RESIDENTIAL BUILDING INSPECTION REPORT

Name of the Insured	**Mrs.Samundeeeswari & Mr.Krishnamoorthy., Chennai.**
Address of the Building Inspected	Mrs.Samundeeswari&Mr.Krishnamoorthy., No.36.Mursoulimaran street, Santhose Nagar, Palavakkam (OMR) Chennai - 96
Purpose of the Inspection	Inspection of the Building to find the cause of Tilting.
Policy Details & Insurance	United India Insurance Co Ltd., PolicyNo:011901/46/07/90/00000202 Type of policy: UNI Home Policy
Property detail	Residential Building.
Date of Inspection	28.06.2016
Date of this Report	10.07.2016
Inspection and Report at the Request of Insurers:	Regional Manager Claims HUB, M/s.United India Insurance Co Ltd., Greams road, Chennai

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Residential Building Inspection
For
Assessing the cause of tilting of building
Owned by
Mrs.Samundeeswari & .Krishnamoorthy.,
And Insured with
United India Insurance Co. Ltd.

Date of Inspection: 28.06.2016

Introduction:

Regional Manager, M/s.United India Insurance Co Ltd., requested for an inspection of one of the Buildings Insured by their Branch Office on which a claim has been preferred by their owners based on the Insurance Policy with the Insurers. The subject Building is a Residential building at No.36. Murasholimaran street, Santhose Nagar, Palavakkam (OMR), Chennai – 600 096, Tamil Nadu. The Insurers requested our expert opinion on the cause of the Loss pertaining to rectifications necessitated by the tilting of the above building allegedly due to the heavy monsoon rains during Nov Dec 2015.

About the Insurance claim

As per the information provided to us, Mrs.Samundeeswari & Mr.Krishnamoorthy owned a residential building in the above locality. The subject building is Ground + First floor building at palavakkam (OMR), Chennai. The building was stated to be constructed in the year 2007. Ground floor was occupied as a machine shop with a lath machine and the first floor occupied as residence by the owners.

It was alleged that during the recent flood the building has tilted to one side 10 to 15 degree as shown in the photo attached in the report. The owner has insured his property with the United India Insurance Company., through their Bankers and hence they have claimed for the cost of rectification to the building. They intend to Lift the Building using modern techniques.

The owner claims that the building has tilted only due to heavy flood. The insurance surveyor appointed by the Insurers in his Survey Report has reported that the cause of the Loss is due to Faulty Construction in Basement and not due to any of the Insured Peril as stated in the Policy. Based on this Survey Report Insurers has repudiated the claim and informed Insured about the same. Aggrieved by the above, the Insured has sent a notice through their advocate requesting for settlement and other expenses.

Under the above circumstances, Insurers briefed us and requisitioned our services as a Civil and Chartered Engineer to ascertain the cause of the above Tilting and our views on

the subject cause of loss with specific reference to the subject Insurance Policy coverage terms and exclusions there of.

The Insured Property:

The Residential building was constructed as framed structure with ground plus one upper Floor. On enquiry with the owner and inspection of approved corporation drawing it could be inferred that the foundation was taken to a depth of 5' from the ground level. The building was constructed in the year 2007 and is an about 10 years old building. Though the building during its construction was about 3' above the then ground level, as shown in the enclosed approved drawing and based on our enquires with the owners, now the level of the Building is at the road level.

This leads to the conclusion that the either road level would have been increased periodically by relaying and other improvements or the subject building would have settled gradually due to improper foundation or both would have contributed for the subject settlement of the property to its present level. The approved construction drawing copy is also attached below the report for information.

The Inspection:

The undersigned a Civil Engineer by qualification and a practicing Civil engineer and also a Chartered Engineer with 35 years of experience in the field of Civil Engineering visited the site on 28.06.2016 and had a detailed physical and visual inspection of the subject building. During the inspection the owner of the building Mr.Krishnamoorthy was also present.

The Proposed Repair and rectifications:

The owners have engaged the services of Professional agencies to Jack up the Property or underpin the property as per the cost estimate given by the firm. We have also interacted with this firm and it was clarified that the cost estimate not only includes cost of jacking up the building to correct the tilting but also includes jacking up the property to about 3 ft level above the present road level to its previous level when it was originally constructed.

Observations:

- The Residential building is south facing Building and was found tilted on one side by 15 to 20 degree on western side and the sunshade rested on the nearby building. On west side length of the building tilted from the centre of the building to northwest building corner to the neighbouring building. There are no visible cracks on the tilted portion of the building side except near the sunshade area and rear side column and wall pulling the building to west side.
- There are no major noticeable cracks found throughout the wall / floor junction in the settled side. The cause may be only due to settlement due inadequate and inappropriate foundation design and methodology.
- The Palavakkam area where the subject building is constructed is generally with made up soil as this locality use to be low lying and the natural ground level generally slopes towards the nearby Buckingham canal which is water drain basin for this locality.
- The area is generally with soft soils and is termed as Low to very low Safe Bearing Capacity type of soil warranting special type of non conventional load transfer or foundations. An abstract table detailing SBC of different types of soils is enclosed for easy reference.
- The conventional type of foundations like individual footings with fillings below to dissipate the building load will be unsafe in this type of made up soft soils. And hence it will be safe and enduring to adopt non conventional type of foundations like Under reamed Pile foundations, to ensure that the Load is taken and distributed at a safer depth in earth where hard types of soils are encountered and also the skin friction of these reamed piles will help in dissipating the load properly and safely.
- As per the details provided to us this building was constructed with ordinary footings without any proper soil investigation or guidance from Professionals.
- Due to the above improper load transfer due to defective type of foundation, the settlement or bedding down of structure would have started long back and any such settlement is gradual and will not be sudden due to the factor of safety inbuilt in the construction Industry.
- This is clearly evident from the merging of the flood level of the building with that of the road level which was about 3 ft below the building floor level during construction of the said building.

- From the above it clearly emerges that the tilting of the building happened slowly and not sudden due to settlement and this is purely because of the poor and inadequate design and type of the foundation adopted at site.
- Apart from rectifying the tilting of the building by jacking the foundation up, as per the detailed discussions we had with the repairers, we understand that the owner also wanted to lift the building by 3' as the present floor is same level of road level.
- We also inferred from the owner version that even during flood the water level was only about 1 foot within the building which would not have caused the subject tilting.
- We also infer that most of the buildings in the neighbourhood are with ground plus one upper floor have been provided with under reamed Pile foundation.
- If flooding was the reason for such a tilting, the other properties in the neighbourhood also would have tilted and would have faced similar problems which we have not witnessed and there is no tell tale evidence of such massive dislocations or settlements. This clearly proves that the settlement in the building is only due to defective and inadequate design and type of foundation and the tilting is due to settlement or bedding down of structure which is a gradual and slow phenomenon and has no direct connection with the said flooding caused by the monsoon rains.
- The interaction with the Building Lifting Technology company Mr. Thanigai Vel has also confirmed that they get request for lifting of buildings in many places and invariably in the cases poor foundation is the cause for such defect.
- We also infer from the subject Insurance policy that none of the Perils named in the policy had acted to cause the Loss. Event the if the subsidence is assumed to be a cause of the Loss, which is very remote, the exclusion there off namely "defective design or workmanship or use of defective materials" will be prominent and proximate cause to exclude the subject Loss from coverage under the policy

Conclusion:

Based on our Inspection and Visual Physical Observations at the site we are of the considered opinion that the tilting of the subject building is caused due to settlement of the foundation over a period of time and such a settlement is due to inadequate and improper foundation type and design and not due to Flood or Inundation caused by the Monsoon rains. We could also infer that non of the Perils Named in the subject Insurance Policy has caused the Loss to the Insured Property.

The report is issued without Prejudice and is purely technical in nature and no liability legal or others or what so ever will attach to the undersigned consequent upon the above Opinion. The subject building is unsafe for occupation and the owners may take a quick remedial measure and till such time the building may be cordoned off as unsafe for occupation.

Issued without prejudice

(K.Sundarapandian)

Dated: 08/07/16

Chennai.

Photos taken during the inspection of Residential house building .

Building tilting on western side of the plot. -1

Building tilting on western side of the plot. -2

Photo showing the tilt in terrace floor -1

Photo showing the tilt in terrace floor -2

Photo showing in between the building - 1

Photo showing on the North side of the building

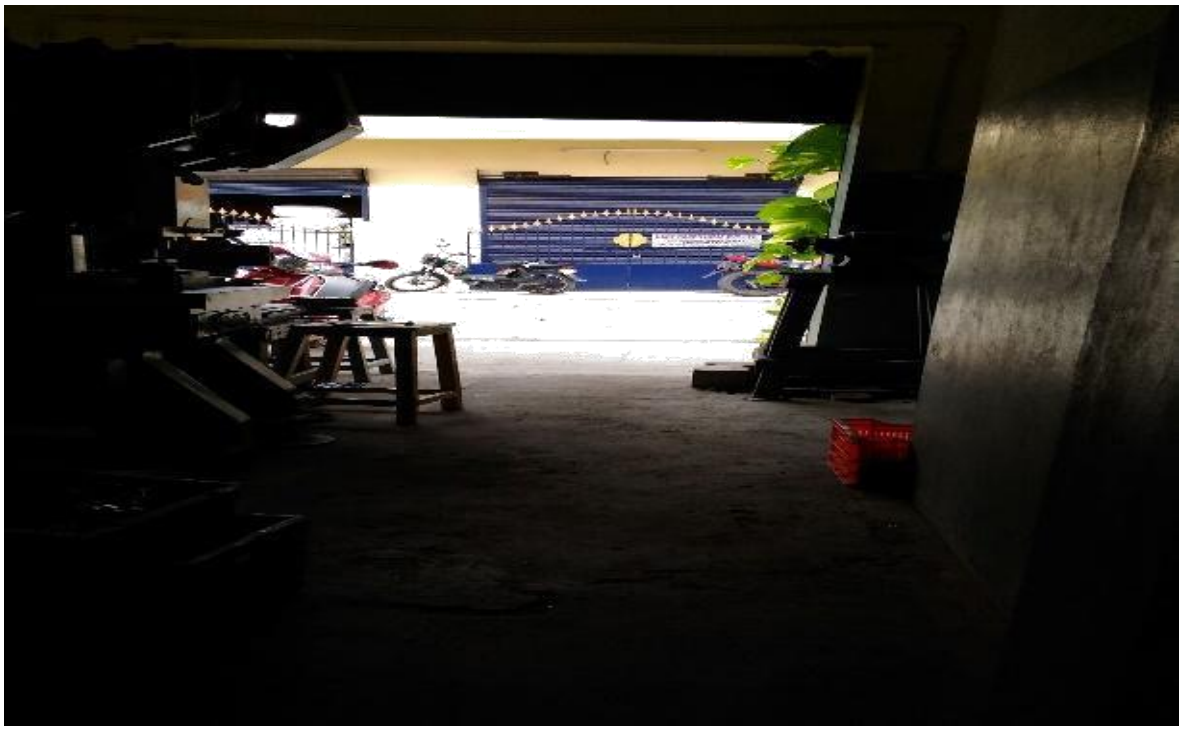
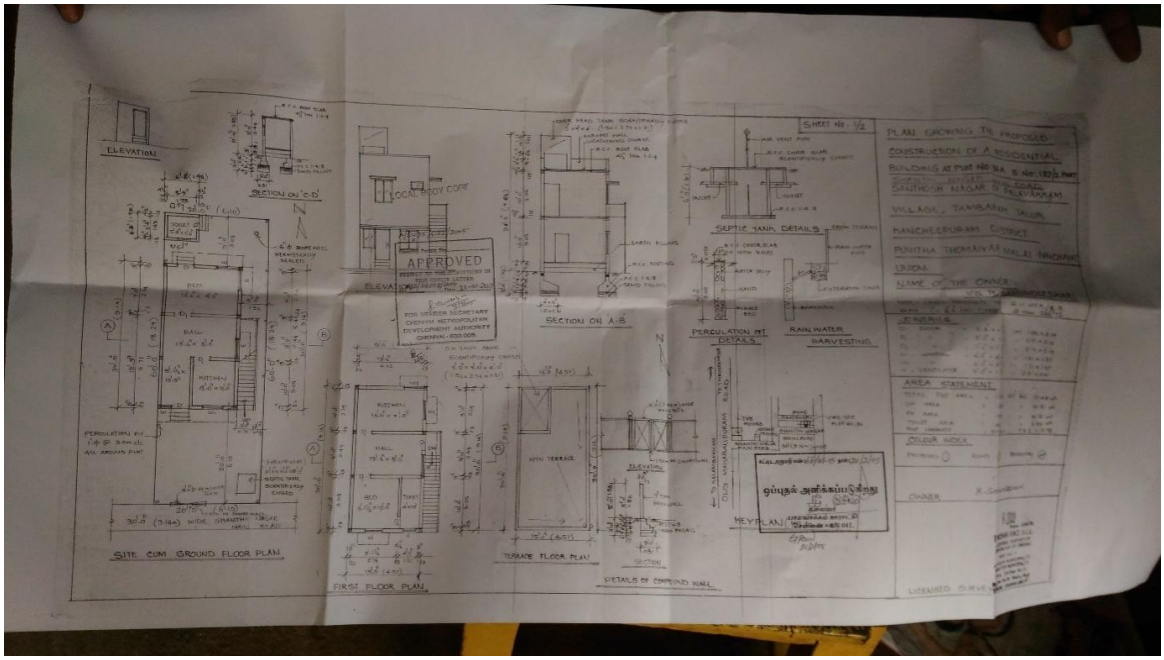


Photo showing the lath machine room

Front portion of the Building

Approved Plan Showing the Residential building with set backs.



ANNEXURE

RECOMMENDED VALUES OF SAFE BEARING CAPACITY FOR PRELIMINARY ANALYSIS

Sl. No	TYPE OF ROCK OR SOIL	SAFE BEARING CAPACITY	
		(kN/m_2)	(kg/cm_2)
	ROCKS		
1 2	Rocks (hard) without lamination and defects, forexample granite, trap and diorite Laminated rocks, for example sand stone and lime	3300	33
3	stone in sound condition	1650	16.5
4	Residual deposits of shattered and broken bed rock and hard shale, cemented material	900	9
	Soft rock	450	4.5
	NON-COHESIVE SOILS		
5	Gravel, sand and gravel mixture, compact and offering high resistance to penetration when excavated by tools. (Refer Note 5)	450	4.5
6	Coarse sand, compact and dry (with ground water level at a depth greater than width of foundation below the base of footing)	450	4.5
7	Medium sand, compact and dry	250	2.5
8	Fine sand, silt (dry lumps easily pulverized by fingers)	150	1.5
9	Loose gravel or sand gravel mixture; loose coarse to medium sand, dry (Refer Note 5)	250	2.5
10	Fine sand, loose and dry	100	1
	COHESIVE SOILS		
11	Soft shale, hard or stiff clay in deep bed, dry	450	4.5
12	Medium clay, readily indented with thumb nail	250	2.5
13	Moist clay and sand clay mixture which can be indented with strong thumb pressure	150	1.5

14	Soft clay indented with moderate thumb pressure	100	1.0