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Towards Automation of Building Integrity Tracking: Review of Building Collapse in Nigeria

J.U. Okoye[a], S.T. Apeh[a],E. Olaye[a]& S.O. Osuji[b]

[a]Department of Computer Engineering & [b]Department of Civil Engineering, University of Benin, P.M.B 1154, Benin City, Nigeria
Uchechukwu.okoye@uniben.edu, apeh@uniben.edu, Sylvester.osuji@uniben.edu&edoghogho.olaye@uniben.edu
+2348066079086

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Abstract

This study presents current efforts aimed at providing an updated record as it regards the impact of collapsed of building structures in Nigeria. Many of these building collapse incidences that have occurred between 1973 and 2022 were not properly analysed based on some certain factors such as the frequencies of occurrences and the number of causalities involved per decade, height of the structure that are normally affected, and the particular location(s) that this building collapse due frequently occurred. Therefore, this necessitated the need to carry out this comprehensive study to investigate the actual situation of collapsed buildings in Nigeria for the period under reviewed, based on the factors aforementioned. Information obtained from published journal article, academic research reports, newspapers, conference proceedings, were reviewed to generate the required data used for the analysis. The data collected above for the study were analysed using the statistical methods. The computation analysis was done with mat - lab and excel. The location of the collapse was obtained by using the Global Positioning System (GPS) to obtain the location of the collapse. The study reveals that one hundred and seventy- seven (177) are the recorded number of buildings that have collapsed in the period under reviewed. Over nine hundred and fifty- six (956) lives have been lost during the period. They also discovered that there was high rate of 3-storey building collapse during the period under review. The location distribution of the collapsed building shows a high rate in Lagos state, with ninety- three (93) (52.54%) of the reported cases. The study concludes by suggesting appropriate possible measures to avert the growing increment of building collapse in Nigeria. It also seeks to reduce the impact of building collapse incident through the implementation of the real-time wireless based building integrity monitoring and risk factor indicator system, so as to be able to monitor and analysed the integrity stability of such building structure, before it tends to collapse.

1.0 Introduction

Building is a kind of structure or enclosure which can be constructed with the building materials such as bricks, sands, cements, water, concrete, metal and so on. It is made up of the foundation, plinth, walls, floors, roofs, chimneys, plumbing, and building services, fixed platform, veranda, balcony, cornice or projection, part of a building or anything affixed thereto or any wall enclosing or intended to enclose any land or space and signs and outdoor display structures. A building aims to give shelter along with security. Others purposes such as buildings serve several needs of the society primarily as shelter from the weather, adequate security to lives and property, living space, privacy, to store belongings supplied electricity, and to comfortably live and work. It may be load-

bearing masonry building, reinforced concrete cement or steel- framed structure buildings. There are many different types of buildings such as: Residential houses, Schools buildings, Hospitals, Factories, storey buildings, Mosques, Churches, etc.

In ensuring structural stability or integrity of the building, there are factors to be considered which are: if upon releasing the structure from its virtually displaced state the structure returns to its pervious configuration, then structure is in stable equilibrium. Moreover, the structure is in stable equilibrium, when small perturbations do not cause large movement like a mechanism. Structure vibrates about its equilibrium position and the mechanism must resist loads. Factors that necessitate building integrity are the structural elements such as the structure's height, spans, percentage of shear wall, ratio of structural and non- structural panels to number of panels, type of frame, and the loading patterns (based on the serviceability limit of structural components [1].

However, if the structure doesn't return to its original state following the release of the virtual displacements, the condition is either neutral equilibrium or unstable equilibrium. Therefore, the structure is unstable equilibrium when small perturbation produces large movements and the structure never return to its original equilibrium position. Small perturbation causes large movements, but the structure can be brought back to its original equilibrium position. A building structural instability occurs when there is a change in the geometry of a structural or structural component under compression- resulting in the loss of ability to resist loading. Instability can lead to catastrophic failure. There are different types of instability of building structure, which are bucking- bifurcation of equilibrium from deformation i.e. member or structure that are subjected to loads, as the load is increased it reaches a critical value where the deformation changes suddenly and the equilibrium load – deformation path bifurcates. Failure due to instability of equilibrium state occurs due to large deformations on material in elasticity i.e. elastic instability occurs for beam-columns and frames that is subjected to gravity and lateral loads. Also, inelastic instability can occur for all members and frames. But when all building structures are subjected to sufficient pressure will collapse in a manner which is largely dependent upon the type of construction. In most cases, the floors, ceilings and roof will collapse in large sections and not disintegrate into a large number of small segments. These large sections when they fall, will create voids, the most common forms are namely: V-Shape, A-Frame or Tent, Lean- to, Unsupported Lean-to or Cantilever and Pen cake. This can lead to either the primary collapse (which is the actual collapse of the building structure) or the secondary collapse (when the debris from it fells in another building for a possible collapse or that cause another building collapse.)

Apart from the above reason above, there are other causes that can result to building collapse which are: Design Construction Flaws, Deterioration due to Age, Explosions or Fires, Heavy Machinery, Building materials (substandard), Structural damage, Water infiltration, Inadequate soil preparation and so on. [2,3,4,5,6,7]**.** But when this building collapses, as a result of the above mention causes, according to [7], the consequences of the building collapsed can be summarized as: loss of lives, loss of income invested, material wastage, loss of prestige of the owner, loss of reputation of the contractor, loss of the building collapse are usually devastation and can require costly long- term medical care, and result in permanent disabilities or even deaths. The current methods of tracking building stability are performing extensive testing work that are carried out to check the strength and structural stability of the building are: Observation based on visual inspection, Non- destructive testing of the building Ultrasonic Pulse Velocity Test, Rebound Hammer (RH) Test, Concrete Core Test, Load Test, Tracking Regulatory and Cosmic ray tracking system. [8,9]. Some of the challenges faced by the aforementioned methods include: High cost of implementation, Difficulty to install stability monitoring sensors and controls, UN -inter-operable building communication systems and Non- Optimized control strategies.

In these recent times, there have been incensement increases in the issue of collapsing of building structures in different locations in Nigeria, with no ending insight to these embarrassing events. Many of these building collapse incidents that have occurred within a given period of time are not

properly indicated and analysed based on some certain factors such as the frequencies of occurrences and the number of causalities involved per decade, height of the structure that are normally affected, and the particular location(s) that this building collapse due frequently occurred. Therefore, this necessitated the need to carry out this comprehensive study to investigate the actual numerical number of collapsed buildings in Nigeria for the period under reviewed, based on the factors heighted above.

2.0 Materials and Methods

2.1 Materials used for Data Collection

The study was carried out using secondary data coupled with observations. In a selected published journals on reviewed cases of building collapses in Nigeria and information obtained from academic research reports, Newspapers (print and media reports), conference proceedings, were used for analysis and discussions. 177 reported cases of building collapse in Nigeria between 1973 and 2022.

2.2 Method of Data Analysis

The data collected for the study were analyzed using the statistical methods' such as the charts, figures and tables. Using the class interval of ten (10), the years of occurrence of building collapse were disaggregated into 5, then the number of reported cases were found within each interval and later used to find aggregate percentage for each class. In addition, the highest and lowest number of occurrences was deduced. The computation analysis was done with mat -lab and excel packages. The location of the collapse was obtained by using the Global Positioning System (GPS) to obtain the location of the collapse.

3.0 Results and Discussion

3.1 For reported cases of Building collapse between 1973 and 2022 in Nigeria see Table A1 in Appendix A

3.2 Collapse Records Based On Years (Decades)

The records of collapse per decades based on different decades are shown in Fig 1. it shows the summaries of building collapse and number of lives lost (casualties) involved in the 5-decades (1973-2022). From the years under review (1973-2022), 177 cases of building collapse have occurred, which was considered in this research [2,3,4,5,6,7] over 956 deaths were verified. From the graph, the decade (2003-2012) recorded the highest number of collapse and more lives has been lost in 2013- 2022 with a total of 351 people and the decade (1983 – 1992) recorded the least lives with 87 people. Also from the last 3 decades (1993 – 2022), there has been sharp increase in death rate from 119 people to 351 people lost their lives

From Table 1, presents the recorded analysis of the building collapse in Nigeria. The table reveals that about one hundred and seventy-seven (177) buildings have collapse between 1973 and 2022. Over nine hundred and fifty-six (956) lives have been lost during the period under review. The result obtained is greater than [3], in the number of incidences for 2010 to 2019 and that of [5], that recorded 20 and 84 cases respectively

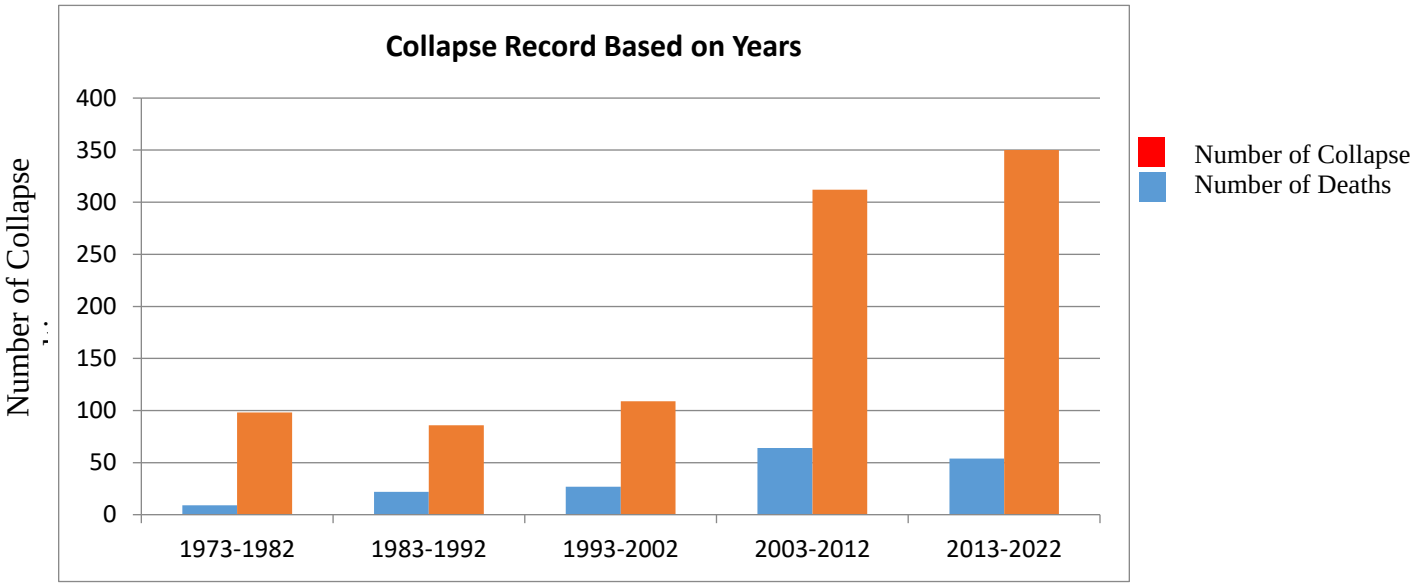

Fig. 1 Casualties verified in the last 50 years (1973 – 2022)

3.2 Number of Building Collapse/ Casualties

Table 1: Recorded building collapse in Nigeria between 1973 – 2022

S/N	YEARS	FREQUENCY	% FREQUENCY	NO. OF RECORDED LIVES LOST AND HOW MANY
1.	1973 – 1982	9	5.09	98
2.	1983 – 1992	22	12.43	86
3.	1993 – 2002	27	15.25	109
4.	2003 -2012	64	36.16	312
5.	2013 – 2022	55	31.07	351
		177	100	956

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Table 2: Heights of Building structure collapsed in Nigeria (1973 and 2022)

YEAR	1S	2-S	3-S	4-S	5-S	6-S	7-S	MULTI-S
1973-1982	1	3	2	2				1
1983 – 1992	4	7	5			1		5
1993 – 2002	4	3	8	3		2		7
2003 – 2012	2	11	12	4	4	2		10
2013 – 2022	5	9	22	4	1	1	1	13
Total number of building collapse	16	33	49	13	5	6	1	36

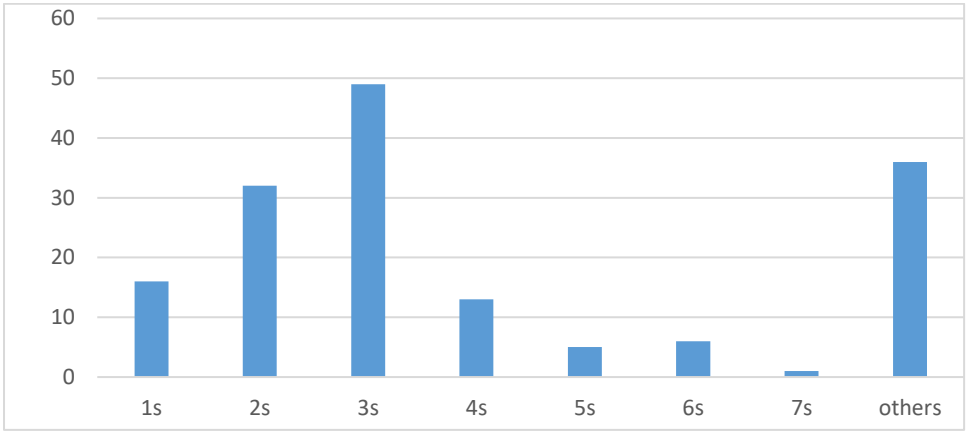
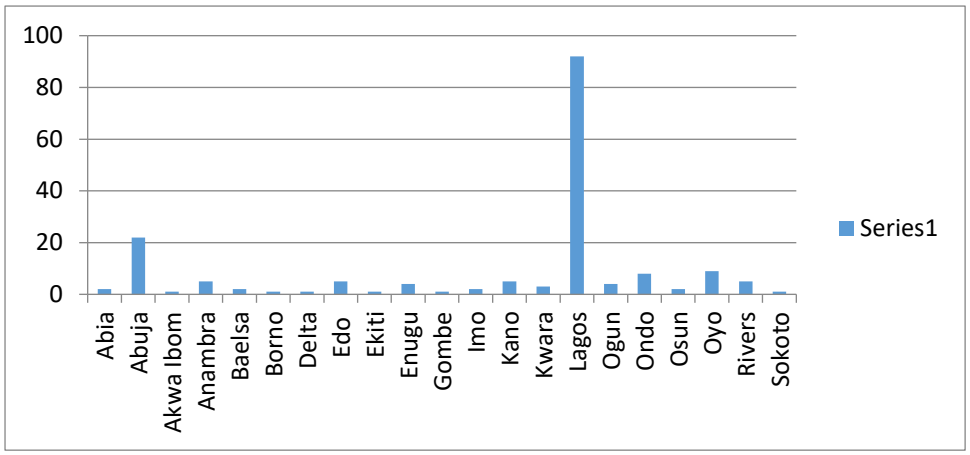


Fig. 2. Variation of building collapse with respect to the height of building

From Fig. 2; it is evident that during the years under review (1973 – 2022) the 3-storey building has structures has experience much impact compared to other building heights. This brings to fore the risk involved in high rise building, such as the 3-storey building structure. Furthermore, in considering the distribution of the different building height, in terms of its total number of collapse, shown that 49 3-storey buildings structure have collapsed for the past 50years (1973 – 2022). The result obtained is similar to [3], as it regards to the height of buildings that collapsed most for 2010 to 2019. However, this study analysed 1973 and 2022 incidents.

Table 3: Location Distribution of the incidents of Building Collapse in Nigeria

S/N	LOCATION	FREQUENCYOF OCCURRENCE	PERCENTAGE (%)
1	Abia	2	1.13
2	Abuja	22	12.43
3	AkwaIbom	1	0.57
4	Anambra	5	2.83
5	Bayelsa	2	1.13
6	Borno	1	0.57
7	Delta	1	0.57
8	Edo	5	2.83
9	Ekiti	1	0.57
10	Enugu	4	2.26
11	Gombe	1	0.57
12	Imo	2	1.13
13	Kano	5	2.83
14	Kwara	3	1.70
15	Lagos	93	52.54
16	Ogun	4	2.26
17	Ondo	8	4.52
18	Osun	2	1.13
19	Oyo	9	5.09
20	Rivers	5	2.83
21	Sokoto	1	0.57
		177	100



Percentage Frequency of Occurrence (%) = $\frac{x}{177}$x $\frac{100}{1}$

Fig. 3. Analysis of distribution of building collapse in various states in Nigeria, between 1973 and 2022 **Source: [2,3,4,5,6,7]**

3.4 Distribution of building collapse among the state in Nigeria

Table 4: shows the location distribution of the incidents of building collapse in Nigeria. It reveals that ninety- three (93) (52.54%) of the reported cases of building collapse have occurred in Lagos state. About twenty- two (22) (12.43%) of the reported cases of the building collapse had occurred in Abuja. Nine (9) (5.09%) in Oyo State, Eight (8) (4.52%) in Ondo. Others are Abia, Akwa Ibom, Anambra, Bayelsa, Borno, Delta, Edo, Ekiti, Enugu, Gombe, Imo, Kano, Kwara, Ogun, Osun, Rivers and Sokoto states, which have had reported cases of building collapse less than 2.83%. In the course of this research analysis of the location distribution of collapsed building by location, it is important to note that the table does not contain record of any case of building collapse in the other fifteen (15) states of Nigeria. It is significant to know that the locational distribution of building collapse deduced a high rate of incidents of building in Lagos followed by Abuja. The location distribution of the collapsed building shows a high rate of occurrence in Lagos state, having ninety- three (93) (52.54%) of the reported cases. The result obtained is similar to [3], as it regards to the location distribution of buildings that collapsed most for 2010 to 2019. However, this study analyzed 1973 and 2022 incidents.

4.0 Conclusion

The total number of building collapse is one hundred and seventy-seven (177) cases and recorded nine hundred and fifty- five (956) lives lost in the 5 decades. For the years under reviewed for 5 decades (1973 and 2022), it shows that the three (3) storey- building were most affected among the collapses recorded because it has the highest frequently occurred with collapse of forty- nine (49) cases. The location distribution of the collapse building shows a high rate in Lagos State with ninety-three (93) (52.54%) of the reported cases.

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Appendix A

Table A1: Trends of Building collapse cases in Nigeria (1973 and 2022)

S/N	BUILDING LOCATION	TYPE OF BUILDING STRUCTURE	DATE OF COLLAPSE	NUMBER OF LIVES LOST	SUSPECTED CAUSES OF BUILDING COLLAPSE
1973 – 1982					
1.	Mokola, Ibadan, Oyo State	Multi Storey Building Under Construction	October 1974	27	Excessive Loading

2.	Ondo	One Storey	December 1976	8	Substandard Building Materials/Structural Defect
3.	Oyo	Two Storey	May, 1977	10	Substandard Building Materials/Structural Defects
4.	Borno	Four Storey	Oct. 1977	10	Poor Performance By Contractor
5.	Rivers	Four Storey Building	March 1978	16	Lack Of Concrete Services To Hold Foundation
6.	Western Avenue, Lagos	Three Storey	December 1978	Unknown	Undisclosed
7.	Lagos	Three Storey	March 1982	10	Weak Foundation
8.	Lagos	Two Storey	June,1982	10	Weak Foundation
9.	Ondo	Two Storey	June 1982	7	Heavy Downpour/Structural Defect
1983 – 1992					
10	Lagos	Two Storey	September 1983	8	Structural Defect
11	Lagos	Two Storey	May, 1985	9	Faulty Foundation And Bad Workmanship
12	Lagos	Two Storey	June, 1985	5	Weak Foundation
13	Bereku Lane, Lagos Island	Three Storey Building Under Construction	July 1985	9	Excessive Loading
14	Anambra State Trade Fair Complex	A Central Pavillion Of The Complex	September 1985	Unknown	Undecided
15	Abeokuta Ogun State	A Mosque Under Construction	October 1985	10	Faulty Design/Carelessness
16	Oshogbo, Osun State	Mosque	May, 1986	2	Faulty Design, Carelessness
17	Lagos	Three Storey	November 1986	1	Faulty Foundation
18	Agege, Lagos	Two Storey	May 1987	2	Carelessness
19	Ikorodu Road, Lagos	Commercial Building	September 1987	4	Rain Storm Nature
20	Idisagbe Lane, Idumota, Lagos	Two Storey Residential Building	September, 1987	17	Ignorant Client, No Structural Design
22	Akinade Village Ikeja, Lagos	One Storey	September 1987	Unknown	Undecided
22	Akure Ondo State Nigeria	Two Storey Building	1988	Unknown	Structural Failure
23	Benin City, Edo State	One Storey Hotel Building	July1989	Undecided	None
24	Igbobi, Lagos	Uncompleted Three Storey Building	October 1989	Undecided	None
25	Akinwunmi Street, Mende Village Lagos	6 Storey Hotel Building	October 1989	Unknown	Faulty Design
26	Idumota, Lagos	Three Storey Commercial Building	February 1990	None	Undecided
27	Obasiolu-Diobu, Port Harcourt, River State	Three Storey Building	June 1990	Unknown	Ignorant Owner/No Structural Design
28	Kano	One Storey	July, 1991	3	Substandard Material

29	Sokoto	One Storey	July, 1991	4	Heavy Downpour/Structural Defect
30	Lagos	Two Storey	August 1991	10	Poor Workmanship/Structural Defect
31	Lagos	Hotel Building	June, 1992	2 And Several Injured	Defective Structural Design
1993 – 2002					
32	Area 10, Abuja	One-Storey Multipurpose Indoor Sports Complex	March 1993	Unknown	Structural Failure/Poor Workmanship
33	Kano	One Storey	October 1993	5	Dilapidated Structure
34	Lagos	Uncompleted Four Storey Building	June 1994	1	Bad Workmanship
35	Lagos	Four Storey	June 1994	10 And 74 Inured	Structural Defects/Poor Building Materials
36	Kwara	One Storey	August 1994	2 And 6 Injuries	Structural Defect/Poor Workmanship
37	Ondo	One Storey	August 1994	1 And Several Injuries	Structural Defect
38	Oyo	Two Storey Building	March 1994	4 And 11 Injured	Structural Defect
39	Lagos	Three Storey	June 1994	1	Bad Workmanship
40	Oyo	Two Storey	August 1994	10 And 74 Injured	Structural Defect/Substandard Materials
41	Maryland Ikorodu Road, Lagos	Six Storey Classroom Building Under Construction	January 1995	1	Structural Defects, Substandard Materials
42	Enugu, Enugu	Three Storey Building Under Construction	June 1995	Unknown	Undisclosed
43	Oke-Igbala,MasadoluwaCloase, Obga Lagos	Three Storey Church Building	October 1995	15	Faulty Design/Carelessness
44	Oke-Igbala Area, Ibadan, Oyo State	Three Storey Building	October 1995	6	Structural Failure
45	Central Lagos	Storey Building Under Construction	October 1995	10	Faulty Design/Carelessness
46	Lagos State	Store Building Under Construction	March 1996	Injuries Only	Structural Failure
47	Olowookere Street, Oshodi, Lagos	Church Building (CAC)	March 1996	7	Conversion/Structural Weakness
48	Ijagbemi Street, Pedro Lagos	Six Storey Classroom Building Under Construction	October 1996	1	Use Of Quacks/Structural Failure
49	Illorin, Kwara State	Mud Building	September 1997	Unknown	Undisclosed

50	Mba Street, Ajegunle, Lagos	Magistrate Court Building	January 1998	Unknown	Undisclosed
51	Akure, Ondo State	Four Storey Church Building Under Construction	October 1998	8	Structural Failure/Poor Supervision
52	Charity Road, New Oko-Oba, Agege Lagos	Three Storey Building	June 1999	None	Structural Failure
53	Tokumbo Street, Off Adeniji Adele Road, Lagos	Three Storey Building	June 1999	Unknown	Undisclosed
54	Four Square Gospel Church, Maitama District, Abuja	Three Storey Building	October 1999	Not Available	Structural Failure
55	Salisu Street, Ijulshaga Lagos State	Three Storey Building Under Construction	October 1999	20	Rain Storm
56	Oke Bola, Ado Ekiti	Undisclosed	2000	Nil	Poor Quality Control
57	OdoIkoye, Lagos	Undisclosed	2001	Nil	Foundation Problem
58	21,Buhari Street, Mushin Lagos	Two Storey Mosque Building	April 2001	7	Unauthorized Conversion Of A Bungalow Into A Two Storey Building
2003-2012					
59	Ojuelegba, Akure, Ondo State	Unspecified Undisclosed	2003	Nil	Poor Workmanship And Under Reinforcement
60	Stadium Road, Akure, Ondo State	Undisclosed	2003	Nil	No Structural Members
61	Oyeregbulem, Edo State	Undisclosed	2003	Nil	Poor Workmanship And Under
62	Ebuta Meta, Lagos	Undisclosed	2003	8 Injured	Structural Defect
63	Port Harcourt Rivers State	Two-Storey School Building	2003	Unknown	Undisclosed
64	22, Makinde Street, Ebutemeta, Lagos	Three Floor Building	2004	Unknown	Undisclosed
65	11, Solola Street, Agege, Lagos	Two Floor Building	2004	Unknown	Undisclosed
66	Iponri, Lagos	Inspected	2005	Nil	Inappropriate Foundation
67	OkeSuna, Lagos	Inspected	2005	1	Structural Degeneration
68	40, Market Street, Shomolu, Lagos	Two Floor Commercial Building	March 2005	Unknown	Undisclosed
69	Ibile Holding, Ikeja, Lagos State	Three Floor Framed Commercial Building	April, 2005	Unknown	Undisclosed
70	Port Harcourt Rivers State	Commercial Building	June 2005	Unknown	Undisclosed
71	6, Princess Street, Lagos	Three Floor Commercial Building	July 2005	1	Undisclosed
72	Broad Street, Lagos	Inspected	2006	Not Disclosed	Rainstorm
73	Commentary Road, Amukoko, Lagos	Residential/ Commercial Building	January, 2006	7	Ignorance/Greedy Landlord
74	Ebuta Meta, Lagos	Unspecified	2006	37	Structural Defect
75	Oworosonki, Benin City, Edo State	Unspecified	2006	1	Faulty Construction

76	Ikpoba-Okha Local Govt, Edo State	Two Floor School Building	April 2006	2	Undisclosed
77	Abuja	Three Floor Commercial Building	June, 2006	None	Undisclosed
78	Apongbon, Lagos	Unspecified	2007	3 Injured	Structural Defect
79	Ikeja Lagos	Unspecified	2008	Several Injured	Faulty Construction
80	Alade Street, Lagos	Unspecified	2008	3 And 5 Injured	Structural Defect
81	Ogudu, Ojota Lagos	Three Storey Building Under Construction	April, 2008	Unknown	Undisclosed
82	Wuse, Area Abuja	Five-Storey Shopping Complex Building Under Construction	August 2008	2 People Injured And 100 People Trapped	Structural Failure/Incompetency/Bad Workmanship
83	Ojerinde Street, Idi-Araba Lagos	Unspecified	2009	9 Died, 3 Missing And 31 Injured	Excessive Loading/ Faulty Construction
84	AjegunleApapa. Lagos	Unspecified	2009	Not Disclosed	Structural Degeneration
85	Ogbomosho, Oyo State	Six Storey LAUTECH Teaching Hospital Complex Under Construction	February 2009	5	Use Of Substandard Material, Poor Workmanship/Supervision
86	Ogbomoso Oyo State	Four Storey Building Under Construction	March 2009	5	Undisclosed
87	Lagos	Two Stroey Building	June 2009	7	Undsiclosed
88	Oke Padre StreetmIta-Morin, Abeokuta, Ogun State	Uncompleted Building	October 2009	3 Died And 11 Injured	Use Of Substandard Materials/Hasty Construction
89	Garki, Abuja	Two Storey Commercial Building	November 2009	Unknown	Structural Failure Substandard Material
90	Abuja	Undisclosed	2010	Not Disclosed	Faulty Construction
91	Isopakodowo Street, Cairo Oshodi Lagos	Building Under Construction For Lagos State Government	April 2010	4 Persons 12 Injured	Use Of Substandard Material
92	Adenike Street, Off New Market Oniru Estate Lagos	Uncompleted Storey Building	June 2010	1 Person And 2 Injured	Use Of Substandard Materials, None Compliance With Approved Building Plans And Weak Structure
93	Nkwerre Street, Garki, Abuja	2-Storey Building Under Construction	June 2010	1	Non Compliance With Building Regulations
94	Plot 702 Port Harcourt Crescent Garki Abuja	6 Suspended Floors For Commercial Purpose	July, 2010	11	Substandard Materials And Qualified And Unqualified Professionals

95	Aghaji Crescent GRA, Enugu	A Wall Fence	August 2010	1	No Proper Drainage
96	Ikole Street, Area 11, Abuja	Uncompleted Three Storey Building	August 2010	5 People And 40 Squatters Where Trapped	Undisclosed
97	2 Okolie Street, Off Abuja	Uncompleted Four Storey Building	August 2010	23 Died 11 Injured	Substandard Materials
98	24, Alli Street Victoria Island, Lagos	Four Storey Building	September 2010	3	Structural Defect/Overloading
99	Oba Ife Housing Estate Akure	Collapse Of A Hotel Building Under Construction	2011	None	Structural Failure
100	Kano	Undisclosed	2011	6	Rainstorm
101	Abuja	Undisclosed	2011	100	Overloading
102	9b, Ademibi Close, Ikeja, Lagos State	5 Storey Hotel Under Construction	March 2011	2	Structural Defect
103	Nyanya, Abuja	2 Storey Building	June 2011	4	Large Span Slab
104	11, Aderibigbe Street, Maryland, Lagos	Five Storey	June 2011	None	No Geotechnical Investigation
105	NdiaguAmechi Road, Amechi, Enugu	4 Storey Building	June 2011	3	Undersized Reinforcement
106	Maraba (Near Abuja)	2 Storey Building Zenith Bank Plc Expansion Building	June 2011	2 Died, 11 Injured	No Geotechnical Investigation Undersized Reinforcement, Large Span Slab, No Specific Floor Thickness On Drawing
107	20, DoyinOmoluyi Street, Alapere, In Agboyi Ketu Local Council Development Area In Lagos State	Undisclosed	July 16, 2011	2 Dead	Undisclosed
108	Oloro Street Off Cemetery, Lagos	3 Storey Building	July 2011	10	Non Adherence To Building Standards & Regulations
109	6, Magaji Close Idumota Lagos	3 Storey Building	July, 2011	18	Undisclosed
110	Orosanye Street, Lagos	3 Storey Building	August 2011	None	Wrong Supervision
111	Aderibigbe Street, Maryland Lagos	5 Storey Block Of Structure	October 2011	2	Structural Failure
112	16, Nnobi Street, Enugu, Enugu State, Nigeria	Three Storey Building	2012	Not Reported	Structural Failure
113	Owerri, Imo State	Three Storey Building	2012	Not Reported	Flooding
114	Awka, Anambra State	One Storey Building	2012	Unknown	Defective Building
115	Abuja	Unspecified	2012	2	Unsupervised Demolition
116	Gwarinpa Estate Abuja	2 Storey Building	January 2012	3	Structural Defect And Demolition Operation
117	Apo Mechanic Village, Abuja	One Storey Commercial	June 2012	Unknown	No Building Approval No Qualified Professional On Site, Poor Supervision

		Building Under Construction			Use Of Poor Quality Materials
118	Hadeja Road, By Ibrahim Taiwo Road, Gombe	101 Year Old, 3 Storey Commercial Building	July 2012	1	Building Has Passed Its Limit State
119	3, AdemolaAwosike Road, Kubwa Extension 111, Abuja	2 Storey Building Under Construction	August 2012	3 Died, 9 Injured	Poor Quality Material, Poor Workmanship
120	Jakande Estate Oke-Ake Aa, Isolo Lagos	Building In Use	November 2012	3	Structural Failure And Occupants Ignored The Government's Safety
121	MuriOkunolaStreeet, Eti-Osa LGA Of Victoria Island Lagos	Building Under Construction	November 2012	3 Dead 50 Trapped	Structural Failure
122	174 Corporation Drive Dolphin Estate, Ikoyi Lagos	Collapse Of A Building	November 2012	None	Structural Failure
2013 – 2022					
123	Ojodu, Lagos	2 Storey Building	May 2013	1	Illegal Approval
124	Abgama Area, Umuahia, Abia State	Building Under Construction	May 2013	7	Undisclosed
125	Ojodu, Lagos	3 Storey Building	May 2013	2	Undisclosed
126	Agege Motor Road, Mushin Lagos	3 Storey Building	June 2013	1	Unauthorized Conversion
127	Ishago Road, Surulere Lagos	2 Storey Building	July 2013	4	Non Compliance To Regulatory Authority Warnings Inferior Building Materials
128	Lagos Island	Three Storey Building	September 2013	2	Undisclosed
129	Maitama, Abuja	Building Collapse	September 2013	3	Undisclosed
130	Nyanya Abuja	Storey Building Of Government	September 2013	8 Injured	Undisclosed
131	Amassoma In Southern Ijaw LGA Of Bayelsa State	Lecture Theatre Building At The Permanent Site Of The Niger Delta University	October 2013	None	Use Of Substandard Materials
132	Akure Ondo State	Storey Building A Hostel Building Under Construction	May 2014	2	No Geotechnical Report
133	Agudama-Epie, Near Yenagoa, Bayelsa	Uncompleted Church Building	May 2014	20 Injured	Use Of Quacks Heavy Downpour
134	Ologuneru In Ido LGA, Ibadan City, Oyo	An Uncompleted 2 Storey Building	May 2014	1	Undisclosed
135	Pedro Police Station, Somolu Lagos	2 Storey Barrack Building	June 2014	Unknown	Undisclosed
136	Onitsha, Anambra State	All Uncompleted Four Storey Building	June, 2014	4	Structural Failure
137	Bucknor Estate, Jakande-Isherioshun Road Ejigbo/Isolo Lagos State	Three Storey Building	July 2014	None	Structural Failure

138	Osogbo, Osun State	One Storey Building	August 2014	One Injured	Heavy Downpour
139	Ikotun-Egbe Area Of Lagos State, Nigeria	Collapse Of A Warehouse At Synagogue Church	September 2014	4	Demolition Process
140	Liberty Power Bible Church, Benin, Edo State	Liberty Power Bible Church, Benin	September 2014		Structural Defect And Use Of Substandard Material
141	6, Mogaji Street, Idumota Lagos Island	4 Storey Building	March 2015	1	Undisclosed
142	Ebuta Meta Lagos	3 Storey Building	July 2015	4	Structural Defect
143	Swamp Street, Odunfa Lagos Island	3 Storey Building	October 2015	4	Structural Defects
144	Lekki Lagos	3 Storey Building	2016		
145	Lekki, Lagos	A Five Storey Building Under Construction	March 2016	34	Addition To The Approved Number Of Floors
146	Mile 12, Lagos	2 Storey Building	March 2016	1 Dead 1 Injured	Structural Defects
147	LafenwaSapon Road, Itoku Abeokuta, Ogun	Commercial Complex	May 2016	2	Structural Defects
148	Ojodu Lagos	Three Storey Building	May 2016	2	Undisclosed
149	AkwaIbom State, Nigeria	The Reigners Bible Church	December 2016	100	Structural Failure
150	Ulakwo Junction, Owerri North LGA, Imo State	One Storey Building	July 2017	3	Undisclosed
151	Zulu Gambari Road, Illorin, Kwara State	4 Storey Building	August 2017	Unknown	Undisclosed
152	Abuja	An Abandoned Building	August 2018	2 Dead 3 Injured	Old Age Illegal
153	Jabi, Abuja	4 Storey Building	August 2018	2	Substandard Materials
154	Okpuno, Otolo In Nnewi, Anambra	3 Storey Building	October 2018	None	Substandard Materials
155	IfiteAwka, Anambra State	3 Storey Building	November 2018	None	Substandard Materials
156	Woji Road, GRA Phase 2, Port Harcourt, Rivers State	7 Storey Building	November 2018	15 Died And 31 Rescued	Undisclosed
157	Lagos Island	3 Storey Building	February 2019	2	Undisclosed
158	ItaFaaji Area Of Lagos State, Nigeria	3 Storey Building	March 13 2019	20	The Change Of Use Of The Building From The Intended Purpose
159	Sogoye, Bode Area Of Ibadan, Oyo State	3 Storey Building Under Construction	March 2019	None	Concrete Was Not Adequately Cured During Construction
160	No 12, Alasepe Street, Off Community Road, Ayo Palace Way, Okota, Lagos, Nigeria	Uncompleted Three Storey Building	17th January 2020	One Escapes Death	As A Result Of Substandard Rehabilitation Materials Used For Reconstruction And Ageing Of The Building Which Made The Entire Building Cared In Under Duress

161	Freeman Street, Lagos Island, Lagos State	Three Storey Building	July 11, 2020	1 Dead, Six Others Were Rescued	Building Was Said To Have Suffered Total Collapse
162	No 46, Gafari Balogun Street, Ogudu Area Of Lagos State	Storey Building Collapse	22nd July 2020		Heavy Rainfall
163	No 95, Abeokuta Street Cemetery, EbuteMeta Area Of Lagos State Nigeria	3 Storey Building	24th July 2020	Nil	Self Collapse
164	Abuja, Nigeria	Two Storey Building	25th July 2020	10 People Injured	The Building Was A Bungalow But The Developer Was Trying To Upgrade It To A Two Storey Building And It Suffered A Total Collapse
165	Dangawon Jingau Street, in Kuma Asabe Kano State	One Storey Building	29th July 2020		Undisclosed
166	62, Do Street, Obalense, Lagos Island	3 Storey Building	Oct 12, 2020	6 Persons Dead	Partially Collapsed
167	At Commercial Hub, Along Azikiwe Road, Aba, Abia State	3 Storey Building Under Construction	September 16, 2020	5 Persons Dead	Torrential Rain
168	15, Ansarudeen Street, Ile-Epo Bus Stop, Lagos State	3 Storey Building	Saturday, September 19, 2020		The Excel College Had Shown Signs Of Distress Before Its Collapse And That The School Was Planning To Renovate The Structure Before The Incident Happened
169	Along Gerrard Road, Ikoyi, Lagos	21 Storey Building	November 1st 2021	46 Persons Dead	Structural Defect Caused By Overloading, As A Result Of The Erosion Of Professional Ethics And Due Diligence
170	Lagos, Nigeria	Two Storey Building	November 17th 2021	4 People	Owner Converted Old Bungalow To A Storey Building
171	Okpanam Community, Oshimili North Local Government Area CLGA, Delta State	One Story Building	January 11, 2022 - Tuesday	3 Persons Dead	Undisclosed
172	Akunde Crescent OnikeLaba Area Of Lagos, Lagos State	3 Storey Building	February 12, 2022 – Saturday	3 Persons Dead	Compromise In The Quality Of The Materials Used. The Developer Break The Government Seal On The Property And Also Violated The Stop Hole Order Placed In The Building
173	Ahmadu Bello Way, Opposite State Library, Kano, Nigeria	3 Storey Building Collapse	March 17th 2022	One Dead, Several Injured	Damage (Structural), Structural Failures, And Storey Building Under Construction.
174	Iperu in the Iheme Local Government Area, Ogun State	1 Storey Building	March 23rd 2022	2 people dead	Poor enforcement of regulations guiding the construction industry by

					the government to the incessant building collapse Undergoing illegal constructs by the owner
175	No 32, Ibadan Street, Off Herbal Macaulay Way, Ebute-Meta	3 storey Building	April, 1st 2022	10 death	Failed integrity test mark for demolition, some occupants left but the rest material testing
176	Chris Igade Street, Off Ago Palace Wary, Opposite Kilamajaro/AP , Lagos State	2 storey building	May 7th 2022	No casualty was recorded during the incident	Structural defects
177	Freeman Street, Lagos Island, Lagos	2 storey building	May 21st 2022	1 dead	Heavy downpour (rainfall)/structural failure

Source: [2,3,4,5,6,7]