



Italy Tower Collapse in São José do Rio Preto - São Paulo - Brazil

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Abstract

This paper discusses the collapse of Italy Tower, a 16-storey building, that fell down 10 years after construction, with 10 floors upside down in a lateral street.

The designed structure and the structure as built were verified and a possible and probable cause was identified.

Keywords: high-rise buildings, columns, transition, piles, collapse, brittle failure.

1. Introduction

The collapse occurred day 16th/Oct/97.

CREA-SP – SP Regional Engineering Council - in July/98, hired us for this technical report. The scope was the analysis of the structure as designed and as built based on data from CREA-SP Process and the IPT Technical Report – Technological Research Institute, concluding with an opinion on the probable causes of the collapse.

The collapse as described by some people, the tower would have spun and started slowly to settle, much more in the back than in the front, up to an inclination of approximately 1:1. Suddenly and quickly the structure collapsed.

Photos of the ruins show that the piles of the facade columns failed by tension. The upper floors fell on Lateral Street upside down.

2. Data available for the report

This report was based on the following data:

- a) SF/97 40255 CREA-SP Process, especially the final report from 12/30/97.
- b) IPT Technical report, in 3 volumes, 4/2/98.
- c) Survey of construction imperfections in the two remaining towers Portugal and Spain of judicial expert, engineer Adirson Chala.
- d) Design documents of Architecture, Structure and Foundation provided by the structural designer, engineer Giorgi (Engenharia e Projetos Rui C. Giorgi S/C Ltda).

3. ITALY TOWER description

Italy was a 16 floor tower and attic built above a common use floor (PUC) with other two towers Portugal and Spain.

Below PUC floor there are 2 parking floors and the ground floor for commercial use.