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3. Standard Road Bridge as Highway Overcrossing in Czechoslovakia

Owner: ONV Chomutov

Engineer: Substructure: KPÚ ÚSTÍ n/L; superstructure:
Faculty of Civil Engineering, TU of Praha

Contractor: IPS, n.p., Praha

Dimensions:

span length: from 18 to 30 m

bridge width: from 6,5 to 14,5 m

angle between axes highway/overcrossing: moderate

maximum grade: no special limitation

Quantities of materials used pro m² of bridge:

0.17 m³ concrete for superstructure (span 20 m)

0.35 m³ concrete for substructure (usual foundation conditions)

180 kg steel

Work's duration:

Service date: 1977

A new type of a standard road bridge for spans of 18 - 30 m, with a roadway width of 7,5 - 18,0 m, was developed in the Czech Technical University of Praha, department for Steel Structures and Bridges (table 1). The first bridge of this type is now under construction in Western Bohemia.

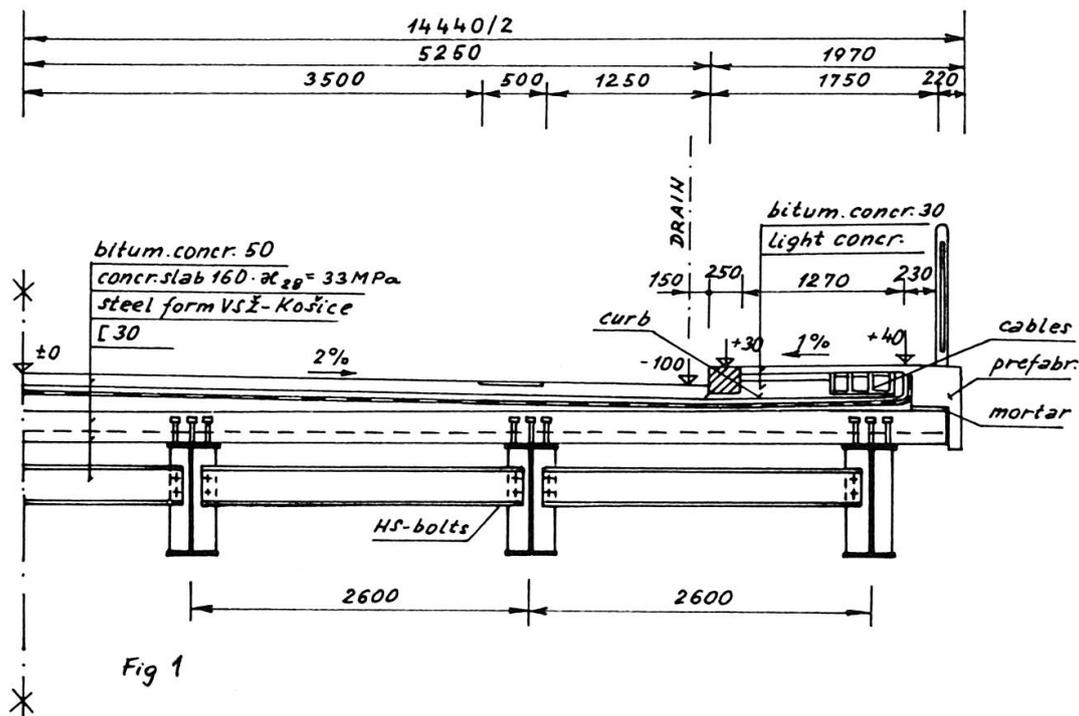
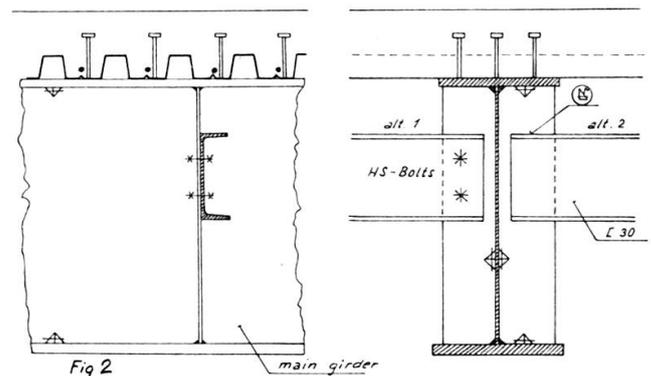
The composite superstructure consists of steel plate girders (steel 37, automatically produced in series in Vitkovice Steelwork, VŽKG Ostrava) and of a concrete bridge deck cast in situ. No scaffolding is necessary; the cold formed trapezoidal steel sheets from East Slovak Steelwork, VSŽ Košice, are used as the form for the concrete slab. This steel form is supported on the top flanges of steel girders and goes through the total width of the bridge deck (Fig. 1).

Experimental studies were directed to 3 main problems:

- Bearing capacity of shear connection between this special type of concrete deck and steel girders under repeated load
- Welding of shear connectors through the zinc plated sheets to the painted top flanges of steel girders
- Protection against corrosion of steel members, including the surface of top flanges under the steel form.

For the corrosion protection a special painting which enables the 'through sheets arc welding' (Peco-Nelson) of stud connectors must be applied. The bearing capacity of stud connectors is substantially increased by additional reinforcing bars lying across the bridge width in concrete ribs at the studs roots (Fig. 2). In transverse direction the main girders are connected with rigid cross beams at the supports, in case lifting of superstructure from bearings is desirable, and with intermediate slender channels in L/4 spacings. Erection joints and splices are welded or bolted with HS-Bolts.

(J. Pechar, J. Studnička)





Type	Roadway Categ.	Side walks (m)	Curb strip (m)	Distance B between handrails (m)	Cross section scheme
1	S 7,5	--	2x0,50	6,50	
2	S 7,5	2x1,25	--	9,00	
3	S 7,5	2x2,00	--	10,50	
4	S 9,5	--	2x0,50	9,50	
5	S 9,5	--	--	11,00	
6	S 9,5	2x2,00	--	12,50	
7	S 11,5	--	2x0,50	11,50	
8	S 11,5	2x1,25	--	13,00	
9	S 11,5	2x2,00	--	14,50	
10	S 15	--	2x0,50	15,00	
11	S 15	2x2,00	--	18,00	

Tab. 1