Reinforced Concrete Arch Bridges

East Clinton Street Bridge, Binghamton
Oldest bridge in the world, still in service. Corbel Arch, Mycenae, Greece, 1400 BC
Second oldest bridge in the world, still in service.
Crete, Greece, 4th Century BC
Zhaozhou Bridge, world’s oldest open spandrel arch bridge 595-605 AD. ASCE landmark 1991
Island of Andros, Greece, Venetian semi-dry laid up stone arch 1750 AD
Daniel Benjamin Luten

An American Engineer
1869-1945
The most prolific bridge engineer

- Graduated in 1894 from Michigan University
- Taught at Purdue 1894 – 1900
- First patent for reinforced concrete arches filed in 1899, was granted in 1900
- Built the second reinforced concrete arch bridge in United States (first by Ernest Ransome, Golden Gate park, SF, CA)
- Designed, constructed and supervised the construction of over 16,000 reinforced concrete arches in all but 3 States, Mexico and Canada
National Bridge Company, 1902
More than 2,000 bridges are still in service
Closed spandrel Luten bridge over Yellow River, Plymouth, Indiana
Restored in 2008
Closed spandrel Luten bridge, over Wabash
Carroll County, Indiana, built 1927
Open spandrel Luten bridge
Watertown, Wisconsin
Luten charged “not one 1 cent” for the plans
Open spandrel under construction
Maryland DOT archives
A concrete arch in harmony with its surroundings but without ornamentation or embellishment of any kind is an exceedingly beautiful structure. A concrete girder under similar conditions may be an exceedingly ugly structure.

D B Luten, Proceedings of the Annual Convention of Cement Users, 1912
D B Luten, Falsework design
The story of one bridge
Revolt and the Struggle to Industrialize

Rockingham County, NC
vs.
Daniel Luten

Mebane Bridge Rd, Eden, NC
Duty to mitigate

Most famous decision of Judge Parker
(1885-1958)
November 24, 1924

“after plaintiff had received notice of the breach, it was its duty to do nothing to increase the damages flowing therefrom ($18,301.07 vs. $1,900)
Memorial Bridge, Binghamton
(by Christina Rallo, photographer)
Memorial Bridge Binghamton, begin of construction
Memorial Bridge Binghamton, under construction