

**„HIDÁSZ NAPOK 2015” (BRIDGE ENGINEERING DAYS-
Conference)**

2015. June 10-11. Visegrád

20 years old is the Rákóczi-bridge

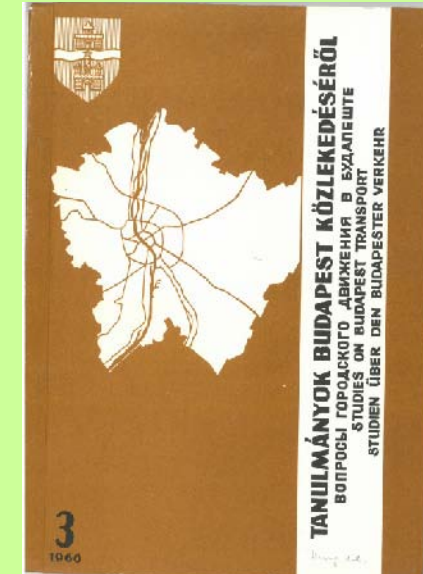
**(Danube road bridge at Lágymányos
in Budapest)**



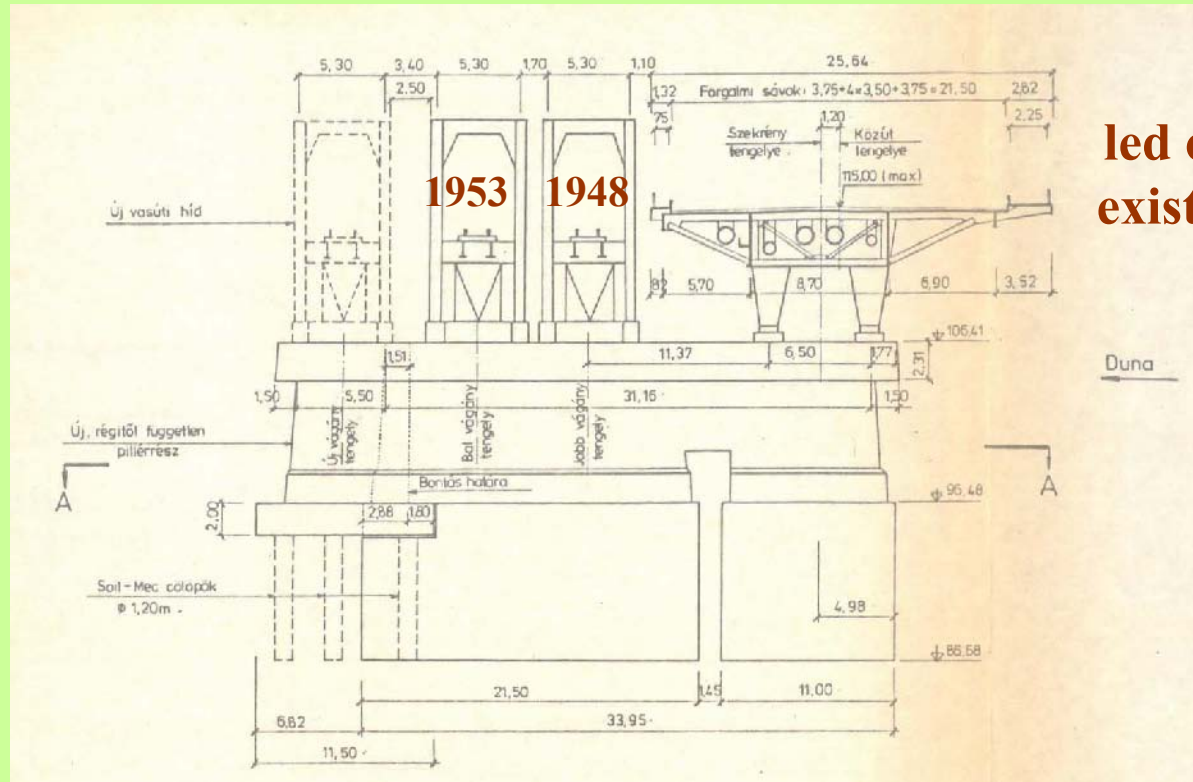
Dr. Ida KOLLER

PRELIMINARIES

- Hungária ring-road (decided in 1872)
built as far as Mester street before 1966
- Studies, bridge-programmes
(1978, 1986, etc.)



- **UVATERV designs: 1972, 1988, 1990, 1991**



Hungária ring-road led over the Danube near the existing Southern rail bridges

**2x3 traffic lanes
at the place of the
temporary „K”
bridge (1946-53)**

**Cross-section at piers
on the design in 1984**
(3. railway line for the future
on the southern side)

CONSIDERATIONS AT THE DESIGN OF THE NEW BRIDGE:

in 1990-1991

- The position of the piers have to be similar to the piers of the adjacent Southern railway bridges :
4 x 100 m
- The substructures of the new road bridge must be independent from the rail-substructures (even the pier-walls aren' t allowed to be connected)
- Place has to be left for the third railway bridge
- Width: 30 m
- Due to navigational regulations the max. length of the pier : 11 m

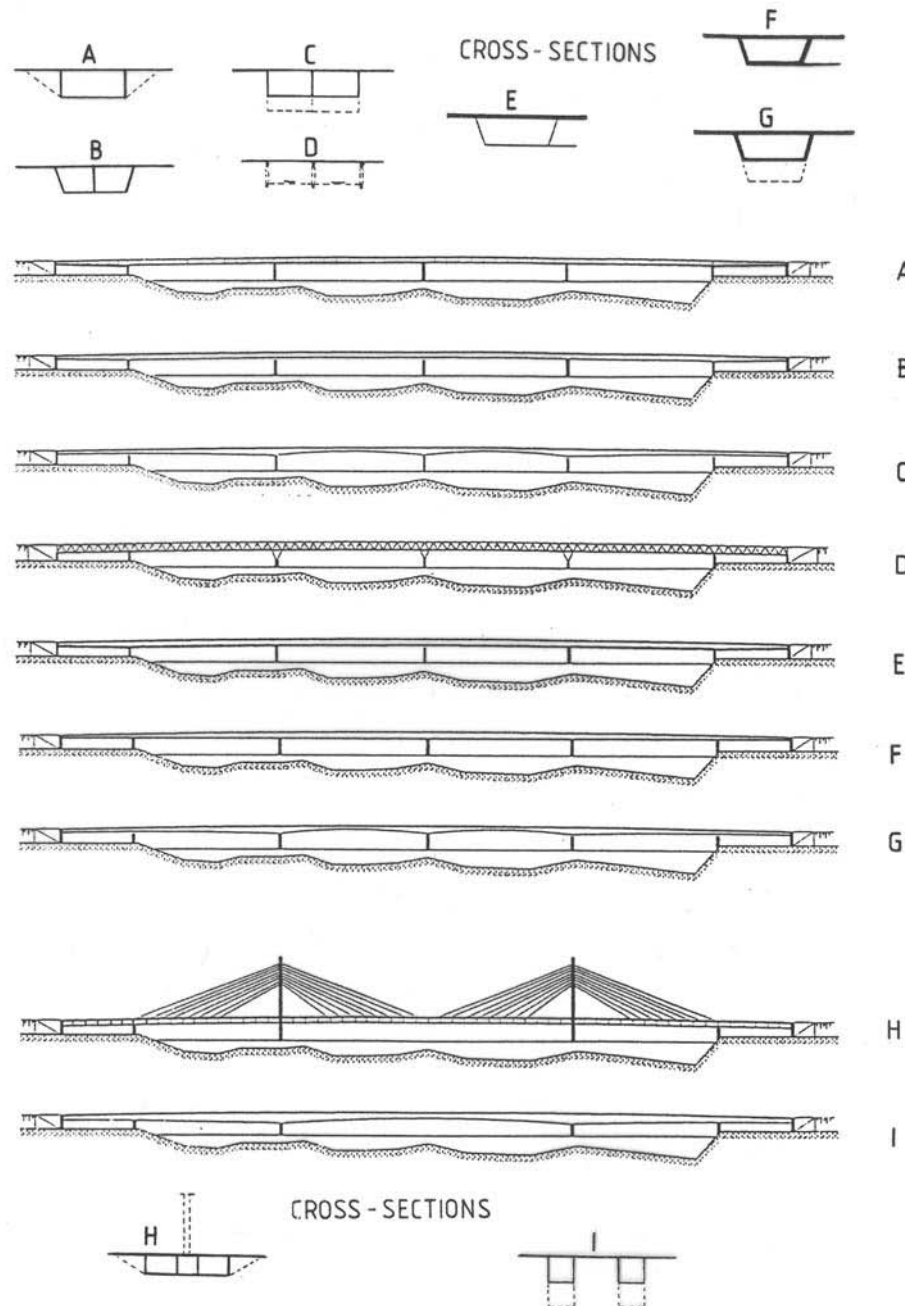
**The raised pier-wall
of the temporary
„K” bridge
was demolished**



- the top parts
of the piers
widened,
- long
cantilevers

**Different variants
of the
„Aesthetical Study”
in 1991**

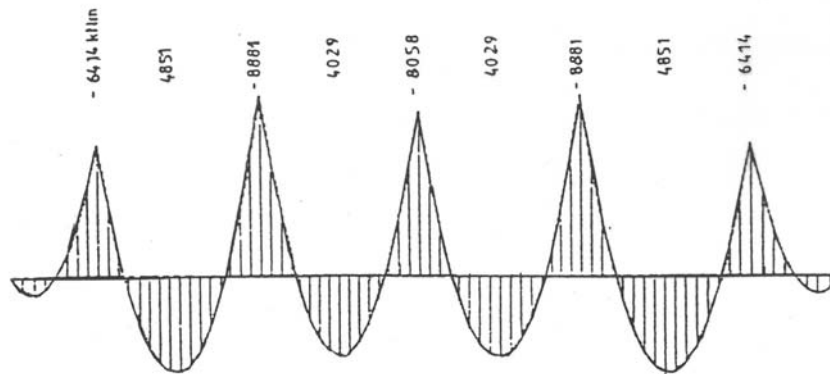
**To reduce the depth
Dr. Tibor Sigray
suggested
continuous
bar-stayed
steel girder bridge of
six spans**



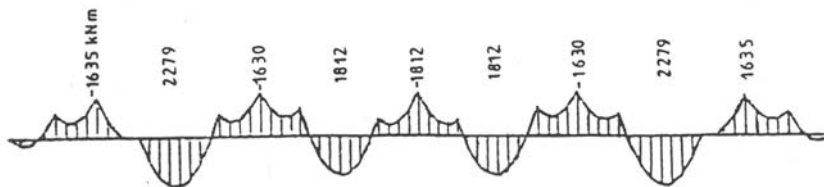


The realized structure
(Photo by Tamás Simonyi at the load testing of tram track on 15 February 2015.)

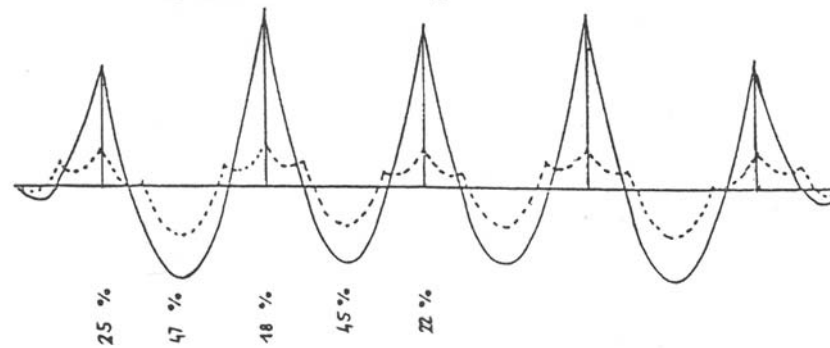
Gerendahíd nyomatókai 10 kN/m megoszló teherből



Ferde rudas hídszerkezet nyomatókai 10 kN/m megoszló teherből



Ferde rudas felszerkezet nyomatókai a gerendahíd nyomatókainak százalékában 10 kN/m megoszló teherből



----- Ferde rudas híd
 ————— Gerendahíd

**Effects of the
 skew bars
 in decreasing
 the moments**

CONSTRUCTION OF RIVER PIERS

totally new method (UVATERV – Hídépítő)
to reduce the construction time and minimize the works
to be done in water



Placing the precast lower casing
element (then pile boring)

lifting upper casing element with
steel casing wall

At first at Hárosi Danube-
bridge
in 1987-88





Underwater concreting
water pumping

In dry construction pit:
r.c. pile-caps
r.c. pier-walls

Then the steel casing wall is
lifted off,
and used again





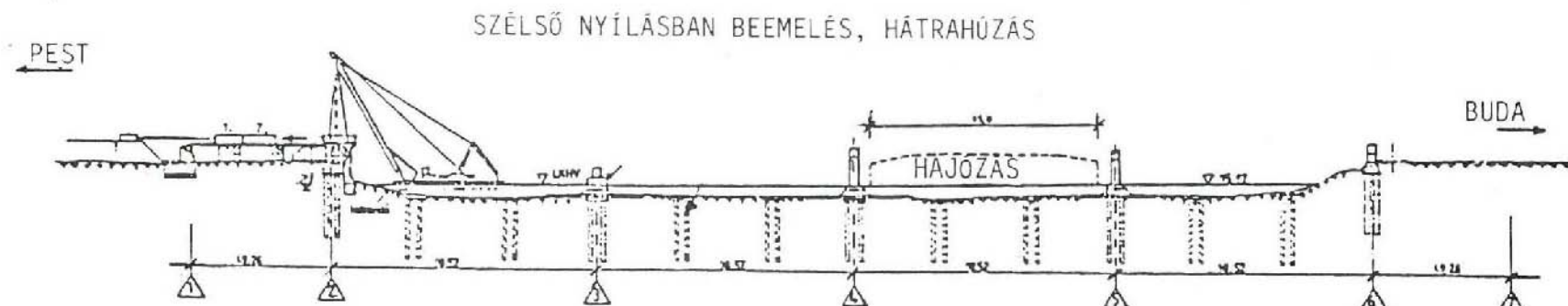


Site connections

- Bottom flange, web with high strength friction grip bolts
- Deck-plate, troughs welded

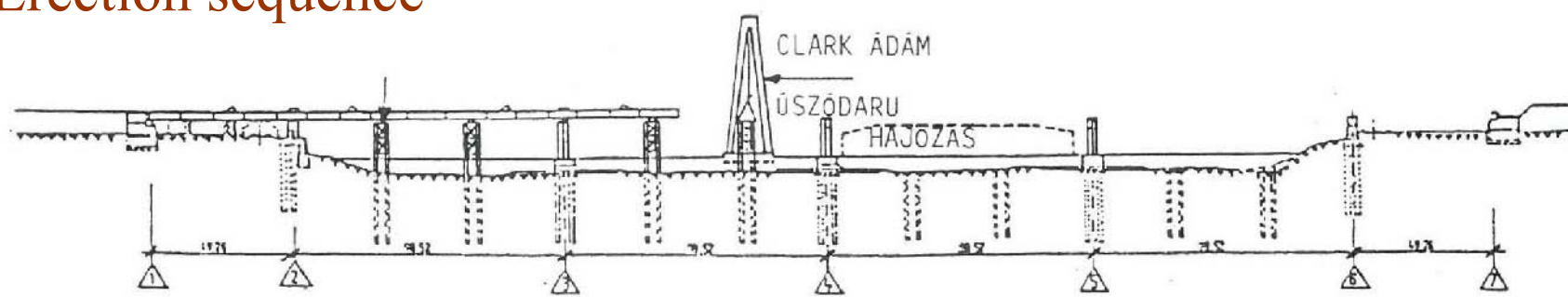
Temporary connection
between the deck-plates
by DYWIDAG bars



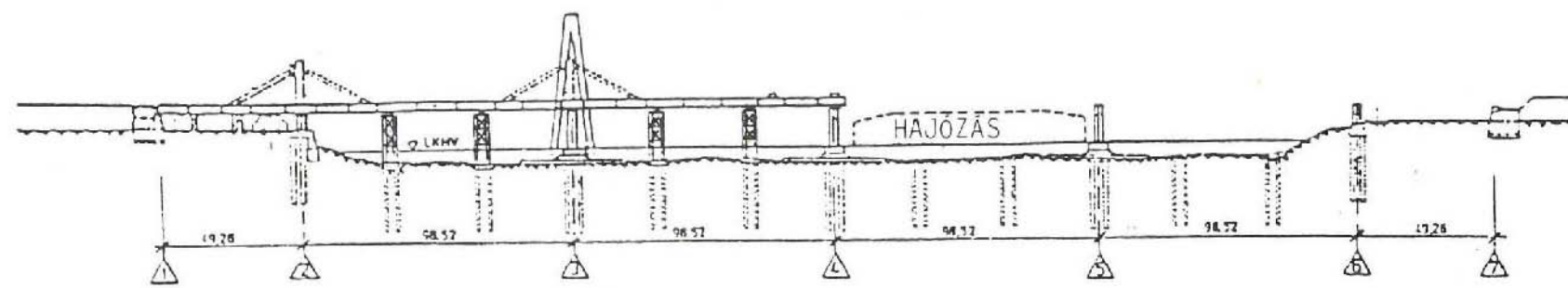


SZEKRÉNYTARTÓ TOVÁBBSZERELÉSE ŰSZÓDARUVAL 4 PILLÉRIG

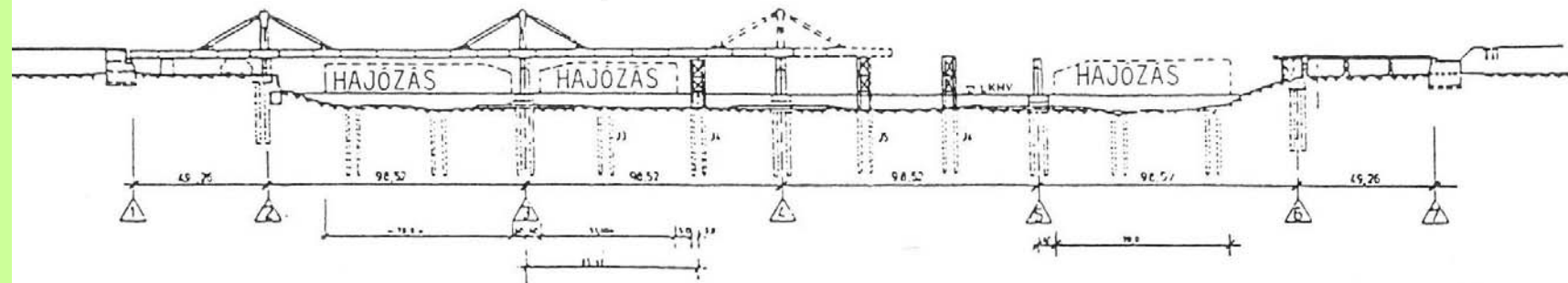
Erection sequence



PILON BEEMELÉS, FERDE RUDAK ELHELYEZÉSE, BEKÖTÉSE

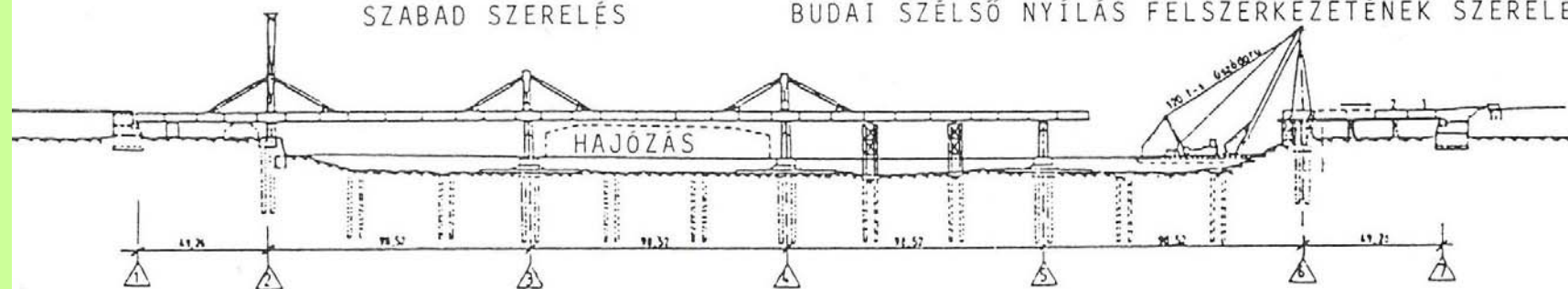


JÁROM FELSZERKEZETEK ÁTHELYEZÉSE, PILON, FERDE RUDAK SZERELÉSE

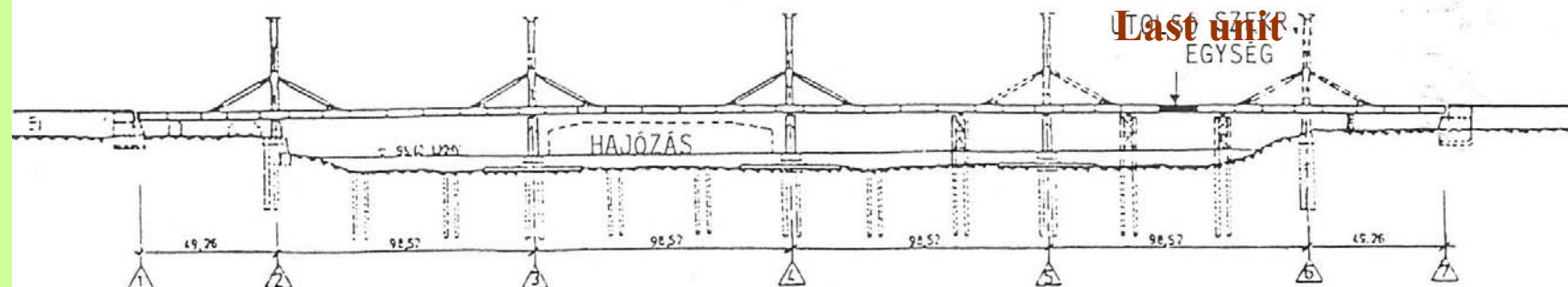


SZABAD SZERELÉS

BUDAI SZÉLSŐ NYÍLÁS FELSZERKEZETÉNEK SZERELÉSE



SZEKRÉNYTARTÓ ZÁRÁS; PILON, FERDE RUDAK SZERELÉSE $\triangle 5$, $\triangle 6$ FELETT, VILLAMOSPÁLYA ÉPÍTÉS
KÖZVILÁGÍTÁSI SZERKEZETEK ELHELYEZÉSE, SZIGETELÉS, ASZFALT BURKOLAT KÉSZÍTÉSE



Last unit
EGYSÉG



1994. April 9 and 14

Temporary supports:

transferable
steel structure of tubes,
founded on bored piles

4 pieces of $\Phi 1500$ mm



1994. June 27



Lifting in the last steel elements

1995. May 17



May 18



Outstanding persons in the design, realization (without Contractors):

Main designer: Dr. Sigrai Tibor - Head of Bridge Department

Dr. Knebel Jenő

Szánthó Pál

Kiss Lajos

Földvály Kálmán

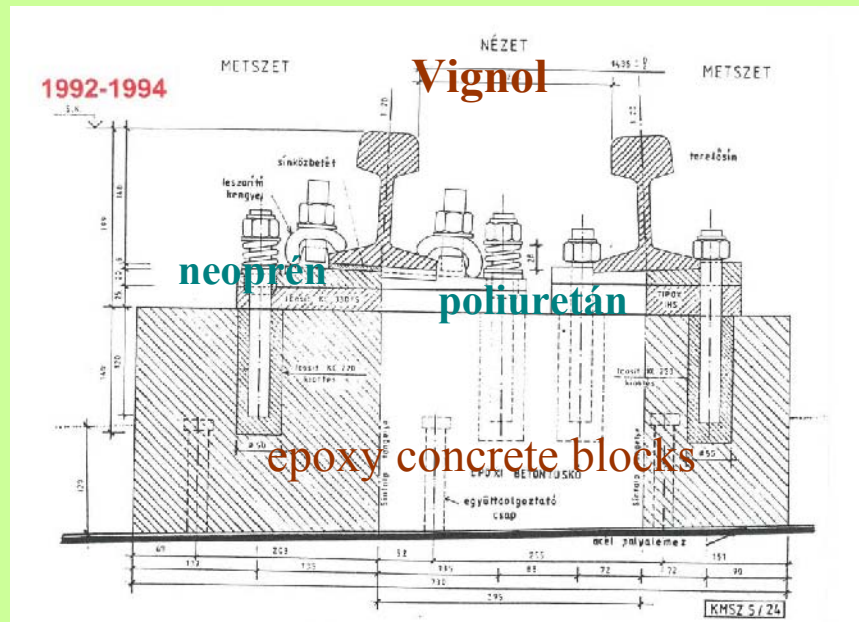
Bors Ernő

UVATERV

Consultant: Forgó Sándor

Engineer: Schuszter Antal
(METRÓBER)





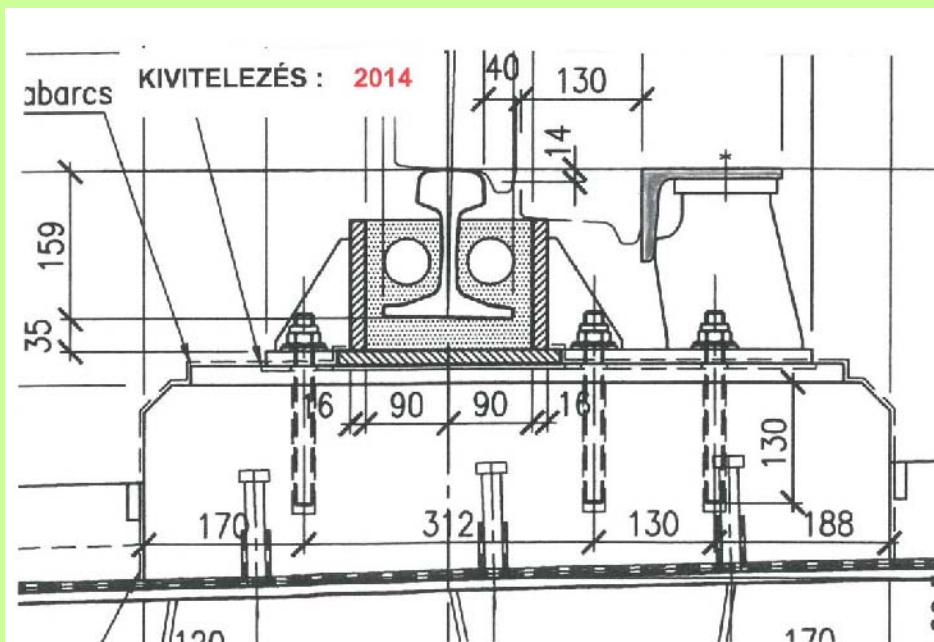
TRAMWAY TRACK

Original design
(Designer: Rosnyay András)

Due to financial reasons
it was not built at that time

1995. Aug. 30.





Execution

Designer: Kovács Zsolt
Kalászi Pál



2014. September 18.

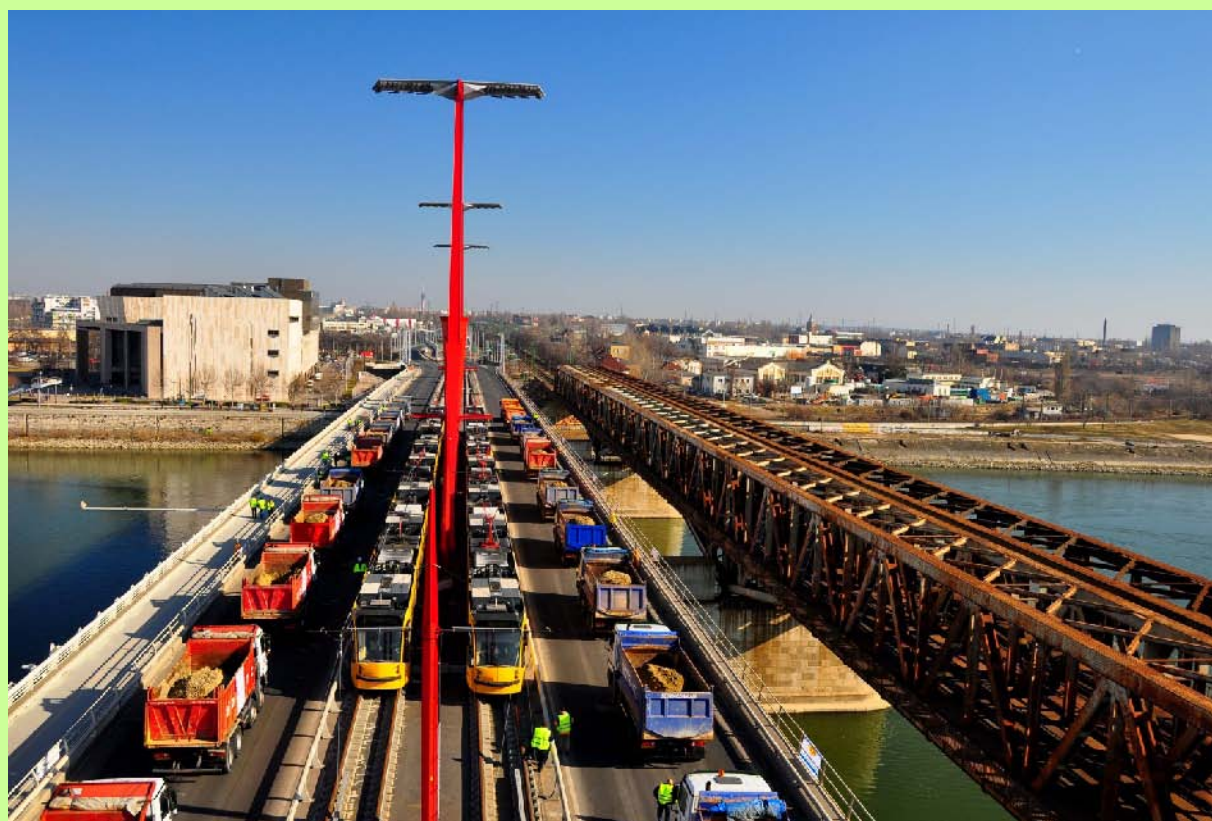


Load tests

1995. October 21-22

Equal to load Class "A" on 2x3 traffic lanes

2015. February 14-15
(Photo by Tamás Simonyi)



**Thank you
for your kind attention!**