



Bank of China - 20th Anniversary Report

Beijing, China



Architect
**PEI PARTNERSHIP
ARCHITECTS**

Completion Date
2001

Contractor
**CHINA STATE ENGINEERING
+ CONSTRUCTION**

Products
CONCENTRATE, MODIFIED

Project Type
**GENERAL CONSTRUCTION
FOUNDATION**

Reflecting both the strength, stability and importance of the world's fourth largest bank, the Bank of China's landmark head office is located at No. 1 Fuxingmennei Street, Beijing, adjacent to Chang'an Avenue, the city's main east-west axis, which leads directly to both Tiananmen Square and the entrance to the Forbidden City.

Occupying an entire city block, the imposing building consists of two L-shaped components, with two sides of each afforded clear passage into the sumptuous central atrium. With no columns supporting it, the multi-pyramid skylight roof high above provides natural light to the most imposing atrium below, as well as 'nourishing' the Chinese garden elements.



Because of building height limits imposed by the district's regulators, architects chose to locate extensive 'habitable' facilities below ground, notably including a most impressive 2,000 seat auditorium plus modern restaurant and cafeteria facilities at level B1, while some other facilities are located as deep as five levels down.



The Bank of China Headquarter's Building, is recognized internationally as one of the representative works of the world-renown architect, I. M. Pei, who designed the building in conjunction with Pei Partnership Architects, (the principals of which are I. M. Pei son's, Chien Chung Pei and Le Chung Pei) and the Beijing based, Chinese Architectural Design Institute of the China.

Designed and then constructed in the late 1990s, The Bank of China Headquarters Building presented a great many challenges to both architects and engineers, including accommodating the district's building height restrictions while maximizing the 'habitable space' available within the allowable building alignments. Traditional waterproofing methods in China at the time would always involve the installation of membranes around below grade structures such as this, however, as the proposed five level basement was planned for development as office space rather than simply for car parking, leaving enough room at the perimeter to allow for the proper installation of a membrane would have required a substantial sacrifice of extremely valuable space. The solution to this quandary was finally offered by the North American office of the Pei organisation who proposed the use of Xypex 'Concrete Waterproofing by Crystallization' technology. At that time, Xypex had rarely been used at all in China, however, within North American there was almost 30 years of experience with its performance and reliability.

Mr. Xue Ming, now Chief Architect of the Architectural Design Institute of the China Academy of Building Research recalls: “I participated in this project right through those early stages of design and then construction, so I spent half a year in the United States in order to work closely within Mr. Pei’s design team. From our ‘China side’, when Xypex was introduced as a likely solution, there was quite a deal of concern about this new and untried (in China) technology, to be used ‘stand alone’ to meet our ‘perfect waterproofing’ requirement for what was planned to be one of Beijing’s most iconic 21st Century structures! In a way, most everyone in our design team was not very ‘good at heart’ at first and yet, here we are 20 years on and the outcome has been most satisfactory in every sense”.



During a brief ceremony in January of 2019 at the Bank of China Headquarters building held to recognise the 20th anniversary of completion of the building, Mr. Xue further commented “Especially after 20 years of testing, it proves that this waterproof material is very good, and because of this project in particular, our Chinese engineers and technicians are now competing against each other; challenged to find more efficient ways and means of ‘future proofing’ our buildings. I have been very impressed with the intuitive understanding of the performance and characteristics of concrete materials.”



The decision was finally made to proceed with the ‘Xypex’ solution and, on completion of the project, more than 60,000 m² of foundation structures were treated with Xypex Concentrate, providing everlasting concrete waterproofing and protection. The designers choice of Xypex also saw the ‘pioneering’ within China of the repairing and waterproofing of diaphragm walls, enabling these structures to become the primary – and most often the only – waterproof barrier for below grade structures.



Also attending that January ceremony, Mr. Fang Yicang (Tony), General Manager of Beijing Chengrong Waterproof Material Co., Ltd., the licensed Xypex manufacturer and distributor for all of China, commented: “The Bank of China Head Office Building is an iconic project, and was at the time, the most significant milestone for Xypex and for cement-based, permeability reducing crystalline materials in the Chinese market. In the 1990s, our domestic engineering community had very little understanding of crystallization waterproofing materials, and the degree of trust was very low. The general contractor for the project tried other waterproof materials to replace Xypex, but ultimately failed”.

“It can be said that because of the excellent performance of Xypex in the Bank of China project, the ‘door was opened’ to our acceptance in general construction projects. The industry quietly began to accept cement-based, crystalline technology, leading to our circumstance today

where in Beijing alone, we have a thousand or more, successfully completed Xypex project involvements”.

Representing the management of BOC’s subsidiary company, Sun Chung Property Management (China) Co., Ltd., manager Zhang Quizeng stated that they are completely satisfied with the waterproof effect of Xypex. Since completion and throughout the ensuing 20 years, there has been hardly a single ‘waterproofing repair or mainte-

nance’ incidence of record, clearly proving that Xypex materials are both reliable and trustworthy. Our particular thanks go to Xypex for their valuable contribution of Xypex technology to the maintaining the integrity of the Bank of China Headquarters building!

Ms. Wang Yuanqi, deputy general manager of Beijing Cheng Rong Waterproof Material Co., Ltd. recalled: “The Bank of china headquarters project was also a milestone for us at BCRWM – it was our first major project of such size and complexity. Over the course of a full year we were required to maintain a team on site at all times during the construction of the sub structure and as the local authorities did not allow any heavy vehicles in the precinct during daylight hours, so much work, including our replenishment of stocks, etc., had to be carried out overnight. Some of our senior colleagues almost became thoroughly nocturnal – creatures of the night!”

Mr. David Lynch, Technical Director for Asia for XYPEX CHEMICAL CORPORATION, said: "The Bank of China Head Office building is a classic example of Architect I. M. Pei's work and will always be an influential project in the world of architecture, and I must say that it is a unique opportunity to be here today with my friends and colleagues, to observe the impact of that decision made more than 20 years ago in far away New York. Twenty years 'in service' is a reasonable 'test of time' for a Xypex treated structure and what we can see here at the BOC Headquarters stands as tangible proof of the quality and performance of Xypex. It also stands as a testimony to the dedication and commitment of our distributor Beijing Cheng Rong Waterproof Material Co., Ltd., to deliver on the Xypex promise of uncompromising quality and service anywhere throughout the world."

(On January 9, 2019, Mr. David Lynch, Technical Director of Xypex, and Mr. Fang Yicang, General Manager of Beijing Cheng Rong Waterproof Material Co., Ltd., the general agent of Xypex China, (who was involved in this project), Ms. Wang Yuanqi and Mr. Xue Ming, Chief Architect of the Architectural Design Institute of the China Academy of Building Research, visited the BOC headquarters in Beijing and were warmly received by senior management of the Bank of China as well as their property management company, Sun Chung Property Management (China) Co., Ltd. Following a brief meeting and some refreshments, the visitors were conducted on an inspection of as much of the Xypex protected areas as are visible / accessible today, given that below grade levels are given over to proportions 'less of carpark and more of habitable space'.



From picture left:

Wang Yun - Principal Architect, Architectural Design Institute, China Academy of Building Research

Xue Ming - Chief Architect, Architectural Design Institute, China Academy of Building Research

David Lynch - Xypex Chemical Corporation

Zhang Quizeng - Sun Chung Property Management (China) Co., Ltd.

Tony Fang Yicang - Beijing Cheng Rong Waterproof Material Co., Ltd.

Steven Zhang Wei Chen - Beijing Cheng Rong Waterproof Material Co., Ltd.

Ms. Wang Yuanqi - Beijing Cheng Rong Waterproof Material Co., Ltd.