Unimas Sportswear Ltd (New Expansion Building)

Baghbari,Kashimpur,Gazipur
(23.955867, 90.313063)
31st January 2022

Building information:

New Expansion Building: 11 storied (B+G+10) building with one basement floor.

Observations

Material strength consideration in DEA report

Observations

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY (BUET)
DEPARTMENT OF CIVIL ENGINEERING
BRTC
CONCRETE LABORATORY

BRTC No. : 1101-61449 /17-18/CE; Dt: 19/5/2018
Sent by : Engr. A K M Badur Rahman, General Manager (Operation), Crown Cement Concrete & Building Products Ltd.
Ref. No : CCC & BPL, Unit-01/Mainland/18; Dt: 16/5/2018
Project : Mainland Development Co. (BD.), Bagbari, Kashimpur, Gazipur
Sample : Cylinder [Mix proportion(as quoted): -, Aggregate Type: Stone chips]
Location : Mat
Test : Compressive Strength [ASTM C39]
Date of Test : 20/5/2018

TEST REPORT

Sl. No.	Date of Casting as per the Letter	Specimen Designation/ Frag Mark	Specimen Area	Maximum Load	Crushing Strength	Average Crushing Strength	Mode of Failure
			(sq. in)	(lb)	(psi)		
1	18/4/2018	Mainland	12.07	72,742	6,741	5340 psi	Combined*
2	(32 days test)	Mainland	12.55	83,778	5,082	(37 MPa)	Combined*
3		Mainland	12.42	64,673	5,207	(375 kg/cm²)	Combined*

Note: Samples were received in unsealed condition.
Concrete Grade: 4350 psi

* Combined = Mortar and Aggregate failure

Countersigned by:
Dr. Abu Siddique
Professor
Department of Civil Engineering
BUET, Dhaka-1000, Bangladesh

Authenticity of this page is verifiable from http://verify.ce.buet.ac.bd with the QR Code or [illegible]

134
LH7L2EDMh

Test Performed by:
21/5/2018
Dr. Md. Delwar Hossain
Professor
Department of Civil Engineering
BUET, Dhaka-1000, Bangladesh

Important Notes: Samples as supplied to us have been tested in our laboratory. BRTC does not have any responsibility as to the representative character of the samples required to be tested. It is recommended that samples are sent in a secure and sealed cover/packet/container under signature of the competent authority. In order to avoid fraudulent fabrication of test results, it is recommended that all test reports are collected by duly authorized person, and not by the Contractor/Supplier.

Centre for Advisory and Testing Services (CATS-MIST)
Military Institute of Science and Technology

Compressive Strength of Concrete Drilled Cores

CATS Reference : 2376/Con/27944-947/01/2022 Date : 10.01.2022
Client : Design & Development Solution
Project Name & Address : Mainland Development Co. (Existing B+G+10 Storied Building)(Building-B) at Bagbari, Kashimpur, Gazipur, Bangladesh.
Sample Brought By : Md. Abdul Quddus Date of Receiving : 09.01.2022
Test Method : ASTM C 42/C 42-M Date of Test : 10.01.2022
Type of Sample : Drilled Core Sample Condition : Unsealed
Location of Sample : 1st Floor Column, Grid: E/9, E/7, F/6 & H/9
Construction Year : 2017-2019 Quantity of Sample : 04 nos
No of Story : Existing B+G+10 Storied Type of Aggregate : Stone Chips

Sl No.	Sample Identification Mark	Original Length	Sawed Length	Diameter	Crushing Load	Crushing Strength		Failure Type	Fracture Type
		mm	mm	mm	kN	MPa	psi		
1	Core-1, E/9	185.0	130.0	68.0	142.3	39.2	5680	Combined	Cone and Shear
2	Core-2, E/7	190.0	132.0	68.0	151.2	41.6	6030	Combined	Shear
3	Core-3, F/6	165.0	132.0	68.0	162.8	44.8	6500	Combined	Cone and Shear
4	Core-4, H/9	145.0	133.0	68.0	177.4	48.8	7080	Combined	Columnar

REMARKS:
1. All information displayed above other than the test results are provided by the client.
2. Please compare the results with your corresponding design values and consult with your design engineer.

Test Supervised By:
Khondaker Sakil Ahmed PhD, PEng, CEng
Lt Col [illegible]
Department of Civil Engineering
MIST, Mirpur Cantt, Dhaka

Countersigned By:
Muhammad Romeo Nowreen Khan
Col
Director, CATS-MIST (CE)
MIST

Note: The results shown in this test report refer only to the samples tested, unless otherwise stated. It is recommended that samples are to be sent in secured and sealed cover/packet/container under the signature of the competent authority in order to avoid fraudulent fabrication of test results. It is also recommended that all test reports are to be collected by duly authorized person and not by the contractor/supplier himself. This test report can not be reproduced, except in full, without prior written permission of the client.

Cylinder test for mat foundation & core test report for column

Table: Design compressive strength of concrete (column)

SL/N	Cylinder strength f'cr (psi)	Cylinder strength f'cr (Mpa)	Average Cylinder strength, fcr (Mpa)	Standard Deviation (S)	Design strength (Mpa) Eq 5.6.1	Design strength-(Mpa) Eq 5.6.2	Design compressive strength f'c(Mpa)	Design compressive strength f'c(Psi)
1	9480	65.38						
2	9270	63.93						
3	10110	69.72						
4	6930	47.79						
5	7760	53.52						
6	9820	67.72	59.42	8.00	48.69	44.27	44.27	6419.34
7	7930	54.69						
8	8240	56.83						
9	6770	46.69						
10	8870	61.17						
11	9590	66.14						

Table: Design compressive strength of concrete (Beam & Slab)

SL/N	Cylinder strength f'cr (psi)	Cylinder strength f'cr (Mpa)	Average Cylinder strength, fcr (Mpa)	Standard Deviation (S)	Design strength (Mpa) Eq 5.6.1	Design strength-(Mpa) Eq 5.6.2	Design compressive strength f'c(Mpa)	Design compressive strength f'c(Psi)
1	8220	56.69						
2	7180	49.52						
3	7350	50.69						
4	7750	53.45						
5	7300	50.34						
6	6970	48.07						
7	7780	53.66	50.20	5.44	42.91	41.03	41.03	5949.42
8	8030	55.38						
9	7850	54.14						
10	7720	53.24						
11	5300	36.55						
12	6690	46.14						
13	6480	44.69						

Material strength considered in DEA report

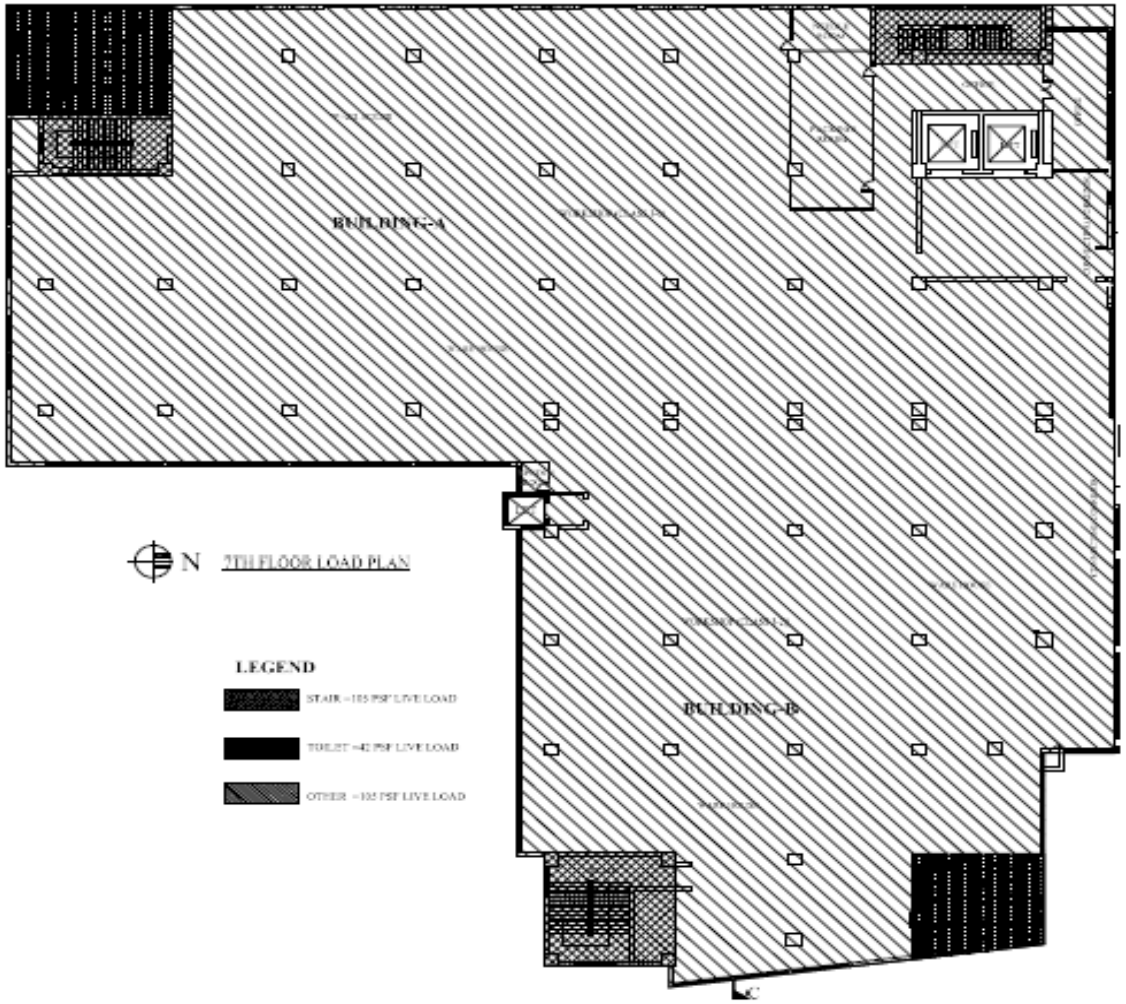
The factory has 38 sets of cylinder test report, among them 12 sets from column & 15 sets from beam/slab, 2 sets from mat foundation & rest doesn't have average value. The factory also has 8 sets of core test report for columns.

In the DEA report factory have considered same concrete strength for mat foundation & column though mat foundation has separate sets of test report. Again, for column & floor 3 sets of concrete cylinder test has not been considered in the DEA. However, the building engineer is required to use concrete strength from core test report for columns and cylinder test report for other structural members.

Observations

Prepared live load plan not comply with BNBC

Observations



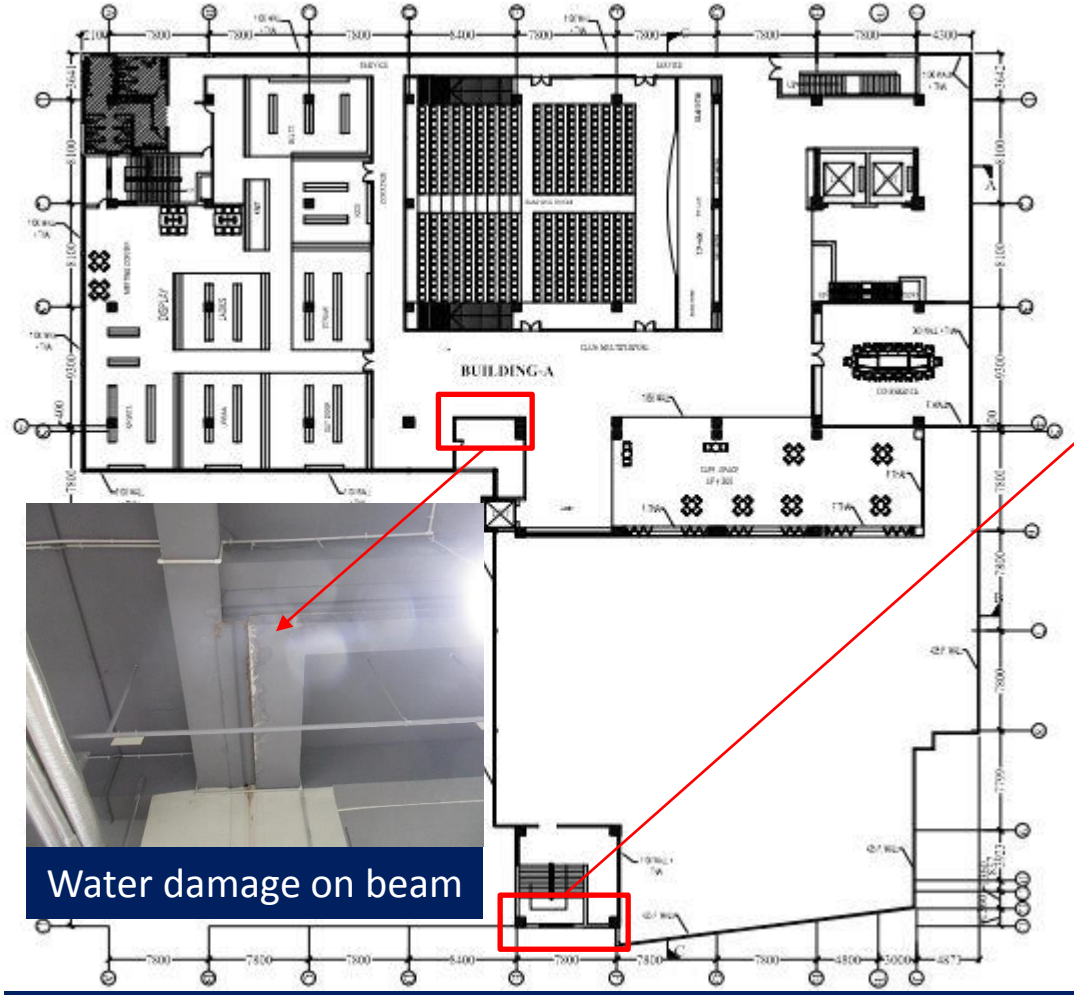
INDUSTRIAL, STORAGE & HAZARDOUS (Occupancy - G, H & J) Workshop, factory, warehouse	1 Light workroom without storage	3.0	2.7
	2 Machinery hall & circulation area	4.0	4.5
	3 Factory, workshop etc.	5.0	4.5
	4 Manufacturing : light	6.0	4.5
	heavy	12.0	9.0 (5)
	ice	15.0	9.0 (5)
	5 Printing plant :		
	Press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

As per BNBC, the minimum floor live load for light storage is 6 kN/m2 (126 psf). The storage in this building is designed for 5 kN/m2 live loads. The building engineer is required to revise the storage live load limit based on BNBC minimum live load requirement.

Observations

Water damage on beam & column

Observation



Water damage on beam

10th floor layout plan

Water damage on beam & column

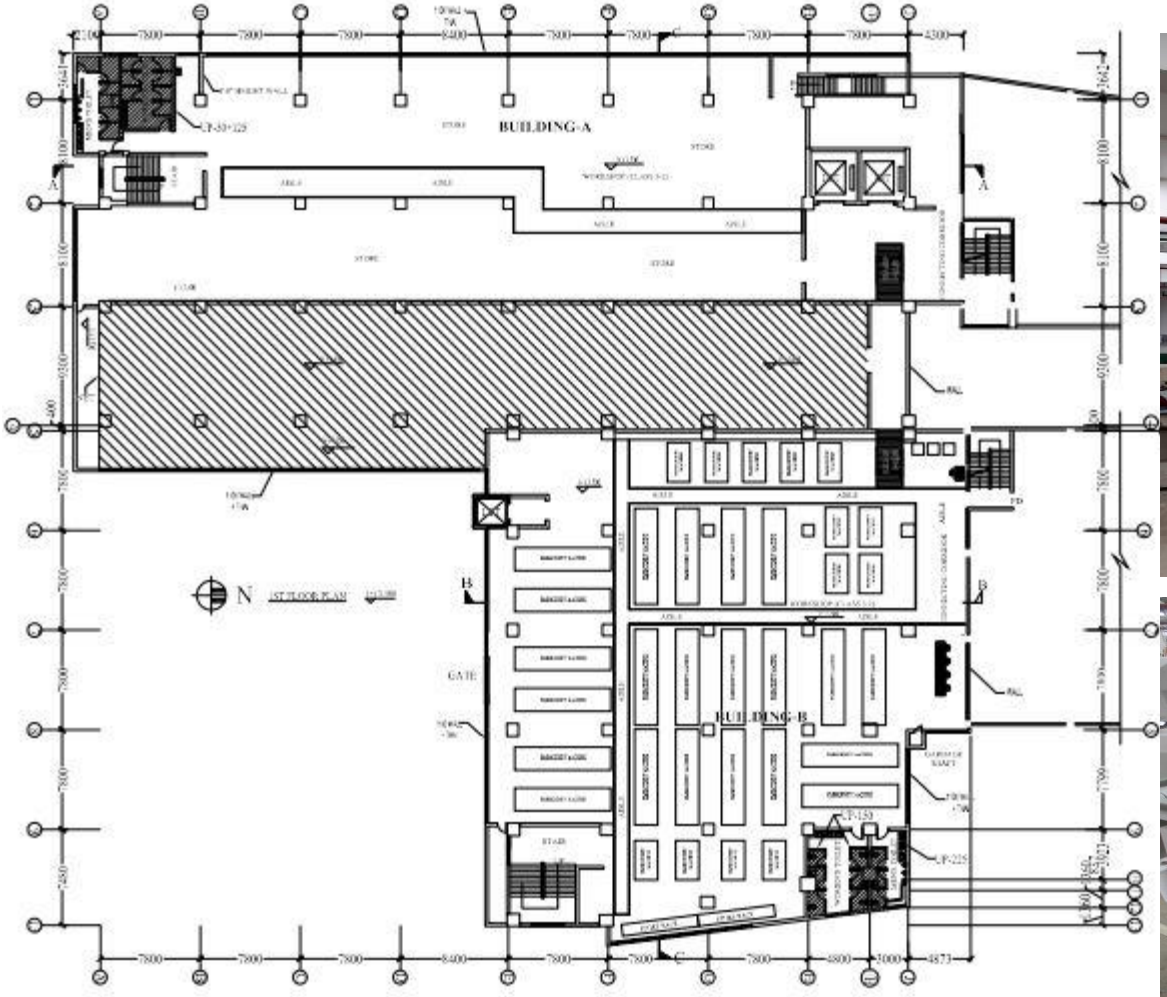
Stagnant water

Stagnant of water and water damage observed on beam & column. Building engineer is required to check the extent of the damage and suggest suitable repair works.

Observation

Vibration on floor

Observations:

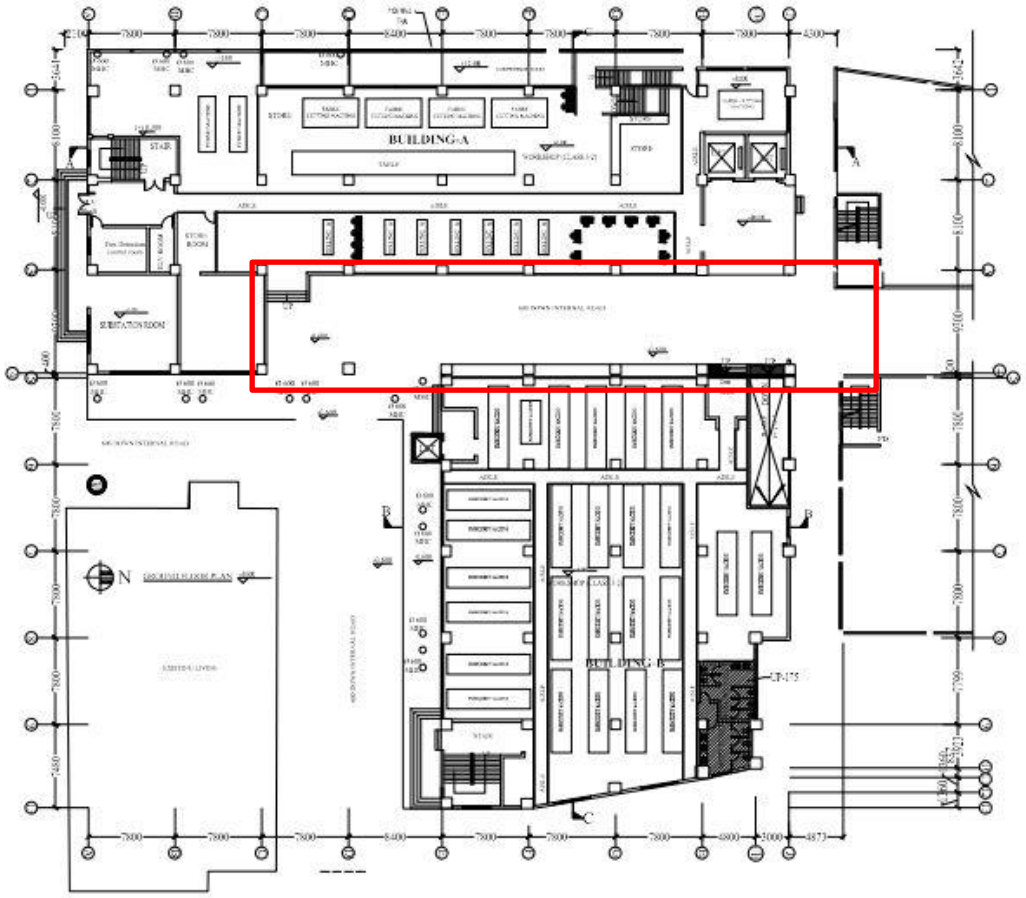


1st floor layout plan

There are noticeable vibration on the 1st floor due to the operation of the embroidery machine. Building engineer is required to take necessary action to minimize the floor vibration.

Observations

Columns are susceptible to vehicle/trolly impact



Ground floor plan

Ground floor column susceptible to vehicle impact

Basement column susceptible to trolly impact

Observations

Problems Observed

1: Material strength consideration in DEA report.

2: Prepared live load plan not comply with BNBC.

3: Water damage on beam & column.

4: Vibration on floor.

5: Columns are susceptible to vehicle/trolly impact.

Priority Actions

Item No.	Observation	Recommended Action Plan	Recommended Timeline
01	Material strength consideration in DEA report.	The building engineer is required to revise the DEA report considering concrete core strength for columns and cylinder strength for other structural members.	6-weeks
02	Material strength consideration in DEA report.	Implement the recommendation of DEA report.	6-months
03	Prepared live load plan not comply with BNBC.	The building engineer to check the occupancies and update the floor live loading plan for the building based on BNBC requirements.	6-weeks
04	Prepared live load plan not comply with BNBC.	Implement the floor loading plan (posting load plan, providing signage and maintaining loadings).	6-months

Item No.	Observation	Recommended Action Plan	Recommended Timeline
05	Water damage on beam & column.	Building engineer is required to check the extent of the damage and suggest suitable repair works.	6-weeks
06	Water damage on beam & column.	Carry out remedial works where required.	6-months
07	Vibration on floor.	Apply suitable remedial works to minimize the floor vibration as per engineer's suggestions.	6-weeks
08	Columns are susceptible to vehicle/trolly impact.	Building engineer required to provide safety barrier to avoid possible vehicle/trolly impact.	6-weeks