



General view of the Huangpu Great Bridge.

# The Huangpu Great Bridge

## – unique suspension and cable-stayed bridge complex

In China, the Huangpu Great Bridge was recently built across the Zhujiang River near Guangzhou City [1-2]. Huangpu1 is a suspension bridge with a span of 1108 m, one of the longest built in the 2000's [3]. Huangpu2 has a span of 383 m, 2nd longest among 1-tower cable-stayed bridges worldwide.

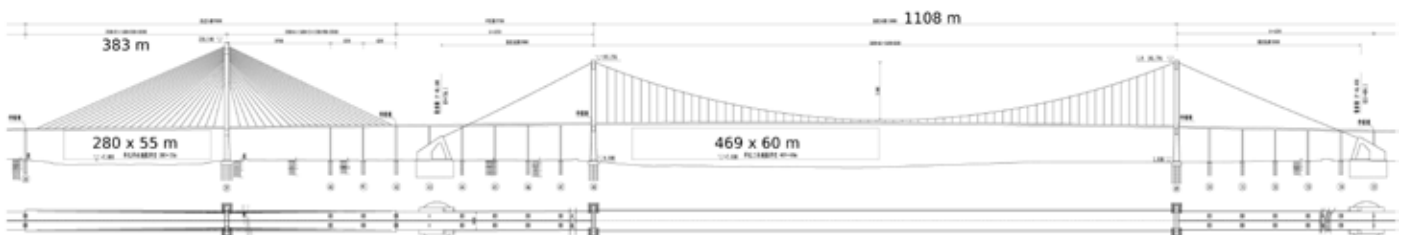
The Zhujiang River is about 2200 km long, third longest in China after the Yangtze and Yellow rivers, and it discharges to the South China Sea between Hong Kong and Macao. Guangzhou, capital of the Guangdong province, is situated along the Zhujiang River,

about 150 km north-west of Hong Kong.

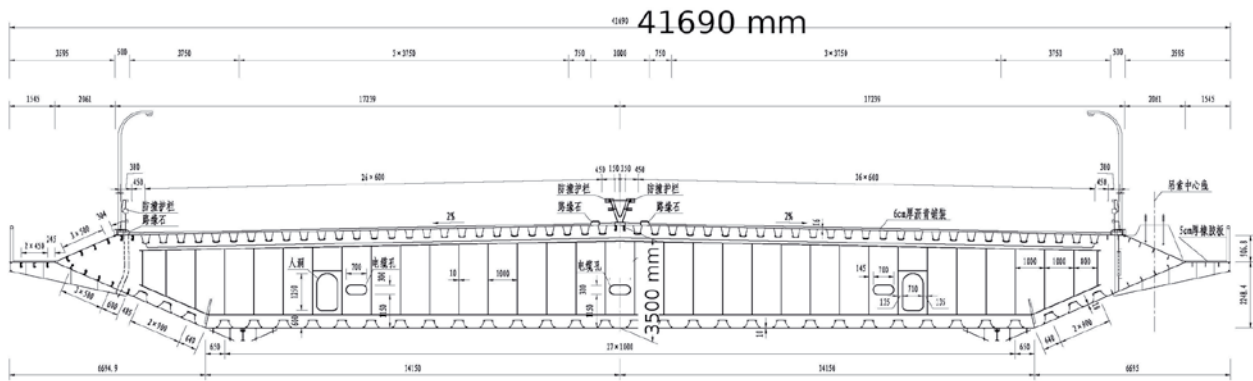
At the south shore of the river, the Huangpu1 Bridge is an ordinary 2-tower suspension bridge. Only the 1108 m long main span is suspended by hangers from the two main cables, while the both side spans are sup-

ported by underneath columns. The main cables are anchored to block anchorages at side span ends. The spacing of the hangers is 16 m along the bridge.

At the north shore of the river, the Huangpu2 Bridge is a 1-tower cable-stayed bridge



Longitudinal profile and plane of the bridge.



Cross-section of the deck.

with a main span of 383 m, 2nd longest in the world. The opposite side span near the suspension bridge is 197 m long.

The towers of the both bridges are made of concrete. The single tower of the cable-stayed bridge is 201 m tall, while the 2 towers of the suspension bridge are 189 m tall. The deck structure of the both bridges consists of a streamlined steel box girder, structural height 3,5 m, overall width 41,7 m. The vertical clearance at the cable-stayed bridge is 55 m, at the suspension bridge 60 m.

The client is the Chinese Ministry of Communications, and the consultant is the First Prospecting & Design Research Institute of Highways at Xi'an. The bridge was completed in 2008.

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Illustration:

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Bridge tower under construction.

### The world's 20 longest-span suspension bridges, [3]

No.	Bridge	Span	Location	Year
1	Akashi-Kaikyo	1991 m	Kobe-Naruto, Japan	1998
2	Xihoumen	1650 m	Zhoushan, China	2008
3	Great Belt East	1624 m	Korsor, Denmark	1998
4	Gwangyang	1545 m	Myodo-Gwangyang, South Korea	2012
5	Runyang South	1490 m	Zhejiang, China	2005
6	Nanjing-4	1418 m	Nanjing, China	2013
7	Humber	1410 m	Kingston-upon-Hull, Britain	1981
8	Jiangyin	1385 m	Jiangsu, China	1999
9	Tsing Ma	1377 m	Hong Kong, China	1997
10	Verrazano-Narrows	1298 m	New York, NY, USA	1964
11	Golden Gate	1280 m	San Francisco, CA, USA	1937
12	Yangluo	1280 m	Wuhan, China	2007
13	Höga Kusten	1210 m	Kramfors, Sweden	1997
14	Mackinac	1158 m	Mackinaw City, MI, USA	1957
15	Aizhai	1146 m	Hunan, China	2011
16	Huangpu-1	1108 m	Guangzhou, China	2008
17	Minami Bisan-seto	1100 m	Kojima-Sakaide, Japan	1988
18	Fatih Sultan Mehmet	1090 m	Istanbul, Turkey	1988
19	Balinghe	1088 m	Guanling, China	2010
20	Taizhou	2 x 1080 m	Jiangsu, China	2010

Finland's 2 longest-span suspension bridges:

1	Kirjalansalmi	220 m	Parainen	1963
2	Sääksmäki	155 m	Valkeakoski	1963

## The world's 10 longest-span 1-tower cable-stayed bridges

No.	Bridge	Span	Location	Year
1	Surgut	408 m	Khanty-Mansi, Russia	2000
2	Huangpu-2	383 m	Guangzhou, China	2008
3	Flehebrücke	368 m	Düsseldorf, Germany	1979
4	Kao Ping Shi	330 m	Dapingding, Taiwan	2000
5	Karnali	325 m	Chisapani, Nepal	1993
6	Kniebrücke	320 m	Düsseldorf, Germany	1969
7	Daugava	312 m	Riga, Latvia	1981
8	Grenland	305 m	Frierfjord, Norge	1996
9	Dubrovacka Most	304 m	Dubrovnik, Croatia	2002
10	Novy Most	303 m	Bratislava, Slovakia	1972

### Finland's 3 longest 1-tower cable-stayed bridge spans:

1	Tähtiniemi (main span)	165 m	Heinola	1993
2	Tähtiniemi (side span)	127 m	Heinola	1993
3	Jätkänkynttilä	126 m	Rovaniemi	1989



### Finnish summary:

Helmijoen ylitse, lähellä Guangzhoun kaupunkia, on Kiinassa rakennettu ainutlaatuinen silta-kompleksi [1-2]. Huangpu1 on pitkäjänteinen (1108 m) riippusilta, joka sijoittuu maailman 20:n suurimman riippusillan joukkoon [3]. Huangpu2 on 1pyloninen vinoköysisilta, jonka jänneväli 383 metriä on lajissaan maailman 2. pisin.

#### References:

- [1] Information and material kindly given by the Nanjing Institute of Technology (NIT), and by the Tongji University Shanghai.  
 [2] LIU Shilin, FENG Yuncheng & DING Dajun: "Demanding double". *Bridge Design & Engineering* 2004:3, p. 35.  
 [3] *Bridge Tables of the Helsinki University of Technology (TKK)*, [www.tkk.fi/Units/Bridge/longspan.html](http://www.tkk.fi/Units/Bridge/longspan.html)