CTU in Prague
Faculty of Civil Engineering
Department of Building Structures

Restoration of truss

Church of St. Vaclav in Mikulovice

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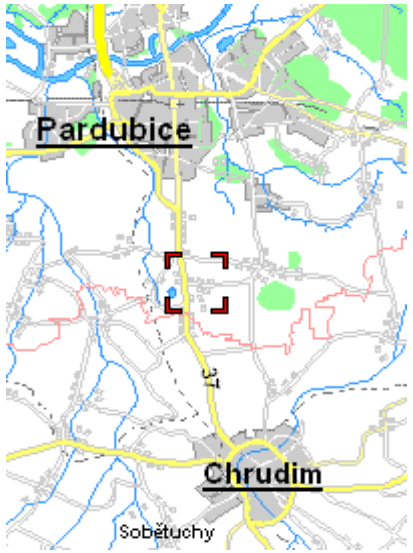
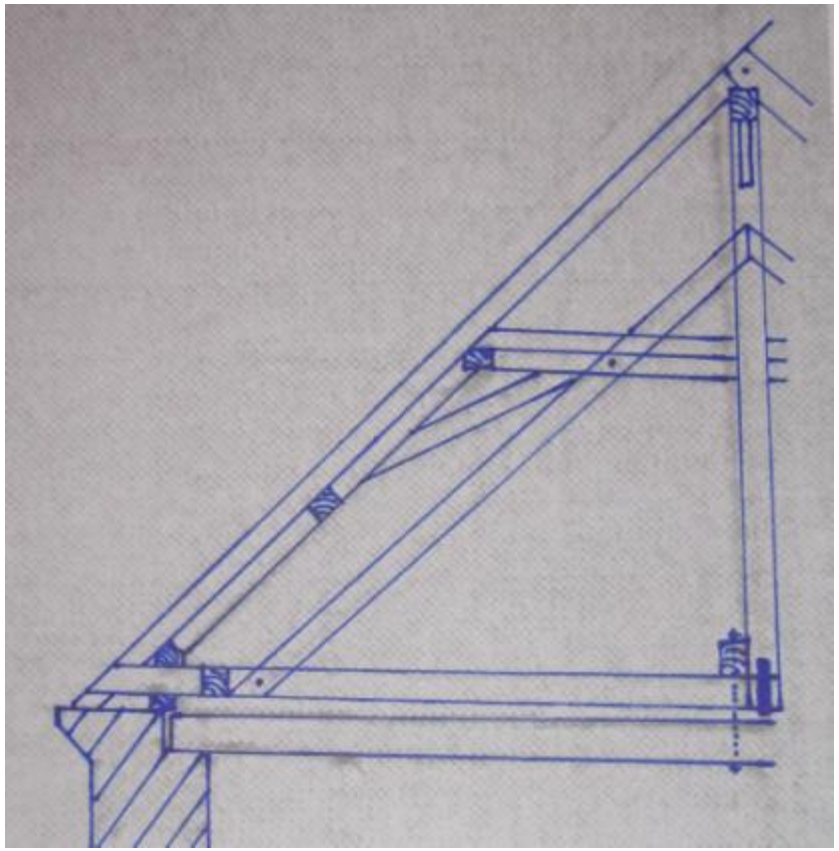
Description of the object

- view on church



Description of the object

- Truss - status before reconstruction
  - reconstruction time of truss- from 1768 to 1769
  - hip roof, king post truss with top purlin and suspension trusses
  - 5 full frames, between them are always 3 yeast frames
  - longitudinal bracing is reinforced by diagonal braces between threshold and top purlins



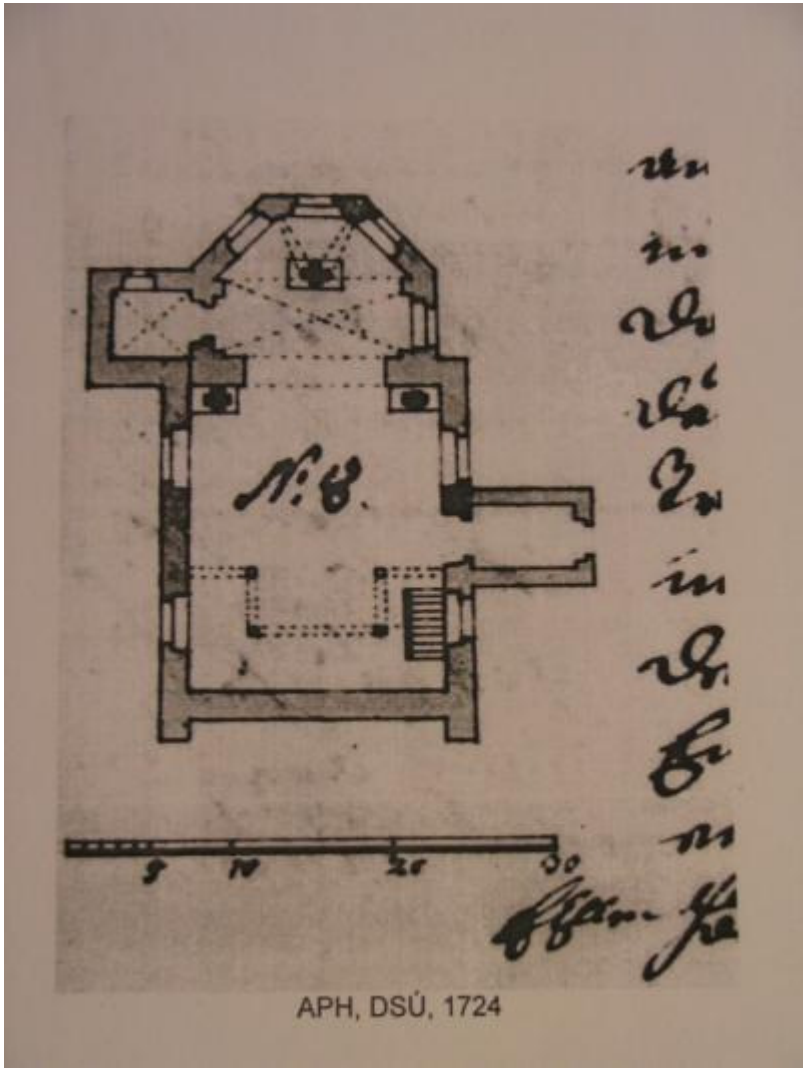
Description of the object

- longitudinal bracing

History of the object

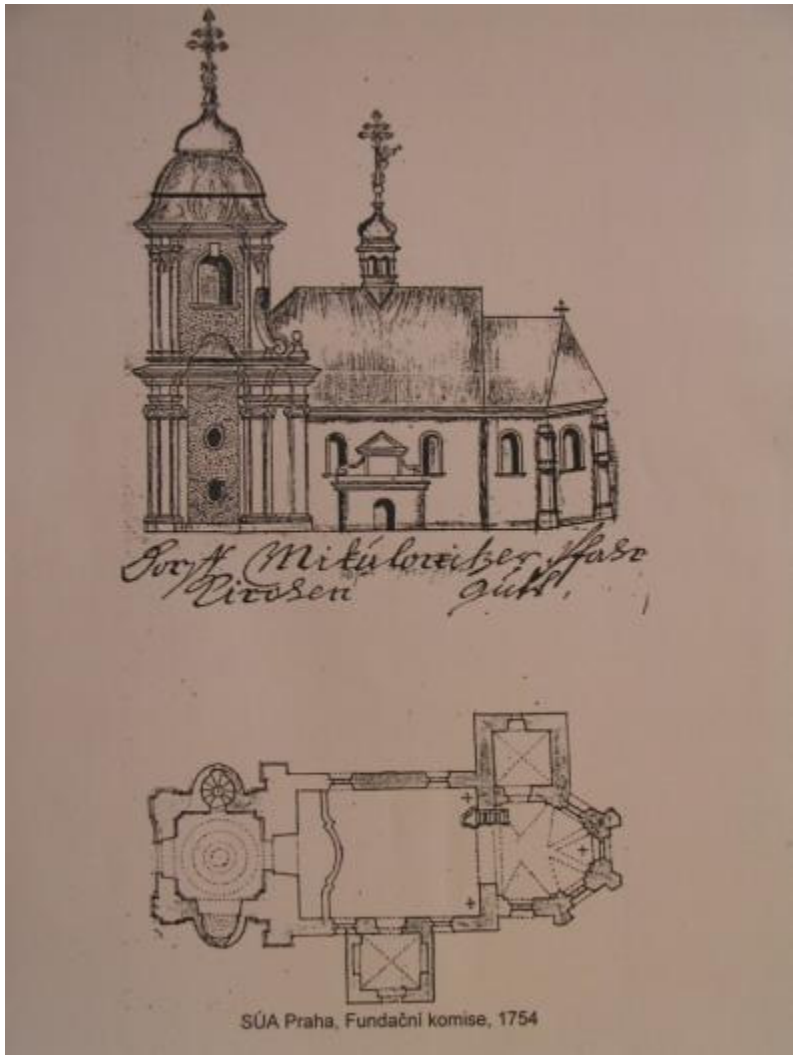
- built probably before 1387 on the Mikulovice marl hill (275 m above sea level) on the former pagan grove, dominates the entire

- according to drawing from 1724 was church in that time still in Gothic style - single aisle with polygonal presbytery without external supporting pillars



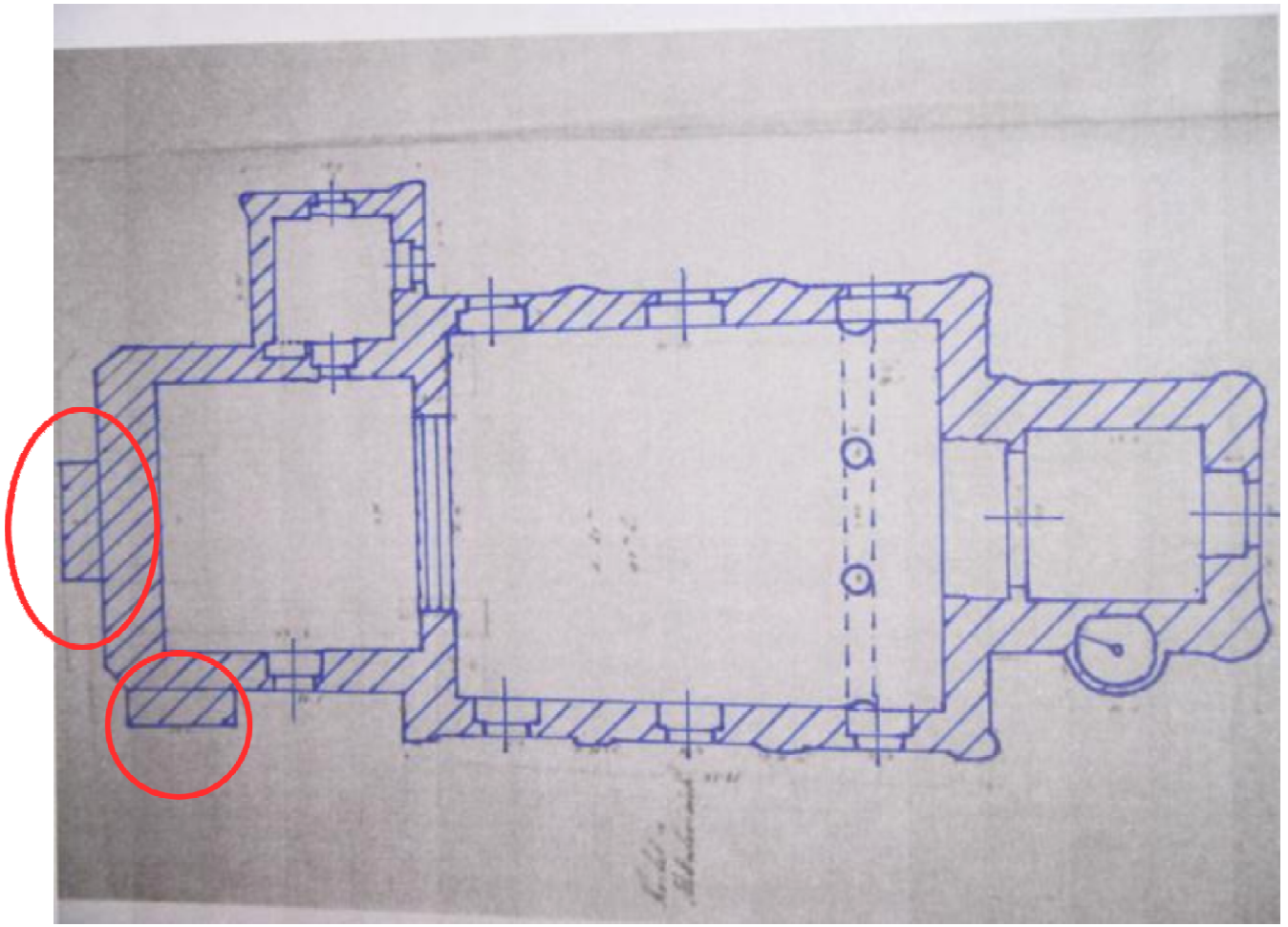
History of the object

- 1750-52 placed the foundation stone of masonry bell tower adjoining to the western facade of the church
- simultaneously with the construction of the tower was made the total reconstruction of the entire Western frontage, in 1769 reconstruction completed
- current appearance of the church (baroque style), with newly built stone aisle, dates from 1768-69
- on the chancel plaster - paintings by Josef and Vaclav Kramolín of 1790
- since 2004 a total reconstruction of the church



History of the object

- ground plan of the church



History of the object

- 1885 solved static failure of the truss and floor
  - hanging tie beams by medium threshold purlin
  - added braces in full frames, which deal with tie beam deflection in their centers

History of the object

- Hanging tie beams by medium threshold purlin

- Suspension truss with medium threshold purlin

Description of defects

- Fault manifested on the the truss ridge of the roof

- Tie beams gridiron is severely damaged or completely missing. Yeast frames were unable to carry the load and there was a rapture of short exchanges

Description of defects

- Rapture of exchanges

Description of defects

- Some tie beams are in very poor condition and will require their total replacement

Description of defects

- Missing tie beams gridirons

Description of defects

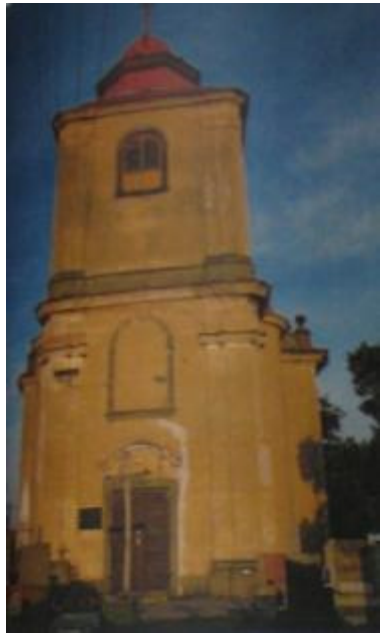
- Because of vault, truss over the chancel is solved without tie beams - vault has no signs of damage

Description of defects

- Faults of other parts of the church
  - rapture of short exchanges led to cracks in the perimeter wall moldings, sometimes missing bricks

Description of defects

- Faults of other parts of the church
  - blown and weathered facade
  - cracked stone elements



Restoration of defects

- Securing construction by steel draw rods
  - secure the stability the truss
  - replacement of wooden truss elements
  - fungicidal treatment of the truss
  - the roof deck replacement

Restoration of defects

Restoration of defects

- condition after reconstruction

Restoration of defects

- construction of the tower roof

Restoration of defects

- condition after reconstruction