



Slide No 108
Collapsed middle section of
underground car park



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- ← Level of initial collapse during concrete pouring of 3rd/top floor
- ← 1st floor failed under the weight of the 2nd and 3rd floors

Amount of Loss	CHF 485,000
Cause	Faulty design of hollow rib ceiling
Short description	During concrete pouring of the 3rd (top) floor, the 2nd floor collapsed. The weight of the fall of 3rd and 2nd floors consequently caused the first floor ceiling to collapse as well.
Comments	<p>Investigations clearly revealed faulty design of ceilings:</p> <ul style="list-style-type: none"> • The main armoring is not concentrated within the area of the ribs • The usual connections between the bottom layer of concrete and the ribs in the absence of stirrups are totally missing. • The bottom layer of concrete of 4 cm is too thin.

Conclusions

The system does not conform with the national code and in future insurers will decline insurance of this specific ceiling system. The ceilings already built using this "system" should be load tested and/or demolished for safety reasons.

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Underside view of the collapsed ceiling.
Clearly visible: Missing stirrups and main armoring are equally distributed instead of being concentrated under ribs.

