Span structures static re-use: bricklaying bridge case
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In this thesis has been done a study of span structures re-use about the case of the "Ponte del Paleotto" in Rastignano near Bologna, 700th three arch structure one carriageway bridge.

This is an alluvial area due to section problems and riverbed cleaning and not suitable lateral bank.

Second and third span portions are blocked by ground, we need to clean whole section put it in a safe condition for traffic and keep the bridge how its look with the original frame and materials because it is under environmental protection.

The study of this thesis has been divided in three thematic areas: **measure, project and verify** through theory, research and technique approach and object re-use need we arrived at the upset explanation, about most critical points and how to really work about and which kind of job is better to do.

First step is **_analyze and investigate_** through measure, site study, hydraulic and static problems and physical analysis of the bridge to let we know about the bridge decline.

Due to few flooding the bridge has go up dampness problems, base corrosion, superficial materials detachment and not, efflorescence and cracking problems on pillars and under spans.

Thanks to bridge characteristic and structural typology need and through a following consolidation technical analysis for foundations, vertical elements and bricklaying spans we did few *project supposals* whit a under-foundations pole root system or grid pole root for foundations and with carbon fiber for bricklaying span.

On third step about *method calculation and bridge verify*, though the analysis of weights that acts on the bridge and linked theory we arrived at the verify of spans stability.

After the beginning chapters about theory of pressure curve and its graphic construction and stability verify and span's balance with the hypothetical pressure curve method of Mery we applied in a practical way that study on a real element that in this case has been the Paleotto bridge.

First of all we applied that theory in a graphic way with help of funicular polygon theory and than thanks to geometry and trigonometry we solved every doubt about the result and calculation of pressure curve that will be represented by a broken line that will represent weights acting on the bridge.

All this has been done first with study of proper weights and than adding the specific weight defined by normative choose in the worst position supposed for the bridge.

Than we studied and applied the Mery's theory that had wide solution respecting our hypothesis.

To do a specific study of trend of stress and bridge performance under that weights we represented various pressure curves with the program "RING 1.5" that let us do some conclusions about the bridge endurance and any congruent of damages with evident real fractures.

The bridge result in unfavorable conditions at the base of first span as is possible to see by case 11 of pressure curve and on third span half underground.
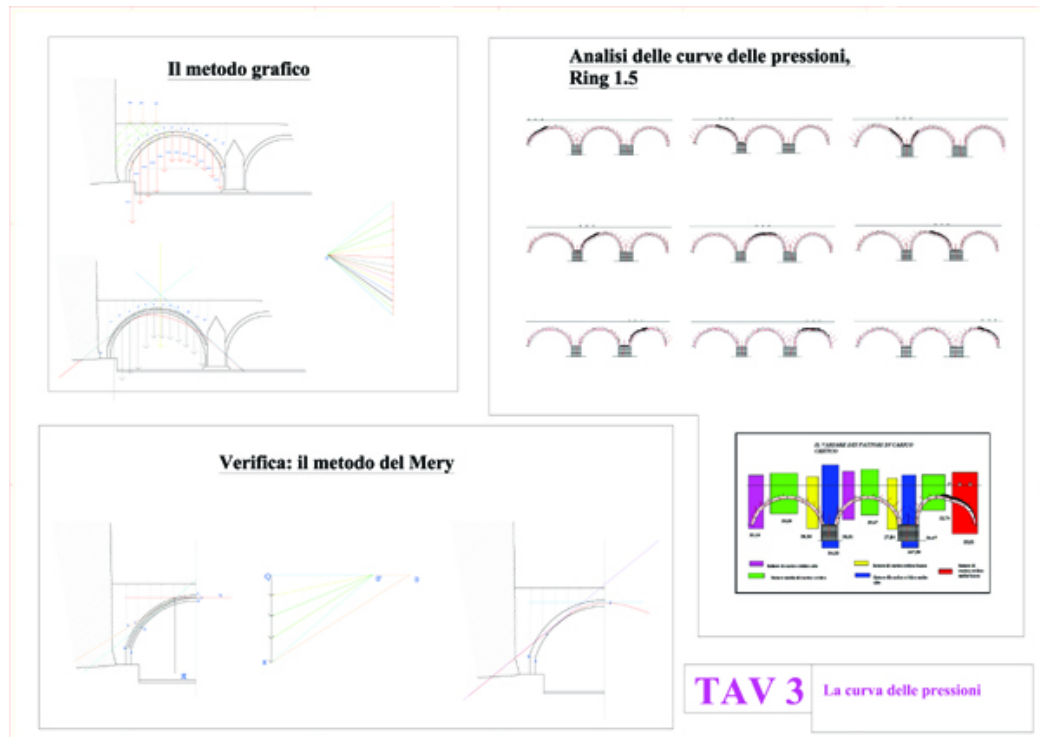
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