



DILLINGER HÜTTE GTS

STEELS FOR CONSTRUCTIONAL STEELWORK



SHANGHAI  
WORLD FINANCIAL CENTER



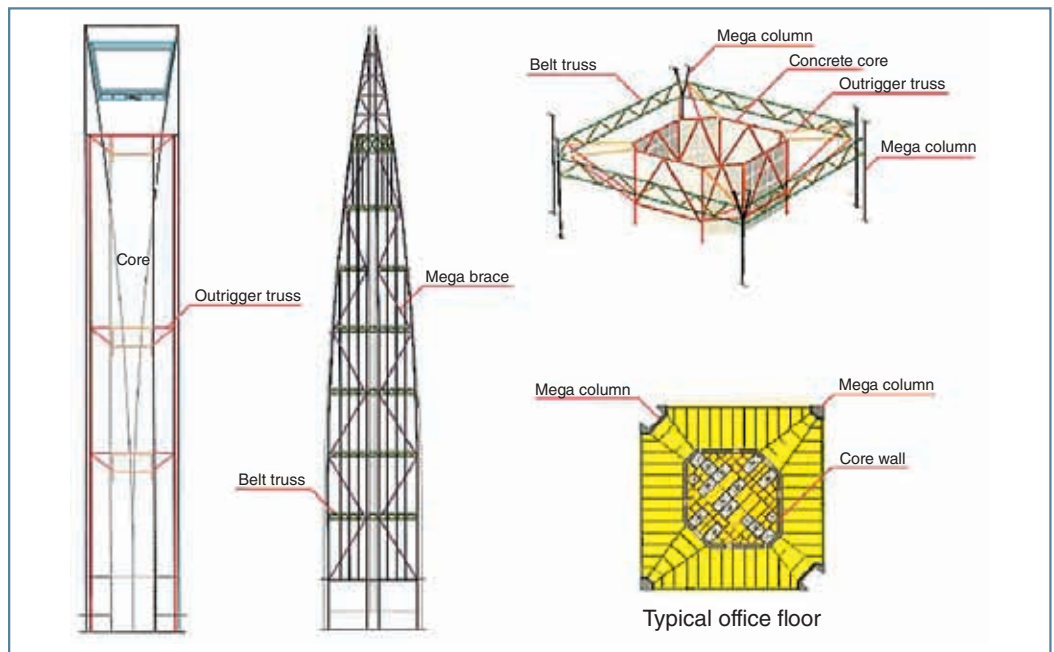
## STEEL AT DIZZY HEIGHTS

There is probably no other city in the world, with the exception of New York, with as many high-rise buildings and skyscrapers as Shanghai, including new tower blocks, such as the Shanghai World Financial Center, which seem constantly to be shooting up in this dynamic metropolis.



The World Financial Center was originally intended to be the world's tallest building, and was designed as early as in the nineties by the American Kohn Pedersen Fox Associates firm of architects. Initial excavation work started in 1997. However, construction activities were suspended in the wake of the Asian financial crisis and also during the attacks of September 11, 2001, but it was, ultimately to be resumed in 2003 by a Japanese consortium headed by Mori Building Co.

With a height of 492 m and 101 floors, the building became, upon its inauguration on August 30, 2008, China's tallest building and the third highest in the world.



### A very special structure

The revised planning incorporated a modified support structure and enhanced safety precautions. The building now features a concrete core, with four mega columns at the corners, linked to one another by truss belts and to the core by bracing elements. These mega columns comprise a welded core consisting of heavy plate, with a concrete outer casing. This design was selected to assure the building's stability even in case of disasters such as earthquakes; as the loads exerted by the building are transmitted by the mega columns directly into the foundations.



Dillinger Hütte GTS supplied for this very special structure around 23,000 t of heavy plate, of which some 15,200 t consisted of ASTM A572 Grade 50 with a thickness varying between 45 and 100 mm, and approximately 7,700 t of thermomechanically rolled high-strength fine-grained structural steel DI-MC 460, in thicknesses ranging between 20 and 100 mm. Steels with special deformation properties in the thickness direction (Specification Z25) were also used in specific cases, in order to assure the necessary high flexibility of the structure. The plate material was firstly transported by sea to China, where it was welded together to make the beams and support elements in the steel-fabricating

workshops. The completed components were then conveyed to the site, where they were lifted into position and then welded or bolted together.

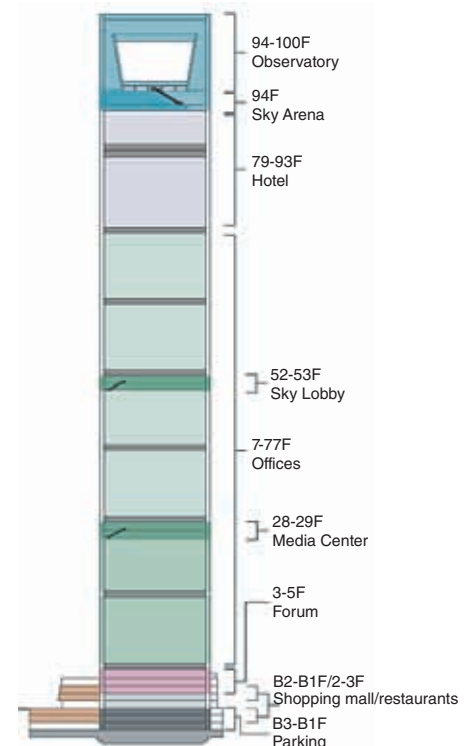
### Why DI-MC?

Our thermomechanically rolled fine-grained structural steels DI-MC are notable for their greatly reduced carbon and alloying-element contents, in addition to their high strength reserves – features which result in excellent working properties including, in particular, superior weldability compared to standard structural steels.

### World's highest viewing platform

This distinctive feature takes the form of an aperture through the top of the building. Here, at the dizzy height of 472 m, on the 100th floor, is the world's highest viewing platform. An enclosed walkway enables visitors and employees to move from one section of the building to the other. The aperture has a trapezoidal geometry, this quadrilateral shape being an ancient Chinese symbol of the earth, is emphasizing the tower's role as a link between heaven and earth.

The World Financial Center in Shanghai's Pudong business district thus provides the city with yet another striking symbol, incorporating not only offices, restaurants, conference centers and shopping malls, but also a luxury hotel.





Photos: © Dillinger Hütte, Mori Building

## Shanghai World Financial Center

Project owner:	Shanghai World Financial Center Co., Ltd.
Project architect and engineer:	Mori Building Co., Ltd.
Design architect:	Kohn Pedersen Fox Associates P.C. (KPF)
Structural engineering:	Leslie E. Robertson Associates R.L.L.P. (LERA)
Constructor:	China State Construction Engineering Corporation Shanghai Construction Group
Heavy plate supplier:	Dillinger Hütte GTS



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