	within 6 weeks
	Carry out the suggested remedial works.	within 6 months
	Continue to implement final floor live load plan.	within 6 months
Lack of design documents. (Building 4)	The building engineer is required to prepare design documents (including as-built drawings, design report, load plan and material test reports) in compliance with section 1.9.1 (part-6, BNBC).	within 6 weeks
	Verify in situ concrete strength (100mm dia. cores from 4 columns) from the lower tier of the building.	within 6 weeks
	Carry out the suggested remedial works.	within 6 months
Non-structural elements found unbraced/not anchored. (Building 1 & 4)	Factory is required to brace/anchor all non-structural elements.	within 6 weeks
Lack of design documents (Building 2).	The building engineer is required to carry out Engineering Assessment (EA) based on in-situ material strength and submit to RSC for review.	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months
Faulty retrofitting works (Building 2).	As per the suggestion if the building engineer carry out remedial works where required.	within 6 weeks
Discrepancies in the provided drawing (Building-3)	The building engineer is required to survey the whole structure and update the drawing reflecting on-site condition.	within 6 weeks
Lack of Design Report (Building-3)	The building engineer is required to prepare a design report considering BNBC (part-6, Section-1.9.1).	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months
Lack of material test report (Building-3)	Verify in-situ material strength by further testing if required.	within 6 weeks

Lack of design documents. (Building-5)	The building engineer is required to prepare design documents (including as-built drawings, design report, load plan and material test reports) in compliance with section 1.9.1 (part-6, BNBC).	within 6 weeks
	Verify in situ concrete strength (100mm dia. cores from 4 columns) from the lower tier of the building.	within 6 weeks
	Carry out the suggested remedial works.	within 6 months
Possible falling hazard on roof. (Building-5)	Factory is required to provide parapet/railing at all locations of roof and staircase to avoid possible falling hazard.	within 6 weeks
Lack of design documents (Building-6)	The building engineer is required to prepare a design report considering BNBC (part-6, Section-1.9.1).	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months
Lack of as-built structural drawings (Building-6).	The building engineer is required to survey the full structure and produce accurate as-built drawings.	within 6 weeks
Lack of Design Report (Building-7)	The building engineer is required to prepare a design report considering BNBC (part-6, Section-1.9.1).	within 6 weeks
	The building engineer is required to review the design of the long columns.	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months
Lack of material test report (Building-7)	Verify in-situ material strength by further testing if required.	within 6 weeks
Possible horizontal expansion (Building-7)	The factory is required to prepare a Detailed Engineering Assessment (DEA) report prior conducting any horizontal expansion.	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months
Exposed rebar left at roof level and all floor (Building-7)	The factory is required to provide rust proof coating on exposed rebar to protect from corrosion.	within 6 months
Lack of Design Report (Building-8)	The building engineer is required to prepare a design report considering BNBC (part-6, Section-1.9.1).	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months

Absence of design documents. (Building 9)	Building is required to prepare a set of design reports in compliance with BNBC.	within 6 weeks
	Implement remediation work if required.	within 6 months
Lack of design documents (Building-10)	The building engineer is required to prepare a design report considering BNBC (part-6, Section-1.9.1).	within 6 weeks
	Carry out suggested remedial works if required.	within 6 months
Lack of as-built structural drawings (Building-11 & 13).	The building engineer is required to survey the full structure and produce accurate as-built drawings.	within 6 weeks
Absence of design documents. (Building 11)	Building is required to prepare a set of design reports in compliance with BNBC.	within 6 weeks
	Implement remediation work if required.	within 6 months
Apparently non-engineered structure (Building-12)	The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.	within 6 months
Apparently non-engineered structure (Building-14)	The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.	within 6 months
Apparently non-engineered structure (Building-15)	The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.	within 6 months
Apparently non-engineered structure (Building-16)	The building engineer to provide necessary alternatives to make the structure stable. Otherwise, replace with an engineered one.	within 6 months