Thesis Title **Potential Causes of the Collapse of Building in the Northeast**

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ABSTRACT

The purpose of this investigation was to find a typical collapsing of an overloaded structure founded on silty soil, the typical soil in the Northeast of Thailand. The building structure was modelled as space frame on elastic foundation. STAAD - III / ISDS program was used in the analysis. Failure of the structural elements were investigated in the views of their safety factors.

Because of the extension of the building from 3 to 6 storeys, safety factors of a column were reduced from 6.24 to 1.03 , which nearly induced failure. When the moisture content of the soil increased, the Spring Stiffness of the foundation was drastically decreased and additional settlement occurred. Additional differential settlement can result in increased bending moment in columns, reducing the strength of the columns. When one column failed, the simulation was revised neglecting the failed column stiffness. The load of the failed column was transferred to the nearby columns. The next failed column could then be identified. This sequential simulation shows the progressive failure of the columns which leads finally to the total collapse of the structure.