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ABSTRACT

DOING BUSINESS IN CHINA: A PRIMER FOR FOREIGN ARCHITECTS

**by
Shijie Wu**

With more and more U.S. and other foreign businesses investing in the Chinese market, it is a good time for American architectural firms to enter this great market and play an important role. This thesis analyzes the prospects and feasibility of cooperation between U.S. and Chinese architects by investigating China's construction market, architects and firms.

In an overseas investment and architectural project, foreign and Chinese architects have to learn how to co-operate. They will encounter many special problems in this new work, which is very different from projects in their own countries. American architects and businessmen urgently need a reference guide to understand Chinese architectural laws, standards and code, and how to work in China with Chinese architects and government officials.

This thesis provides firsthand material collected from recent foreign investment projects in China. It is hoped that this thesis will be a guide for U.S. architects who are interested in working in China.

**DOING BUSINESS IN CHINA:
A PRIMER FOR FOREIGN ARCHITECTS**

**by
Shijie Wu**

**A Thesis
Submitted to the Faculty of New Jersey Institute of Technology
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CHAPTER 1

INTRODUCTION

Across East and Southeast Asia, the architectural profession faces a momentous challenge, Asia is riding a widespread economic boom, one so potent that *The Economist* says the modernization of Asia is likely to be the most earthshaking public event in the lifetime of those living today. Countries such as Indonesia, Malaysia, and above all the People's Republic of China are hungry for monuments to their fast-rising prosperity. Galloping toward industrialization at a pace that makes Western economies look practically indolent, the modernizing nations of the East are providing plentiful work for The U.S. architects. But the buildings being produced raise nettlesome questions about the responsibilities architects should bear when they take their advanced technical skills into societies that have had little experience with the problems that large, modern, Western-style development brings.

The economy is increasingly marked by global competition and global alliances, and architects have every right to hunt for jobs overseas, particularly at a time when opportunities in the United States have left some 15 to 20 percent of this country's architects unemployed or underemployed. Pursuing openings overseas is a way to grow during a period when U.S. market for offices, shopping centers, and hotels is still hobbled by overbuilding in the 1980s.

With the economical emphasis moving from Europe to Asia, China, the largest market in Asia, has become an interesting place for many companies and countries to invest. After being closed for forty years, the mysterious country opened to the world to begin her new

future in development. More and more business and countries were attracted by the great potential market.

China, with the third largest land and the largest population in the world, offers opportunities almost beyond comprehension. For many years, foreign businessmen and countries had tried to enter the market but they were refused entry to the country by the various governments. Western countries did open China's market to the world a hundred years ago. In 1899, the U.S., Britain, Germany, Japan, Russia, France and Italy, forced China to open its market to the world by force; it was the Opium War (1840-1842). This cast a long shadow over the nation. But it also gave an ancient and less-developed country good economic life, and new social and scientific technology.

Today, China wants to make use of foreign investments to develop its economy. It finally understands the importance of connecting with the world economy. The relationship of countries in the world is so important that one country can not develop its economy if it is separated from others.^[1]

China has been open to the world economy over ten years. Foreign investments have influenced the country's economy and have changed the cities and countryside. This is especially apparent in the construction fields. Foreign investment projects carried out with new styles and new technology form large scale, new, special constructions in China's cities.

In general, there are three forms of foreign investment in China:

A) Direct investment

Foreign businessmen have either whole shares, or cooperate with Chinese in sharing or managing their companies in China in cooperative development, in compensation trade, or

in processing an investor's raw materials.

B) Different kinds of credits

This includes loans from foreign countries' or from international financial organizations loans with middle and low interest rates, export credits (including credit for buying and selling goods), private bank credit, bonds and stocks, and rental income from leasing properties.

C) Different forms of economic assistance grants

This includes the money, goods, materials, and technology provided for free by foreign countries, international organizations and privates. For example, China has loaned twenty four billion US dollars with no interest from IDA (International Development Association) since 1980.

This thesis describes the experience of foreign investors and architects who are working in China. The experience includes cooperating with Chinese architects, contacting Chinese officials, and using the procedures of construction progress and reviewing. Since no one has studied and summarized this kind experience of foreign investment, design and construction, it is a new challenge for us. This report will discuss some questions on the above issues.

In order to get good information for this thesis, I returned to China to investigate the market, to collect information from China's officials, architects, and I also visited several U.S. architectural firms.

I will discuss how China's construction market is run, what the procedure of the construction is, how to open a foreign architectural firm or a foreign company in China.

The systems in China are very different from the U.S.. What foreign architectural firms

should know and be ready for if they want to exploit the Chinese market is critical information. A major topic concerns emphasized on the details of the procedure of China's construction from the beginning of a project through registration, to project completion. Hopefully it will give a clear and useful help for U.S. architectural firms to operate their businesses in that country.

CHAPTER 2

DEVELOPMENT OF FOREIGN INVESTMENT IN CHINA

Working in China offers benefits for both of sides. China opened its market to attract foreign investment to push its economy to develop, while foreign investors benefit from the market. Construction is a producing tool. From the amount of investment, we can find the scale of construction. To understand the process of investment in China, it is good to find the source of projects.

2.1 History of Foreign Investment in China

In the history of mainland China, the first foreign investment project was China-Poland Steamship Cooperative Company cooperating with the city of Shanghai and Poland in 1950. Since then, no more foreign business were run in China until 1978, The foreign investment projects developed in mainland China are of small or middle size. The major foreign businesses have been compensation trades which attract foreign businessman to invest in enterprises and international renting businesses. Later China entered into direct international financial market to gain capital to run their own business. From 1979 to the end of 1985, China attracted and used 215 billion dollars in foreign investment; the loan portion was 175 million dollars; direct investment was 46 billion dollars. There were 2,300 Chinese and foreign enterprises involved in this investment, over 3,700 cooperative in the management of 120 independent investment and management companies. The sources of funds came from over 30 countries, in which the U.S. and Western European countries represent 35 percent of the gross. The projects extended over 23 provinces.

2.2 Shanghai's Development Influenced by Foreign Investment

Shanghai, the second largest city in China, has attracted and collected some of this foreign investment, and set up China-foreign businesses. The new Shanghai is to be a symbol of the new China: rich, big, modern, flashy. Therefore, Shanghai's development could represent China's development. In the history of Shanghai-foreign cooperative business, it has gone through four periods. From this, we can find out how Shanghai's economy has been growing. It is a good news for foreigners because they are often confused or upset by the country that seems to have no rules in its economic activities.

2.2.1 Period of Experiment and Testing (1979~1983)

At the beginning of this period, Shanghai had no experience in cooperating with foreign business in the field of commerce, trade and finance. Foreign affairs' laws were just being established. It was a time for both Chinese and foreigners to seek out and understand each other. During the period of 1979~1983, only 20 foreign investment enterprises were founded; the gross was less than 10 billion dollars from foreign investors. The cooperative enterprises were in textiles, elevators and perfume. Construction was done in the style of industrial, and official buildings.

2.2.2 Period of Development (1984~1985)

In 1984, the State Council of the People's Republic of China decided to open 14 coastal cities including Shanghai. Since then, Shanghai speeded up the pace of cooperation with foreign business. In 1984, there were 43 foreign investment enterprises founded with the gross of three billion dollars. It was twice as much as the previous five years.

In 1985, 96 foreign enterprises were founded with a gross of 60 billion dollars. At the end of that year, a total of 160 enterprises were founded with a gross of 12 billion dollars. Factory buildings, workshops, business buildings, and hotels were built. Hotels occupied a greater ratio of the total construction because they could provide living and office spaces for foreign investors, from which was gained a great amount of foreign exchange.

2.2.3 Period of Forming and Adjusting (1986~1989)

Since 1986, foreign investment projects in Shanghai were in a period of forming and adjusting. In 1986, there were 62 foreign investment ex-enterprises founded with the gross of three billion dollars. The investment speed was declined compared with the previous year. The reason was Shanghai city government thought that the construction of foreign investment projects needed to be adjusted, and that hotels invested in by foreign business should be controlled and limited. On the other side, production for export and the advanced technology were developed and popularized. In this period, construction was mainly important in industrial development.

2.2.4 Period after June 4th (1989~1995)

In this period, the foreign investment business was badly influenced by a well-known political factor. On June, 4th, 1989, the Chinese government ordered its army to fire on students who were parading in Tiananmen Square of the capital of China. This action shook the world. It caused the strong condemnation from many countries of the world. Most foreign businesses paused because Western countries tried to use economic pressure to stop the Chinese government's oppressive actions.

International business kept running in this period and a new form of foreign investment in China was introduced renting land. Foreign investment projects are not limited to individual projects like setting up a factory, building a house but can enter in to comprehensive, such as investing in a developing region, renting a piece of land in a city. The scale of investment has become larger and larger. Foreign investors have the right to run any business on their rented land if the plan meets the code and city construction requirements. After the contract period is complete (generally thirty to fifty years), all fixed assets on the land will belong to China.

2.3 Prospect of Construction in China

North America and Europe have suffered from economic depression for years. In contrast, the economy in mainland China is doing much better. For last ten years, Chinese economy has performed strongly, growing rapidly after a setback for decades (see figure 1).

In December, 1978, in the Third Plenary Session of the Eleventh Central Committee, according to the suggestion of Mr. Deng, Xiaoping, ex-president of People's Republic of China, China made an important policy decision, of historic significance, to open its economy to the world. It was the first time that China willingly opened to the world, and welcomed foreigners to invest and do business. China, with the third largest land mass and the largest population in the world, has a market is too large to be imagined.

Since this closed country opened to the world, and began to develop in almost every field, the requirements for capital construction have been rising sharply. It is a great potential market attracting many countries around the world. Also, a large market for construction is being formed, introducing and exploiting foreign technology and financial loans.

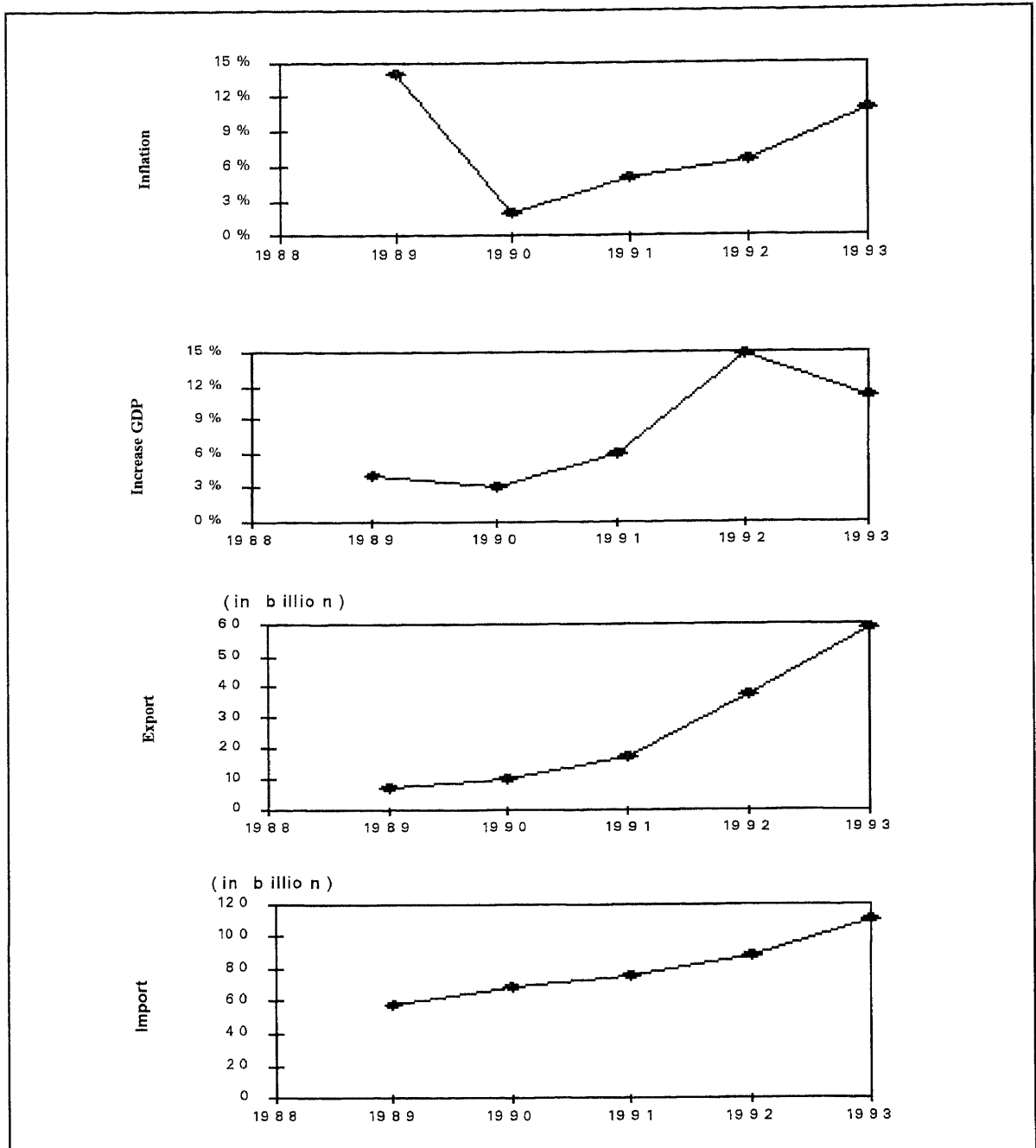


Figure 1. Chinese Economic Parameters

In order to develop their economies, many provinces set up special economic zones called Free Trade Zones. There are over 6000 FTZs in China right now.^[2] In these FTZs, the demand for buildings, roads and bridges, is quite large.

Shenzhen, one of the earliest Free Trade Zones was built on a piece of farm land in 1979, and the pace of construction in this area has not slowed down. There are at least 200 million square meters of space designed each year, which attracts almost all of China's architectural firms. They established their branches in Shenzhen.

Pudong, east of Shanghai, just separated from Huangpu River, and today's most important FTZ in China, has set up a fifty-year plan for development, and is trying to rebuild the financial and trade centers in Asia as they were in Waitan, Shanghai during the 1930's. The ambitious dream is to replace Hong Kong and become the leading tradecenter in the Far East. Today, Pudong has collected RMB 45 billion (US\$ 38 billion) from domestic and foreign companies toward its first five years plan. ^[3]

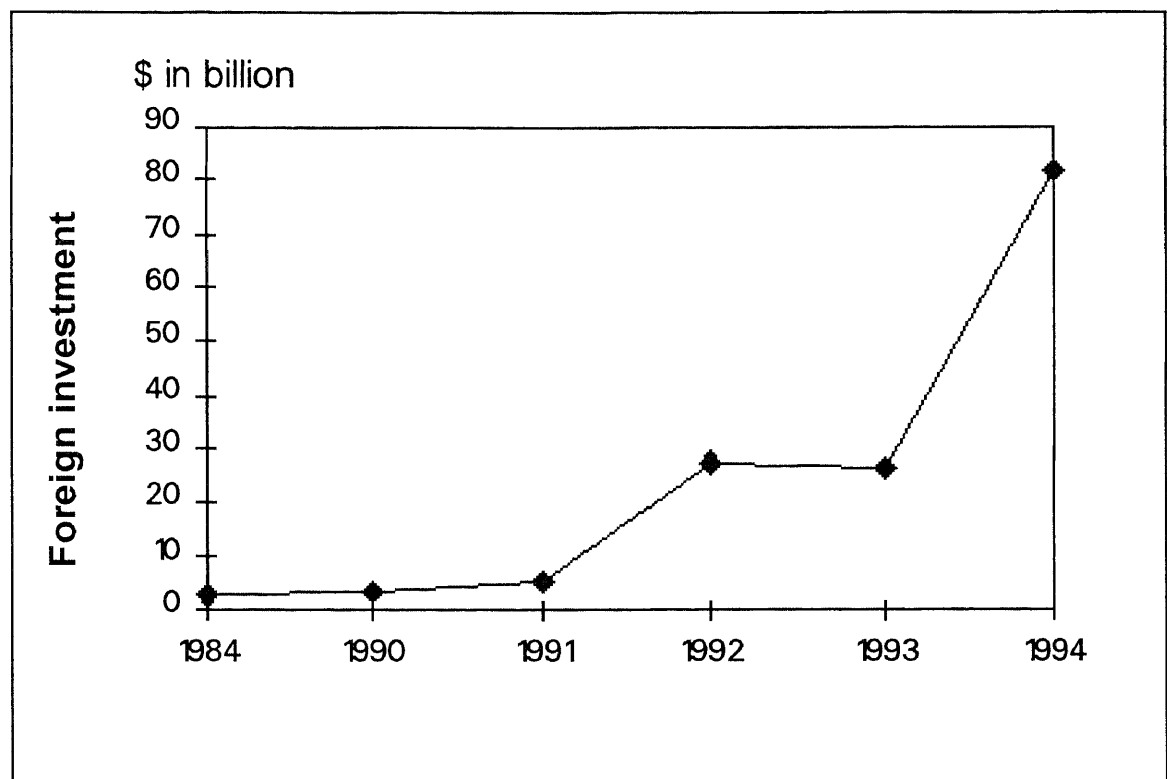


Figure 2. Foreign Investment in China by Year

Shanghai, the second largest city in China, which used to be called Manhattan in the East, Paris in the East, and the Heaven of Adventurers has taken advantage of its strong industrial base and technical skills, traditional business experience and consciousness to push the city forward so quickly that its features change daily. I was born in Shanghai and lived there for over 20 years. Last summer, when I returned to visit the city, the features of the city had totally changed and I did not know how to get to places I had visited five years before. From the overseas investment growth in current years, the bright prospect of the old city is obvious^[4] (See table 1 and 2).

Table 1. Comparison of Total Investment in China and in Shanghai (in billion)

Year	China	Shanghai
1991	\$ 40	\$ 9.5
1992	\$ 110	\$ 30
1993	\$ 170	\$ 70

Source: Nie, Chongzhang 1994

Table 2. Foreign Investment in Special Economical Zone

	Investment	Number of Companies
Yangpu (Shanghai)	HK \$ 180 Billion	177
Pudong (Shanghai)	US \$ 10 Billion	297
Tianjing	US \$ 4.3 Billion	700
Shanghai	US \$ 1.8 Million	1,117

source: Yi, Xing; Xi, Yangpu

Beijing, the capital and the largest city with its advantages of policy and finance, has set a magnificent plan for development. It is to build, within ten years (1994-2004), 100 world-class department stores and 10 commercial streets as large as Wangfujing street, one of the largest central shopping avenues in the city. According to the plan, 10 million square meters of construction are required for each year. The plan has attracted Hong Kong financial groups. Some of them are ready to invest.^{[5][6]}

Also, in its 2010 urban plan, Beijing plans to expand to reduce the pressure of population and transportation. The Beijing government has spent about RMB 10 billion (US\$ 8.6 billion) each year since 1987. The city will expand to 1,040 square kilometers, which includes building and renovating 14 satellite towns containing about 150 to 400 thousand population and over one hundred townships. For its future construction, the government decided to cooperate and use foreign investment and technology.^[7]

The city of Chongqing, not in a special economic zone but hungry for investment, told a developer he could acquire a site in the city's center, but only if he put up a building at least 100 stories high. HLW actually produced a design for a 114-story tower, which received a number of required approvals and then stalled, as many Chinese projects do. Guarantees of seeing a job completed, and of not being replaced by another firm, are elusive. "China," says Don Hackl, president of Loeb Schlossman and Hackl in Chicago, "is no place for the faint-hearted to the undercapitalized."

The construction market in other FTZs, although their sizes are only one fifth to one third as large as that of Pudong, Shanghai, and Shenzhen, are quite considerable.

2.4 Real Estate

Real estate is a window which reflects the construction market.

China did not have real estate business until 1989. This field has been growing very fast. As of 1993, seven thousand real estate companies have been opened. The investment reached RMB 700 (US\$ 602.86) million in 1993; and the sales value reached RMB 143 million (US\$ 89 million) in the same year, which was equal to about 14.37 million square meters of space built (see figure 3).

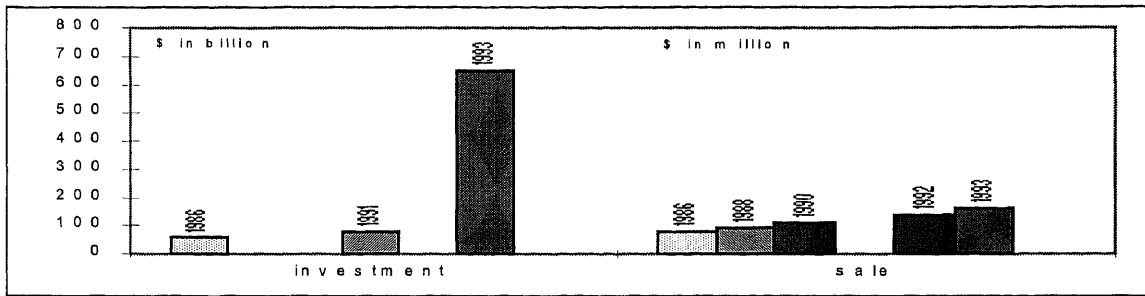


Figure 1. Chinese Real Estate Investment and Real Estate Sales (1986-1993)

Compared with the same period in 1992 and 1993, the investment increased 127%, construction areas 57.75%, and the volume of buildings 40.4%. Overseas investment in real estate has reached US\$ 100 million. The government plans to exploit 200 square kilometers every year for construction. This means that about 106.2 million square meters will be built in virgin land each year.^[8]

Although the real estate market has declined since 1995, demand exceeds supply. The information shows although there are 50 million square meters of building spaces overstocked, 27% residents live with less than four square meters per resident. The reason is that the price of the housing was too high for most consumers.^[9] Another reason is the construction of the high grade hotels and villas leading to saturation of the market. Meanwhile, the number of cities are still keeping increasing at a speed of 6% every year. Urbanization is inevitable with the country's industrialization. Commercially developed cities such as Shanghai, Guangzhou, Beijing, and Tianjing are expanding faster and faster. The construction for supermarkets, shopping centers and offices, banks still have great market. From figure 3, we can see the construction growth tendency in these cities. *The Economist* estimated the real estate would increase by 18% in next ten years.^{[10][11]} However, compared to other advanced countries, the real estate is only a small part of

Chinese GNP. The great future of it is reflected by the bright prospect of construction market^[12] (see table 3).

Table 3. Comparison of Real Estate in National Economics Structure by Years

	1992	2000	2020
China	2%	3-5%	10%
United States	10%	N/A	N/A

source: Lin, Dejin; Zhou, Gan-chi

CHAPTER 3

PROCEDURES OF FOREIGN CONSTRUCTION PROJECTS

3.1 Comparison of Procedures of Construction and Investment in China and Overseas

Every project setting has a procedure from proposal to production, which is the same in countries with planned economic system and countries with market economic systems.

The procedure generally has three periods:

A) pre-investment period (pre-construction period)

B) Investment period (construction period)

C) production period (running business period)

Architectural design is part of the investment procedure. If architects want to make a good design, especially for cooperative projects or for foreign independent investment projects in China, they should understand the difference in procedures in China and the U.S. resulting from the different economic systems of these two countries.

3.1.1 China's and Foreign Investment Procedure

China's construction procedure is divided into three periods and six steps. The following table shows the procedure

The characteristic of foreign countries (including the U.S.) with the market economy is that the pre-investment period is the most important period for making the investment decision. Therefore, the steps for working in this period are divided into more detail than in China's procedure.

China's economic system is a planned economy. The characteristic of China's construction procedure is that the pre-construction period has three steps, and each of them is directed by the planned economy. The planned economy system ensures if a necessary period of the pre-construction satisfies the requirements of national planned economic and the construction progress (see table 4).

Table 4. China's Construction Procedure

PERIOD OF TIME	STEP	CONTENTS
Pre-construction	Planning Investigating Feasibility Study	Scientific research & experiments for survey, prospecting, testing, & feasibility report editing
	Design Proposal	analysis, implement, approval design, design propose; editing
	Preliminary Design	Extensive preliminary design,
Construction	Design	Construction and detail design
	Construction	Constructing Equipment installation, Employee training, Trial running, Testing & checking
Operation	Producing	Starting to run and operate

China does not have this step in the pre-construction period, the similar work is done in their national economy planning.

A) Opportunity Study

The opportunity study is to discriminate investment opportunities and project proposal by information provided. In general, data from similar kinds of projects are compared.

Because the analysis and judgment of investment are pretty rough, the comparison gives a suggestion to tell investors about the feasibility of the projects (see table 5).

Table 5. The Procedure of Investment Projects with Foreign Market Economy

PERIOD OF TIME	STEP	CONTENTS
Pre-Investigation	Analysis & research investment opportunity	General opportunity study Individual project opportunity study
	Project preliminary choosing & decision	Preliminary feasibility research
	Drawing up project	Feasibility research
	Project estimation Investment Decision	Estimation research
Investment	Negotiation & contract	Negotiating Making contracts
	Project design	Concept design Basic design Detail design
	Construction	Constructing Equipment installation
	Training	Employee training
	Trail running	Operating test Producing test
Production	Producing	Put into operation

B) Preliminary Feasibility Study

This is a middle period between the project opportunity study and the detailed feasibility study. This study will provide a more detailed proposal for the project and estimate the feasibility of project.

C) Feasibility Study

The feasibility study provides the data on technology, economy and business for the decision of investment, in which the requirements of the market are a decisive factor. The

difference from the opportunity study is that the necessary data for the final investment policy are not taken from comparisons but from the bidding sheets of equipment suppliers. Since China published the document "Construction Project for Feasibility Study and Management Rules in Temporary Use" in 1983, feasibility studies have been used in the procedure of China's capital construction, technical renovation and technology import.

D) Project Analyzing Study

It will analyze the conditions of the project for technology, economy, financial affairs and management. The results of the estimation will decide the investment policy.

In the planned economy system of China, the decision of investment policy is different from countries with a market economy system. The department, bureaus or companies do research and compile the feasibility reports, and then send the reports to the National Planned Committee Department for approval.

3.1.2. Period of Investment

A) Period of Project Design and Engineering Design

This period includes progress charts, site survey and investigation, construction and equipment installation, engineering detail design, final technology and equipment chosen.

This period will start when the negotiations and contract are completely set. The steps in the period in China are preliminary design, extended preliminary design and construction design, which are pretty close to the U.S. idea design, capital design and detail design. The difference is the requirement and details of each step. For example, the U.S. detail design is different from the construction in China. These two countries have different systems in construction. Detailed drawings in the U.S. can not meet requirements of construction

drawings in China. Chinese construction drawings are more detailed than the US's. The reason is that The U.S. construction companies have the ability and responsibility for the engineering work of the rest of detail design. Chinese construction companies can not do that. All engineering work must be displayed on the detail and construction drawings designed by architects.

B) Period of Negotiations and Contract Setting

This period includes raising funds, technology import for projects, the negotiation and contract setting for the supplies of equipment of construction and public facilities during the period of production. In this period, investors enter into agreement and contact with financial institutions, design consultant firms, construction companies, equipment suppliers, patentees, the suppliers of material, public facilities and other relevant cooperators.

Mainland China does not have this period in current project construction in their planned economic system.

C) Period of Construction

This period includes site preparation, architectural and engineering construction, equipment installation and employee training.

D) Period of Trial Production of Enterprise

The third and fourth period are similar to the period of construction during project construction in China. The difference is in the contract between construction and management.

E) Period of Production

Architectural design and construction and management will directly influence operation

after putting the project into production.

From the comparison above, we find that China's construction procedure is based on the planned economy. The decisions and practices of a construction project must follow the government-prescribed procedures of capital construction.

On the other side, the characteristics of project-investment procedures in market economic countries, like the U.S. and other advanced countries is based on a market economy. Their construction project decisions and practices depend on the decisions of private investors. They will do a certain amount of investigation and research which will help them to make correct decision.

3.2 Construction Procedures for Foreign Investment Projects

Comparison of China's construction procedure with the market economy countries' construction procedure, in foreign investment enterprises can be divided into three periods:

A) Project establishment

This period is like the period of pre-investment and pre-construction. It includes the steps of project proposal and project feasibility research.

B) Construction

This period includes the steps of contract setting, project plan and design, construction, the check and trial of the project. It also includes employee training.

C) Production

In this period, the project starts to operate.

3.2.1 Period of Project Establishment

This is the period of preparing for construction. During this period, foreign investors should investigate the site for project, the range of business, the market of investment projects, the sources of material and energy, and the policy of China's government and local government. According to information collected and analyzed from this investigation, the foreign investors and their cooperators on China's side begin to choose and ensure the invested projects, and then, the China and foreigners investors draw up a project proposal and send the documents to China Foreign Economic Trade Department for approval.

The project proposal is always the first step for foreign investors to set up their projects in China. No matter whether they are individual or cooperative, these projects must have proposals which are approved by the departments or officials of Chinese government. The purpose of a project proposal is to transfer the project planning into the outline of investment suggestion. China often offers information to foreign investors by project proposal to arouse their interest. In turn, foreign investors should provide project proposals to explain the value of their projects.

When foreign investors answer the Chinese projects proposals, a preliminary policy could be made and the project proposal, the next step will start feasibility research for setting up the projects.

According to the characteristics of the planned economy of China, the investment opportunities for large or middle size projects are more easily approved. The reason is that the investment opportunities have been clearly demonstrated during planning research. For the small project, planning research could not profit it in details but their investment

opportunities are still studied and proofed under the direction of planning. When the China Foreign Economic Trade Department accepts the project proposal, the first things they pay attention to are whether the project is suitable to the development of their economy, the requirement and needs of their market, if these projects are advanced technology, and how about prospect of products imported. Then they make a decision if the project is valuable to be set.

This research is not “feasibility” in the broad sense. It does not include opportunity research and feasibility research with preliminary feasibility study, but is technology and economy feasibility research, which is to provide information and data for investors to make investment decisions on technical, economic and business matters. The decisive factors are the needs and requirements of market.

The process of feasibility research includes:

A) Setting up feasibility research contract

B) Collecting information including market, technology, natural sources, geographic environment, construction conditions, China’s national economy region plan, fiscal levy, hydrological data, survey and reconnaissance, prospecting; the initial agreement or draft proposal.

C) Analysis and researched

The research and analysis should be conducted by different professional experts, and should provide each individual with information under the conditions of the agreement.

D) Preliminary decision

It is one of the most important periods to determine the project setting when collecting all information together, and to make sure whether the projects is feasible or not.

E) Writing feasibility research reports

F) Pre-proofing

In this period, consultant firms and design firms must submit feasibility research reports and documents to the Local Preliminary Examined Departments which are responsible for checking the projects in one to three months. Meanwhile, the loan and investment funds from abroad should be mailed in, and an account opened in a bank.

G) Review

This period is for reexamination and modification.

3.2.2 Negotiation And Contract Signing Period

In this period, investors should enter into contracts with financial institutions, consultant design firms, construction companies, equipment suppliers, patentee and material, public facilities' suppliers and cooperators.

3.2.3 Project Design Period

In this period, what should be done is to make general progress charts, to choose and reconnoiter a site for the project, to begin architectural design and construction design, equipment installation design and other engineering detail design. Architectural design for cooperative projects in China is quite different from the design for U.S. domestic projects. China's architectural firms need to be engaged as consultants if the architects of the projects are from foreign countries. The Chinese firms are responsible to explain national and local codes, to coordinate design problems on both sides. Some projects, according to the contracts or the policy of China, needs to cooperate with Chinese architects in design,

that is, you have to have Chinese architects as partners. In that case, Chinese architectural firms are not only engaged as consultants but do design also. In general, they are engaged in structural design. In the projects of Shanghai region, the fundamental designs are often designed by Chinese architects because they are familiar with that area's geological structure and have extensive experience to know how to design it. In some projects, Chinese architects probably are overall cooperation and take part in architectural design. That depends on the contract.

The procedure of China's architectural design is quite similar to that of U.S. architectural design. Their procedure includes three periods:

- A) Proposed preliminary design
- B) Extensive preliminary design
- C) Construction design

They are very close to the US's idea design, capital design and detail design. The difference is in detail drawing; China's designs are more detailed than that of the U.S. or other foreign countries. The reason is that the U.S. and other countries' construction companies have the ability and responsibility for decoration, equipment and utility pipelines installation. Some construction companies can do construction design. In China, all of those should be drafted by architects.

3.2.4 Period Of Construction And Pre-Checking And Pre-Running

Construction period is the practice period after project design is done and pre-construction is preparing. Meanwhile, construction preparatory management office in China's side is going to establish all procedure of construction for checking.

There are three periods included in this period:

A) Site arrangement and cleaning

In general, China's cooperators provides a site according to the requirement of foreign investors. When the site is chosen, they need to finish the work of land purchasing, the houses pulling down in the site, residential moving, and underground piping connecting.

B) Organized Preparatory management office and put contract in black and white

C) Construction and equipment installation

It is a complex procedure and much more work than building in the U.S.. China and foreign owners, design firms and construction companies form six parties. You can imagine that it is really not easy to coordinate all sides.

The scale of office for construction check and examination is depended on the importance of the scope and value of project. Usually, the larger the scale of a project, more important Chinese thought. The office is often organized by investment company, construction companies, architectural firms and relative units like bank, statistic department, the companies of material complete set of equipment, environmental protection organizations, fire departments, health and epidemic prevention offices, labor protection organizations, Unions. The check procedures are divided into two periods as well as the U.S.; individual project check and overall project check.

From the progress of preparatory steps of the employee training, trial producing and pre-business running to the producing and business running period, a China and foreign cooperative project is established.

3.3 Charts Displayed Procedure of Investment and Management

The construction procedure for China investment projects can be divided into ten steps:

- A) Project proposal
- B) Feasibility research
- C) Design document
- D) Construction site chosen
- E) Drafting design documents
- F) Listing fixed assets
- G) Ready for construction
- H) Constructing
- I) Producing preparation
- J) Construction finished and acceptance check

The construction procedure for foreign investment projects is almost the same as the produce for China investment projects. It can be divided into five steps:

- A) Project proposal
- B) Feasibility research
- C) Drawing up contract and rules
- D) Applying for authorization document and registering in Industry and Commerce Bureau;
- E) Construction progress

The following tables will display the procedures above: (see table 6, 7 and 8)

Table 6. China's Construction Procedure Direction

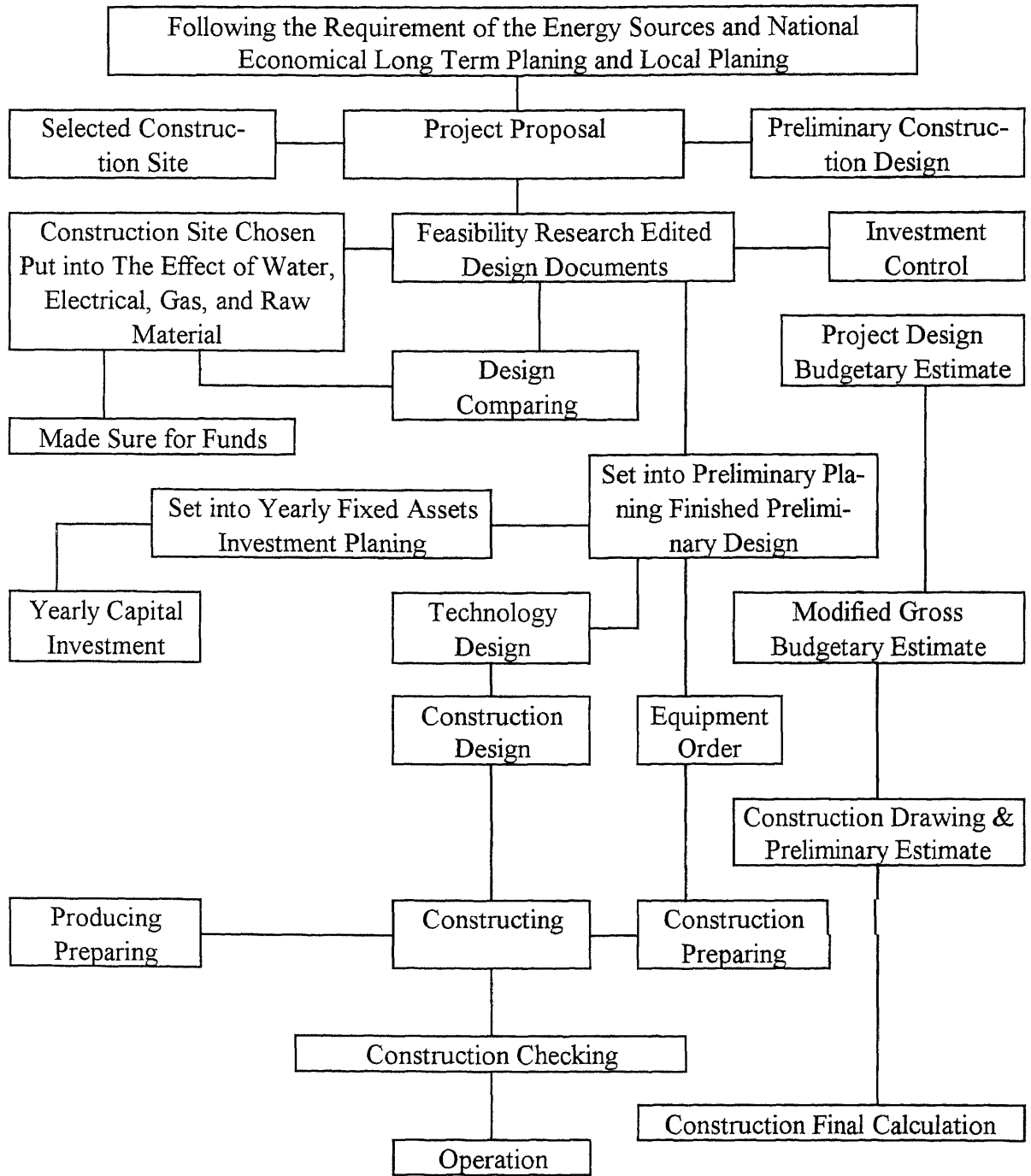


Table 7. Construction Procedure for Chinese-Foreign Cooperative Company

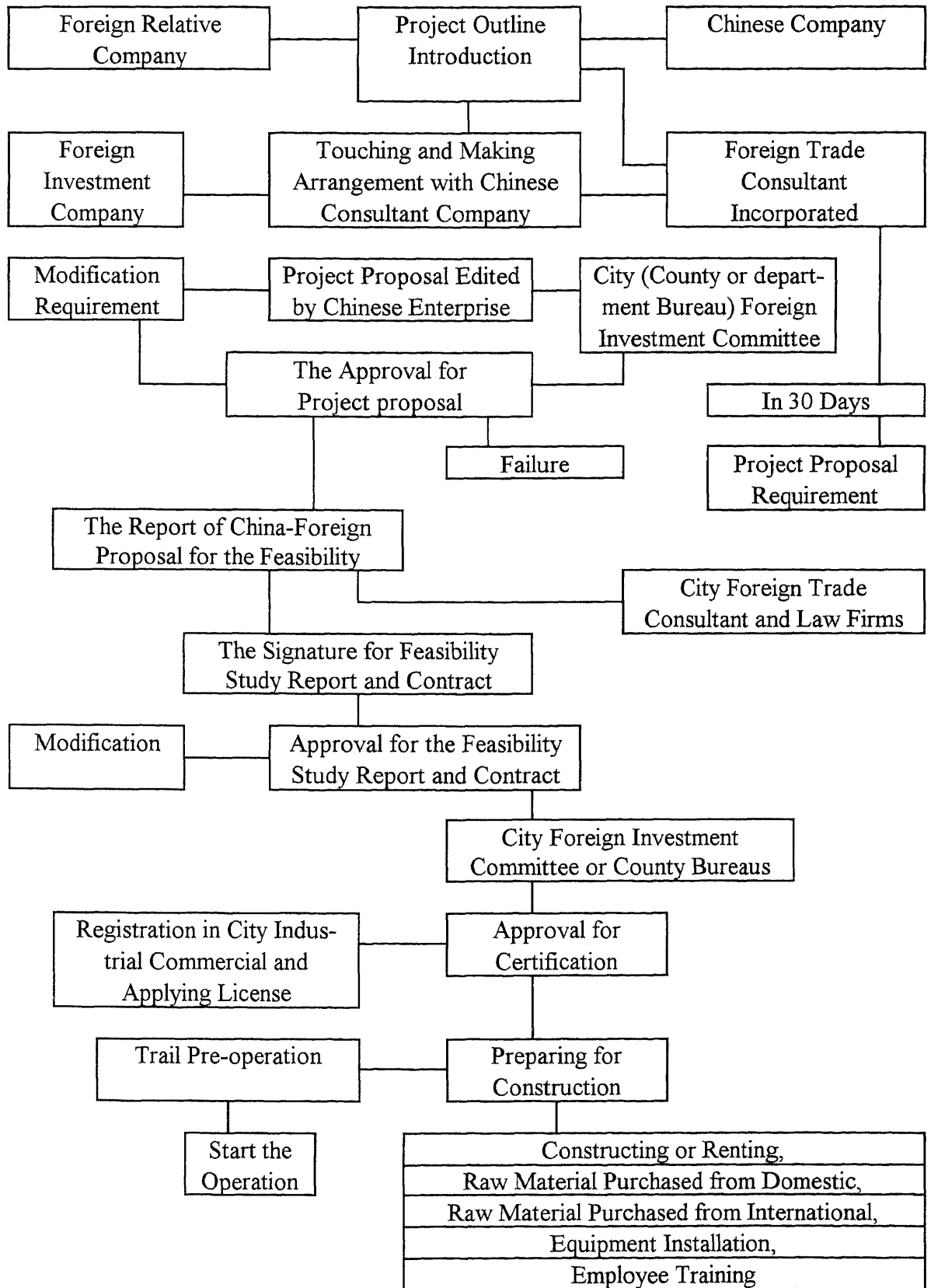
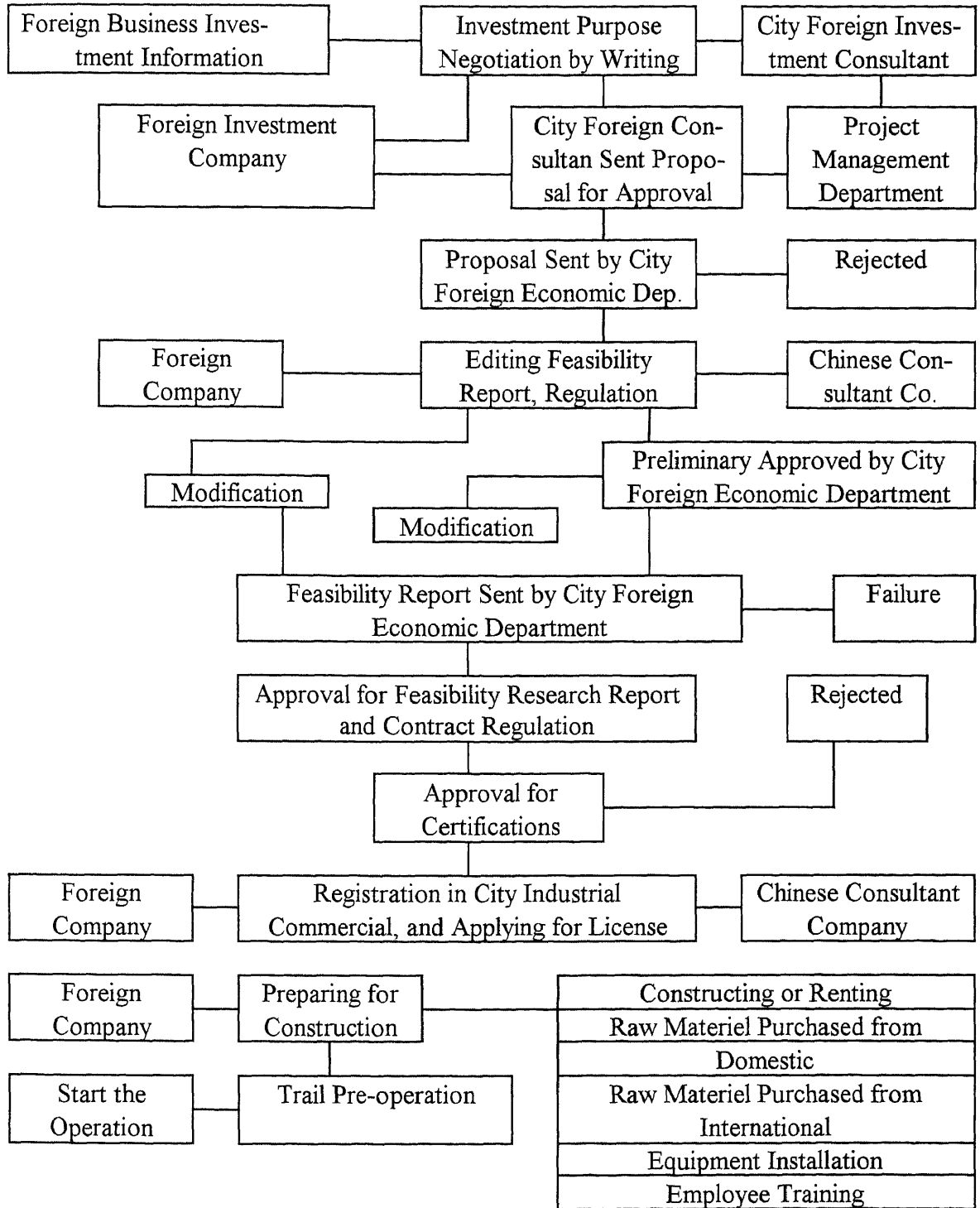


Table 8. Construction Procedure for Foreign Company



CHAPTER 4

CONSTRUCTION AND DESIGN OF FOREIGN INVESTMENT PROJECTS

4.1 Examples of Construction from Foreign Investment

4.1.1 Shanghai Garden Hotel

Shanghai Garden Hotel construction was managed by the cooperation of Shanghai Jingjiang Hotel Systems Incorporated and the Japanese Nomura Incorporated Company

A) Period of Project

Japan Nomura Incorporated Systems visited China during the early 1983 and 1984, and held the meeting of “Shanghai Investment Environment Research” after returning to Japan. The Shanghai governor, Mr. Wang, Daohan was invited to the meeting and publicized the policy of Shanghai opening its economy to the world. The purpose was to attract foreign investment, especially Japanese companies to invest in Shanghai. About 1,400 Japanese companies were invited to the meeting. Shanghai Investment Trust Co., a main representative, was invited in the meeting.

The Japanese Nomura Incorporated Company decided to build a hotel for Japanese companies' employees who worked in companies or offices set up in Shanghai. At that time, Shanghai had few high grade hotels for foreigners. Shanghai had to transfer Japanese who came to Shanghai for business investigation to Jinglin Hotel, the highest grade hotel in Nanking, a city four hundreds miles away from Shanghai, by plane. This embarrassing situation was emphasized by Shanghai government. They knew that such conditions would discourage foreign investment. Therefore, the proposal for project of Shanghai Garden Hotel was set up quickly and supported by all departments and bureaus of the Shanghai

government (Later projects would not be so lucky and easy to pass). This project also received such strong support because it was the first project after Shanghai city decided open to the world.

After the project feasibility study, the project was all right in technology, economy, and the source of customers (in the estimate the most customers would be from Japan which was the main purpose of the project). When the hotel opened, the estimate proved correct. Later when too many high-grade hotels were built and lacked customers, many hotels had to reduce their prices to attract customers. The Shanghai Garden Hotel is still keeping the same price and runs very well.

When the feasibility report was passed, Japanese Nomura Incorporated Company immediately registered the project in Industry and Commerce Bureau. The project was set up.

B) Project Investment Period

In general in international or national investment investors should use their own properties as pledges. However, they can not be used in China because, in China, the property belongs to the government and can not be mortgaged. Foreign investors let China's government financial institutions like the China Bank vouch for them. That is, they mortgage their properties including the building to the China Bank. The bank takes responsibility of guarantee for the investors.

In the processes of negotiations between China and Japan in the cooperative project, the contract was modified nine times. For the project, Japanese Nomura Incorporated Company would invest US\$ 17.7 billion. The project of construction of Shanghai Garden Hotel set account in China and Japan. However, after the project was completed, the

investment exceeded 25 percent of the original estimate because of construction delay and other factors.

This project was designed by the Japanese Aoki architectural and construction firm, and Shanghai Huadong architectural firm was assigned as a consultant by the Shanghai government. Aoki Company Systems is one of the five largest construction companies in Japan.

The detail of drawings in Japan is different from China. Therefore, all drawings needed Chinese architects to translate them and add construction detail drawings according to Chinese standards. The detail design in the architectural design in Japan (U.S. and European) only provided basis of installation for construct companies. All utilities, for instance, only showed the positions on the walls of rooms. Aoki architectural and construction company hired Beijing architects for construction design but this was not successful because Beijing architects did not know Shanghai earth quantities. In the end, Huadong architectural firm had to design it again. The interior decoration was designed by Japanese Ohbayshi architectural system firm.

In the period of construction, the Chinese side was responsible for putting the land in order and the Japanese side was responsible for design and construction. The previous cost of construction of Shanghai Garden Hotel was 900 billion Japanese yen, or 70 percent of gross cost. The price Shanghai branch construction company quoted in negotiation was 6,020 billion Japanese Yen (US\$ 120 million) which was not correct. (which the first foreign investment project with foreign standards, Shanghai branch I construction company had no experience in this field). At the end, the final price was 8 billion Yen (US\$ 80 million).

4.1.2 Gaotang Garden Residential Quarter in Ningpo, China

This was a project developed by the China Real Estate Development Company and the Hong Kong Hence Real Estate Elopement Co., Ltd., which rented land for business. The rent time was 50 years.

The China Co. invested 30 percent and Hong Kong Co. invested 70 percent. They registered in the name of Ningpo City Tuo Zhuang Real Estate Development Co. Ltd. in China. The planning and architectural design were held in the form of public competitive bidding in China. The final design commission was won by Tongji University Architectural and Construction Institute. The procedure of the cooperative project was the following:

A) Ningpo City Urban Construction Committee and Ningpo Foreign Investment Business Office approved the project proposal according to Ningpo City construction documents (1989) No. 148 and City Foreign Investment Office document (1989) No. 49.

B) In September, 1989, China Real Estate Development Company Ningpo System Company, and Hong Kong Hence Real Estate Development Company, LTD put forward the project feasibility report.

C) In September, 1989, China Real Estate Development Company Ningpo System Company and Hong Kong Hence Real Estate Development Company, Ltd. signed the contract.

D) The design called for competitive bidding

E) On January, 3, 1990, sent invitation bid to eight architectural firms, and in February, 20, 1990, held an invited bids meeting and determined the final venders.

F) Sent bidding requirement document to the venders

The document included: the purpose and basis of the project, the land for project

information, meteorological information and geographic information, requirements for the planning of land which included the planning contents, vertical planning, municipal planning, the requirement for architecture including design rules, decoration standards, the style of architecture, construction design, water supply and drainage, gas, electric, air conditioning and communication design, and safe measurement, environmental protection, construction investment, cost control, the requirement of design drawings, the due date and other information.

G) On March, 8, 1990, bids were opened and the announcement of the results was made. The scheme designed by Mr. Yu, Mingfei, an associate professor of Tongji University Architectural Institute, won the competition.

H) Modified the design according to the requirements of investors, and started extending preliminary design and construction design.

4.1.3 Shanghai Business City

The project of Shanghai Exhibition Center Northern Building, was developed by the Shanghai Exhibition Center, and Foreign International Insurance Companies. Three companies managed the project: John Portman Company (US), Kashima Company (Japan) and Shanghai Exhibition Center (China). (In fact, the Shanghai government was really the investment side on the side of China, and the Shanghai Exhibition Center was a represent active for the Shanghai government. According to the policy of China, the Shanghai government is not allowed to run a business. It is a very important factor for a foreign company to find a powerful supporter or cooperater in China if you want to run business successfully).

These three companies were founded in the name of Haiya Company and registered in Hong Kong. The project in the period of establishment, completed the proposal document and project feasibility research. As the project was one of the earliest foreign investment projects in Shanghai, China, the period of setting contract was pretty longer from 1983 to 1985. Investments came from foreign countries (the U.S and Japan); the Chinese side only provided land and municipal systems. Haiya Company, led by J. Portman collected US\$ 1.4 billion from 19 banks in the world, 70 percent of which was guaranteed by the China Bank. Under Shanghai government support, projects of 18 thousand square meters (194,000 square feet) of base with completed finished municipal systems (including six pipelines which are water supplies and drainage, gas), a road system provided, and all of base inside redline were put in order.

According to the contract, the foreign partners were responsible for architectural design and construction design. The U.S. and Japanese companies took responsibility for management when the business began to run. The contract was for 18 years. Sharing of benefits among the three group of investors was divided into two periods of time. In the first 13 years, the profit-sharing between Shanghai City and the Haiya Company was forty vs. sixty percent. In the last five years, the profit-sharing was sixty vs. forty. Over eighteen years, the project was predicted to make a profit of RMB 800 billion (US\$ 680 billion). The Shanghai government would receive RMB ten billion (US\$ 80.5 billion) and a modern building. All business was managed by foreign investors but all foreign incoming funds and exchange would be transferred by China Bank.

4.2 Points for Foreign Investment Construction

4.2.1 Limits of Authority for Approval of Foreign Investment Project Proposals

If the gross cost of construction projects is under US\$ five million, it can be approved by competent government authorities who are responsible for companies or by a county government responsible for the investment region. If the gross of construction projects is from US\$ five million to 30 million, it can be approved by Provinces or a Municipality directly under the Central Government's Foreign Investment Committee. In the other cities, it can be approved by departments or bureaus of cities' Foreign Investment Committee. If the gross investment is over \$30 billion, it must be approved by the Chinese National Economic Planning Committee which receives the report with suggestions from the Foreign Investment Committee of the city or province. All independent foreign investment project proposals should be approved by National Foreign Economic Trade Department.

4.2.2 Contracts and Approvals

Cooperative contracts and rules should be formal documents with the signature of China's cooperative companies and foreign investors after discussing and greening with both sides, and then follow the above rules to sent the feasibility reports, contracts and rules of the cooperative business to City Foreign Investment Committee and county bureaus respectively for approving. If the project of investment gross is over US\$ five million, its contract and rules must be notarized by certified public accountant company and certified a law firm, and natural signed certificates.

A foreign investment enterprise for independent business must have project feasibility

reports and the rules for the company and hire a Trust Foreign Consultant Company (TFCC) on the projects. The TFCC will send the report to relative departments for approval. All documents will be finally approved by Foreign Economic Trade Department of provincial or national level.

4.2.3 Applying for Instrument of Ratification and Registration

After the feasibility reports, contracts and regulations are approved, the cooperating enterprises from Industry Commercial Bureaus apply and register the instrument of ratification immediately. From then on, the cooperative enterprise illegal and can start to run its business.

4.2.4 Construction

When a cooperative or an independent investment enterprise is founded, there are three things to do to prepare for construction. The first thing is to hire an architectural firm on design. If a foreign architectural firm is hired to design the project, in order to meet Shanghai's codes, rules, and construction conditions, the investment enterprise must engage a Chinese architectural firm in Shanghai as its consultant or cooperative design partner. Then it should apply to the Shanghai construction Committee for approval of the firm's qualifications. When the architectural firm, including the consultant companies are approved and get design certification, they can start to design the project.

The second thing is to apply for construction permission. If foreign construction companies are engaged in the entire project or part of the project, the enterprises must apply to City or State Foreign Investment Committee or Foreign Economic Trade

Department for approval, and then apply to the City Construction Engineering Bureau for a license for a foreign construction company working in Shanghai. The City Construction Engineering Bureau checks and tests the qualifications of the foreign construction companies. If these construction companies pass the examination, they will get a construction license and can work on the project.

The third thing is the purchase of construction material and equipment. There is no problem using Chinese material and equipment. But if the construction materials and equipment are imported from abroad, the enterprises must have a list including assortment, specifications, announcement and price marked, and then apply to City Foreign Economic Trade Committee. After approval and going through the process of customs duty or exemption from customs duties, the material and equipment are allowed to be imported.

CHAPTER 5

POTENTIAL ARCHITECTURAL AND CONSTRUCTION MARKET

5.1 Situation

Capital construction is the first step in a developing economy, and the construction market is very large, since China has done very little in this field in past years. Therefore, the speed in construction will develop faster than other fields. As the third largest country and the largest population in the world, the potential market is considerable.

China is an agricultural country. There were very few cities in the whole country. Industrial and cities developed slowly until the early 1980's. Economic development, in fact, is an industrialization process which leads to urbanization. The increase in the number of cities over the past ten years (1978-1988) accelerated from 2.6% to 5% (see table 9), and residents increased also. The number of city residents increased from 12.5% in 1978 to 18.5% in 1988, a 6% increase in ten years . This rate of increase will continue in the future. With urban development, construction demands became urgent.

Table 9. Percentage Increase of City Number and Population Before and After 1978

	City Number			City Population		
	% increase	Large cities ¹	Middle cities ²	Small cities ³	Million	% increase
1949-1978	2.6	40	151	2176	1,200	12
1978-1992	5.0	58	376	11481	2,200	18.5

¹ population over 500K

² population less than 250K

³ population less than 100K

From the demand for housing, we can partially find out how great the market is. The Government has spent about RMB 218.7 billion (US\$ 131.22 billion) for housing, trying to solve the housing shortage problem in the past ten years from 1980 to 1990. About 1.24 billion square meters of housing have been built, but residential area per resident just reached only 6.3 square meters. It is far less than the goal set by the government to provide 10 square meters per resident by 2000. Moreover, public construction and other buildings are drug on the market. Commercial buildings, public buildings, and office spaces, are also in large demand.^[13]

Facing this huge market, Hong Kong, Taiwan, Japan and other countries have opened construction businesses in China. However, the U.S. has not taken advantage of this new market. U.S. companies have invested in areas other than construction in China. Until 1994, U.S. companies had invested over US\$ 13 billion. There were about 50 transitional corporations of the first 300 companies investing about 50 billion in 26 areas including agriculture, light industry, chemistry, food, transportation, construction materials, medicine, fanatical, trade, etc. (see table 10). Information from economic department of Hong Kong government showed that in 1994 of 98% U.S. companies regarded mainland China as the most ideal market for the future five years. *Business Weekly* investigation found that more than 65% companies are planing to invest in China for the next five years. However, U.S. architectural firms seem to be indifferent to this huge market. Compared to over one hundred foreign architects working in the Far East, U.S. architects seem unenthusiastic. Is U.S. construction market enough for them? It has declined. RTKL reports that 30 percent of its work is outside the U.S., half of it in Asia. Other firms busy in Asia also include Brennan Beer Gorman; Collision Architecture, Fox and Fowle, HLW,

Kaplan McLaughlin Diaz, Loeb Schlossman and Hacle, Hohn Portman and Associates, and the Stubbins Associates, to name a few. Jobs there are being pursued by individual practitioners as well. One example is Steven Lombardi of San Diego, a P/A young Architect in 1987, who recently established a partnership in Hong Kong with Frank Desenyi to work on projects ranging from utilities buildings at the Hong Kong airport to transit facilities in Bangkok and Manila.^[14]

Table 10. U.S. Transitional Cooperation Investment in China

U.S. company	Investment (in million)	Project
Wing . Merrill	\$ 2,000	Thermal power
Acro-oil & Gas Co.	\$ 1,200	Natural gas
AT & T	\$ 1,000	Communication equipment
Mortorala	\$ 314	Beep, Telephone, etc.,
Coca-Cola	\$ 119	Factories
GEE	\$ 150	Airplane engine
Boyin Co.	\$ 800	Boyin plane
Chrysler	\$ 497	Automobile
United Technologies	\$ 184	

Why are there so few U.S. firms compared to other countries? After visiting some architectural firms, I found that the lack of investment in construction China may be due to

- A) Lack of information
- B) Concern about working in another culture, with the language barrier influencing project sources and design understanding,
- C) The possibility of cooperating with Chinese architectural firms

Other situations include uncertainty about complex regulations, the size of the market, and duration of the fast construction growth.

5.2. Supply and Demand for Construction

In construction, the main market lies in residential buildings, office buildings, hotels, shopping centers malls, other public buildings and interior design. The future requirements are outlined below.

5.2.1 Housing

In 1992, the average living space for residents in cities of China was four square meters per resident and 35% of population occupied only 2.7 square meters per resident. The Chinese government planned to increase the living space to eight square meters per person by 1995, and ten square meters per person by 2000. They have to build six hundred million square meters of new housing and renovate five hundred million square meters of old housing each year to reach this goal.

5.2.2 Office Buildings

Office space is also scarce in China. There have been very few office buildings erected since 1949. Ninety percent of all agencies and companies are working in old buildings which are thirty to fifty years old. With economic development, thousands of new companies have been set up and several hundred foreign companies have poured into the country for business. The lack of office space hinders business development. Many companies have to rent hotel rooms to resolve the problem, but that is not a permanent solution. High rental costs and inefficient arrangement of hotel space adversely influence business development. Therefore, more and more office buildings have been built in every city and FTZ to meet the demand.

The demand in Guangzhou is an example of the urgent need for office space. Two hundred thousand square meters of office space are built every year, but the sale price has increased from HK\$.75 million per square meter in 1980 up to HK\$ 1.5 million per square meter (US\$ 10,000) today. The rental cost is up from HK\$ 200 to 470 per square meter (US\$ 50.00 to US\$ 120.00) because the market demand exceeds supply. Since Guangzhou started its economic development earlier than other FTZs and cities, one can imagine the unmet demand in other developing places.^[15]

5.2.3 Hotels

In the earlier period of development, hotels had a high construction priority, but ninety percent of them were four star (luxury) hotels. This market is currently approaching saturation. However, middle and modest level hotels are still a potential market. Tourism in China has attracted attention from many foreign financial groups and hotel businesses. They are going to invest money into this potentially profitable market. One example is the French travel agency, Acorr, which announced its intention in 1992 to enter mainland China to build one hundred hotels as a component of the worldwide Acorr system. Their grade is Morctel and Ibis (middle and modest). Acorr has a cooperative relationship with an Australian travel agency to form Accor-Asia Pacific Company and has collected AU\$ 100 million (US\$ 750 million). One third of it is to be invested in China's market. This company has already opened hotels in Shanghai and Beijing. The next places will be in Jinan, Shandong province, and then other cities.

Itt.Shearaton International group, cooperating with China Bank Trust and Investment Corp. and China International Travel Agency, is going to build 10 large-size hotels in five

years. The manager of Holiday Inn Lido in the Asia-Pacific range, David Rigger said they had a plan to build over 100 hotels in China. "Give me forty years," he said "the hotels in China will be more than those in the U.S." Gali financial group (Hong Kong) plans to invest US\$ 600 million to build fifteen Singulira hotels by 1997 (Chen, Zhenhua, 94).

5.2.4 Commercial Buildings

Since 1949, China's third industry (service and financial) has regressed. Therefore, this field has to accelerate its development. With foreign commercial investment and influence, traditional single shops are being replaced by shopping centers. Supermarkets and shopping malls have also been introduced into the country. The scale for commercial buildings has become larger and larger to match advanced countries such as the U.S. and Japan. Some foreign companies have bought a whole street or a region to build multilevel shopping centers or multipurpose commercial buildings. This kind of buildings comprised thirty percent of all construction. However, the growth rate of the service industry is still low compared to advanced countries. As we know, a reasonable rate of growth of the third industry in national economic structure should be over 50%. This means that China will continue development in this field. From 1992, overseas investors began to transfer their emphasis to this field. Commercial buildings will be built to meet with the growth of the third industry in the next years.

5.2.5 Interior Design

Interior design is another unexplored market in China. Until the 90's, there was no school of interior design in mainland China. Architects and artists provided this service in the

past. Interior design is urgently required by the construction market. There is about RMB 350 to 400 billion (US\$ 280 to US\$ 300 billion) gross profit produced in this field each year. Because most designers are either art school graduates, self-trained workers or former architects, they are not properly trained to satisfy clients' requirements. Therefore, many hotel owners have to hire foreign professional designers for decoration to match their high standards. Information also shows the market potential. By 2000, there will be 0.3 million hotel suites and 0.2 million residential units requiring to be decorated. This equals RMB 45,000 billion (US\$ 5,000 billion) in value until 1998.^{[20][21]}

Also the interior decoration of hotels is always changed to match the popular taste of the times.

5.2.6 Other Public Buildings

The demand for public buildings for entertainment and education will increase with economic development. Developed FTZs have encountered this problem, and some of them have begun to invest in this field. Up to now, 50 million square meters of public building spaces have been constructed every year. Some economists have estimated these fields will be the next emphasis for foreign business.

Public buildings need higher aesthetic standard and design quality. Few of successful public buildings were designed and built by Chinese architects in the past. They will play an important role in the construction market until 2000.

CHAPTER 6

CAPABILITIES OF ARCHITECTURAL FIRMS AND CONSTRUCTION COMPANIES

Can China's firms handle the large volume of building needed to meet the requirements of economic development? Generally speaking, they can control it, but doing so much work could make the quality decline. In addition, the standards of modern architecture and construction are new and even strange to them.

Most Chinese architects are able to handle different projects. The overload of work has also given them chances to get more experience. Most firms, specially in A grade class, train their junior architects rigorously. Most senior architects have a good education and rich experience. Some of them were trained by Russian experts who were sent to help Chinese construction during the 1950's. We may say that the capability of Chinese architects is good in engineering but not in design. There were very few good designs in the past decades. The reasons are: 1) China was isolated from the world for long time and lacked new knowledge in the architectural field, 2) Architects had limited freedom and ideas in their field because of social system, 3) Tradition values become a heavy load in architectural theories.

Those problems continued after the country opened to the world. Traditional aesthetics was challenged by modern architectural ideas. The quality of design by China's architects' could not satisfy some overseas businessmen who preferred paying higher fees for foreign architects. Foreign architects' successful projects attracted Chinese clients' interest. These factors have forced Chinese architects into leaving part of the market for foreign architects.

6.1 Architectural Firms in China

Before 1985, each province and city had one to two architectural firms, and larger cities might have more. There were seven ministries of industry. Each had its own architectural firm. Some architectural schools had design offices. The small towns generally had no architectural firms but offices to manage and maintain the town's housing needs. While architectural firms in China are small in number, their average size of firms is large. Therefore, there were about two hundred architectural firms in the country before 1985. The smallest firms had about 100 employees. The staff of larger firms were over 1,000 and some of them were as large as 2,000. The firms were extensive, including architects, civil engineers, and other engineers like electrical, heating engineers, etc.. The ratio among them was probably 2:4:2:1:1 (respectively architect, civil, electronic, heating, sewage engineers).

At present, the firms are divided into three grades (A, B, C). Only the provinces and some bigger cities firms have A-grade status, of which there are approximately fifty to sixty. Most firms (C or D-grade, even B-grade) have to buy the drawings or cooperate with the A-grade firms if they undertake larger or special projects. Their capability is limited to designs of less than 10,000 square meters, or low-rise buildings (two to five floors).

After China's economic developing, although more architectural firms opened and competition among them became sharper, the projects requiring A-grade firms are always greater than they can manage so that many projects have to use B or C-grade firms to meet market demand. In general, A-grade firms with a staff of 1,000 can finish construction of about two to three million square meters each year. B-grade firms manage projects from 0.1 to 1.0 million square meters. Therefore, the total amount for all the firms

is about two hundred million square meters every year. In Shengzhen and Hainan, there are about one hundred firms in each FTZ. Most of them are local branches of province and city firms. They can do about 200 million square meters each year. The market in Shengzhen or Hainan probably is 200 million square meters a year. Therefore, there is great opportunity for foreign firms to participate.

Architects are also not enough to meet market need in China. Before 1985, there were about 10 universities with architectural departments (equal to an architectural school in the U.S.), and about 500 undergraduate students graduated each year. There was a thirteen-year gap in architectural graduates (1967 to 1981) because of the Cultural Revolution in China. Therefore, about 13,500 architects have come out of architectural schools in China from 1949-1989 in the past forty years.^[16]

Firms had to train some draft persons as designers to cope with the overload of projects. After 1984, there were about 10 more architecture departments and schools founded, in which 500 more undergraduate students could be trained every year. Now in PRC there are 30,000 architects including 5,000 to 7,000 re-trained draft persons. Between 1986 and 1993, 1,000 undergraduate students graduated from architectural schools. Compared to about 4,500 architectural students graduated each year in the U.S., this number is very small (see table 11).

6.2 China's Construction Industry

Construction technology is undeveloped in China industry, especially the construction materials. Masonry construction is the main type of construction in most cases, especially in five to seven floor housing. Prefabrication products are quite limited. Southern

provinces and Northern provinces use different standards because of the climate and tradition. In construction materials, the concrete, construction wood and plastic prefabricated products are in short supplying. Aluminum construction products just started to be used a few years ago. Curtain walls have to be imported.

Table 11. Comparison of Architectural Student Graduated by Year

Year	U S				China			
	No. of degree	B. A.	M. A.	No. of school	Non degree	B. A.	M. A. ⁴	No. of school
1981	N/A	N/A	N/A	N/A	N/A	622	None	16
1984	2467	3167	1571	N/A	N/A	1124	120	28
1986	2305	3088	1544	N/A	N/A	1579	180	40
1988	2501	2783	1533	N/A	N/A	1914	332	46
1990	2352	3010	1536	N/A	N/A	1841	330	52
1991	2384	3489	1575	N/A	N/A	1771	353	52

source: Zhou, Gan-chi

With economic development, the need for construction material is urgent. Importing advanced equipment from foreign countries like Japan, Germany, and the U.S. can improve the situation of low-level construction techniques and the shortage of materials. Until 1993, 10% to 20% prefabrication was used in many. Some could be less than 5% or even zero in large scale buildings. That means architects have to spend much more time in

⁴ approximately 10% of B. A. in numbers

drawing details for construction companies.

Although the construction technique in China is not advanced, construction companies can solve problems by their experience. All buildings in mainland China were undertaken by Chinese construction companies. The quality of construction is acceptable, but problems existed in most cases. Some foreign architects complained that the quality of construction did not meet the criteria of the design. In 1993, mainland China failed in the bid to hold 2000 year's Olympic Games. One of the reasons was the low quality of construction. The Olympic Organizing committee found that almost all buildings for sports events did not meet their construction standards.^[17]

6.3 Benefits of Land and Investment

The first thing for investors to consider is the economic benefit of a project which is the most important factor to deciding to invest. In residential planning and design, the economic benefits are presented by land benefit and investment benefit. The land benefit depends on making full use of the land. The investment benefit is decided by the ratio of the profit to investment. The higher the ratio, the better the investment benefit. The design should make the rational use of the land as large as possible, and to increase the volumetric ratio, to reduce the volume of earth embankment and excavation without influencing the quantity of the construction and space environment. All of these create economic value.

The purpose of investment in the construction is to receive economic benefit from it. The economic benefit is shown in the sale value of the houses. For the residential quarter, the value in construction market is produced by many factors. Design is one important factors.

Different quality of design may produce different value. Foreign architects know the point and try to display the value their design. They will consider all the factors which are probably influencing the market price. Their experience and training will give them knowledge to do this. It is an advantage foreign architects have because Chinese architects have never done this. They have no knowledge and experience in how to display market value in their designs, in the buildings and even in every unit. The reason is that in the past in China, no houses were sold. All buildings belonged to the government. When an architect and his firm got a project, they were told the requirements of the function and limitations in a certain amount of money.

The policy in China is to spend the least money to do the greatest thing. Therefore, they often think that increasing the residential density is the best value to increase investment benefit. They do not know that the quality of the environment is also important. If the same houses are in a different district, their value will be different.

6.4 Questions in Social Situation

Different concepts in design also come from different living and working conditions. A few years ago, many Chinese families did not have bathrooms with hot water. They had to go to public bathhouses where more than 50 people use one large bathing pool and ten to twenty single washbasins. Every city has this kind of public bathhouse to solve one of serious life problems for the citizens. Some companies and factories also built public bathhouses which are free for their employees. This situation, of course, was hard for many foreign architects and investors to understand. They were surprised when they saw such a large bathhouse in the Jianguo Hotel when it was built in China. It is a common

concept among most foreign designers that areas for employees should be small as possible in design. The space can be used for business instead. Every inch of floor area means money. However, in China, the condition of the country does not allow you to do this.

In the Shanghai Business City design, the conflict between these approaches appeared. Chinese and U.S. designers disagreed on the first-floor street shop design. Following the experience of the J. Portman firm, the 80 % area should be arranged to customers. This could not be done in China. Since the Chinese employees do not have bathrooms in their homes. The building had to include storeroom, bathhouse, and even a changing room. All of these occupied a lot of business area, which reduced the shop areas for rent. The investors had to raise the rent price to match the original estimate. However, increasing the rent price would reduce the number of customers.

In shop design, Chinese architects consider everything very carefully. They even consider what kinds of goods the shop will sell. U.S. architects thought the merchandise would change according to the needs of market and that they should create a space suitable for different businesses. In the U.S. business, new is important. Chinese often prepare everything and use them forever. Even some equipment will be used for many years.

The difference in concepts of business can also influence the ratio of areas in design. U.S. architects will save every square inch without any waste in their design. They are stingy in locating space for workers' areas like water pumping room, refrigerator room. Workers even find it hard to turn around in their workshops. Chinese architects like to design the room regularly and comfortably. The machines in the room should be arranged in order. If possible, there should be a room for resting. It is influenced by its social system. The result

was that more area for work had to be added. Foreign architects often use the edge and the most irregular spaces of the building for work space. This looks like indifference to employees in the view of Chinese. (But, in fact, no one likes to stay with the noise machines one more minute however well the room is arranged).

Equipment technology is another difference in living conditions. In the design of the Pacific Hotel, Japanese architects insisted on placing the boiler and distribution room underground. It was against China Construction Committee (CCC) and hard to accept by Chinese. CCC forbids anything with gas underground because China does not have detector, alarm and interrupter equipment systems. Japan has this kind of equipment in their gas system so they could do this way.

In the design of Pacific Hotel, the basement was designed in two layers. All equipment and rooms for employee were arranged on the second level of the basement. Japanese designers only added a waterproofing wall. The Chinese were really unhappy. It was a strange design in Shanghai. In general, the design of a basement in Shanghai is less than six meters (19.68 feet) in height because of earth quality and construction technology.

6.5 Different Design Ideas

Although China has a distinctive architectural style, she has gradually accepted foreign architectural ideas in part. The high-rise buildings and Catholic churches are obvious examples. During the early twentieth century, there were a number of colonial buildings in the coastal cities of Shanghai, Tianjing and Dailian.

Modern architectural ideas from abroad flooded the country when the economy opened to the world in 1978. Traditional ideas were challenged! The generation of young architects

would like to accept these new ideas and learn quickly. Traditional architectural systems and models no longer suit buildings with new scale, space and functions. Professors in architectural schools actively carry out modern architectural ideas because most of them graduated from the schools of architecture in Europe or the U.S. Young teachers, most of them will probably be sent abroad like to the U.S. or European countries to be trained or to do research. Some receive Masters or doctoral degrees from universities. They know modern architecture will play an important role now and in the future. Modern architecture has become popular everywhere in the country. However, traditional architecture has its place because of the long history and well-established cultural systems, whereas modern architectural theories entered the country independently of the historical process of moderation. Therefore, people, even most architects, can not understand modern architecture well because they have been isolated from its theories and practice by the process of cultural development and history they learned.

Chinese and foreign architects are not only coming from different social and cultural environments, but also have different education, training and work experiences. All of these create a great difference in their concepts. From some of examples, we can see what difference between Chinese and foreign architects in their designs.

If there is a project to design a restaurant for 1,000 customers, foreign architects probably design 160 to 250 seats because they think the customers will not all come together; any table can be used four to five times. The building and space should be used in the most effective way. Chinese architects may think a seat will just be used once and they will add four to five times as much space for seating. They also like to use mural paintings or frescos as decoration, which often causes some view problems. For example, the Huado

restaurant has a huge mural painting drawn by a famous painter. The painting was beautiful but not suitable because the huge painting became an art show in itself; it was so large that a great amount of space was occupied and useless. In the end, the hotel manager had to use shelves to divide the space for customers' tables. The original idea was lost. Chinese architects never think that the decoration in a restaurant should be often changed to catch up with fashion or cultural change and development.

The Pacific Hotel, designed by Japanese architects, is a typical Japanese style of garden and restaurant. In order to set the garden with Japanese style in the center of building, and also be an scene for the second floor, designers had to have business rooms moved underground. Chinese architects would not design in this way. They would think it was not reasonable to arrange all working rooms underground.

I would say that Chinese architects like to follow tradition, and foreign (special U.S.) architects are looking for new and changing styles. The Chinese like spending money on the door; U.S. architects usually put money inside. Some U.S. architects think that Chinese designs often have too much decoration. Simplicity is a character of modern architectures. When you see Wright, I.M. Pei and other famous modern architects' works, you find how simple their design are. It is a point that Chinese architects have not understood. You always find surplus decoration in Chinese designs. In Jianguo hotel, there are three shelves on the roof; it is hard to image and understand what they are, and why they are there; they are neither modern nor traditional. Creating an individual character does not mean adding decorated style. It is the notions of design how to create modern architecture style under the conditions of understanding modern culture and art. Chinese architects try to do it but they can now. They need time to learn modern art and culture.

Chinese architects have no good experience in design to meet current social development. For example in the design of the United Friendship Hotel and the Garden Hotel, parking was not considered. The result was that the United Friendship Hotel had to rebuild its steel construction to include a multi-floor parking garage. The Garden Hotel had to let vehicles park in its garden because the hotel also did not have parking in its design.

Chinese architects are often looking for perfection in their designs. They are also easily influenced by social consciousness, popular ideas from people, and power from officials around. Sometimes, they are forced to follow or accept unreasonable requirements from officials because serving the people and society is a rule for them. They do not have strong enough social position like U.S. and other foreign country's architects.

Compared with U.S. architects, the skills of Chinese architects in design still have a certain distance to go. That is why many projects are designed by foreign architects. Chinese architects have realized the problems but have difficulty overcoming them. It is not easy to overcome culture and philosophy's problems like learn engineering technology. Modern architecture theory is from modern art and culture which are not melt into Chinese culture. They are looking for communication and cooperation with U.S. or European architects to solve these problems. Before the country opened to the world, communications were limited to academic exchange. Some famous foreign professors and architects have been invited to the country to give lectures since the 80's. The AIC (Architectural Institute of China) actively takes part in the UIA (Union International des Architects) to strengthen communications with other advanced countries. Last year, AIC won the right for holding the UIA meeting in China in 1999. We will see the Chinese architects break out their narrow traditional circle and move toward a world architecture.^[18]

6.6 Influence of Feng Shui

Many designers in Asia have responded to the local culture by applying feng shui, the Chinese art of placement, to the design and sitting of buildings. Feng shui holds that some locations and shapes are auspicious while others are likely to bring misfortune. Buildings influenced by feng shui are usually laid out with their most important spaces facing south. Symmetry is considered desirable. Often buildings are constructed as pairs - not slipping past each other, like New York's World Trade Center towers, but closely aligned. Certain shapes, such as a fish profile, appear frequently. The five - story atrium of Kohn Pedersen Fox's big Nanjing Xi Lu mixed-use project on the main commercial street in Shanghai has a fish-shaped plan. Certain numbers, such as three, six, eight and nine are considered good. Six is considered successful; eight is considered lucky and nine is thought the largest or the most top or most powerful in the world where it could often be seen in the palaces constructions. Many Chinese high-rises are articulated in eight-story increments.

Symbolism plays an important role. For instance, the Shekou Harbor Building near Shenzhen, designed by Loeb Schlossman and Hackl, will display a sail-like shape across its 40-story curtain wall and will have a ship-like plan that of, to recall the countless junks that have sailed past its site in the Pearl river basin. Sometimes a gesture of this sort can be effective. Many attempts at symbolic expression, however, seem slick and superficial, such as pagoda roof on top of skyscrapers which can be found many places in China.

CHAPTER 7

COOPERATION MODELS AND POSSIBILITIES

With more and more overseas investment into China, foreign architects have more chances to challenge China's architectural firms because China's government opened this field as well as others. More and more foreign architects are either invited by their countries' investors or look for projects themselves. However, cooperation between architects from two countries is different from other business cooperation; it includes other complex factors like design philosophy, aesthetics, traditional culture, and social factors. For the ancient country with several thousand years civilization, its tradition is very powerful. Can Western culture, especially modern culture melt into Eastern culture? What problems could this have which way is better for these foreign firms including The U.S. firms which want to share this market?

7.1 Cooperation Models

There is a law in China, which requires that any projects from foreign countries or any projects with chief architects or firms from foreign countries must find Chinese architectural firms as consultants or must engage Chinese architectural firms. to cooperate on the projects. The cooperation and continue may be China set up this law because the procedures in China are so different from other countries. This is especially time for Western countries since most of the procedures of construction of China learned from Russia in the early 50's. Since then, they have not used any foreign systems. It also is necessary for the foreign architectural firms to have Chinese architectural firms or

architects help them to solve local problems. Today, there are four kinds of cooperative modes for Chinese and foreign architects.

A) Foreign firms just do the schematic design and China's firms work out the detailed design, construction design and utilities design.

B) Foreign firms do the projects completely and China's firms cooperate with them as consultants. All of the design including architectural design, construction design, and utility design are done by foreign architectural firms. Chinese firms give direction for the design to suit Chinese building code and requirements, and translate the design into Chinese detailed drawings.

C) Foreign firms set up a branch firm in mainland China and hire Chinese architects to do projects completely.

D) All of the projects is designed by Chinese architects. Foreign architectural firms are engaged as consultants. This situation rarely happens but it could happen.

For the first and second model, foreign architects are often engaged by foreign investors. There are two reasons for this: 1) The investors do not believe in the capability of Chinese architects. They prefer architects from their own countries. They are familiar with their style and like it, and find it easy to cooperate with them. Some investors have cooperated with particular architectural firms in the past or they may be introduced to them by friends or colleagues; 2) Chinese architectural system is complex enough to confuse the foreigners. Except of national standard, states standard, city and township standard in drawing, every firm often have their drawing standard.

In some cooperative projects, Chinese architects have had foreign firm make drawings of their ideas. For example, Shanghai New Jingjiang Hotel was designed by a Shanghai civil

architectural company, Hong Kong International Wong Design Inc., Pan F. civil and construction Company, and United Science Consultants Inc.. Their cooperation succeeded. At the end, the Hong Kong architects and engineers had the impression that Chinese architects often had a lot of idea, and their designs were pretty nice but they had difficulty explaining their ideas in drawings.

Each of these four models has its advantages. The first model is easy to operate and control, save time and labor, and avoid lots of complex social problems. The second model is for large, difficult projects in which Chinese firms may not be able to solve the technical problems.

The fourth model is for long term cooperation. The advantage is the use of the gap in salary between the two countries to reduce expenses (A Chinese architect's salary is about 10 percent or even less than that of an American architect). The firms could flexibly handle projects on both sides. That is, giving a little training to Chinese architects so that they can even do U.S. projects in China when needed. With the development of computer systems, it is not a problem for engineering projects to transfer information, to discuss projects and to change design across long distances. Also, you can take projects from China if it is too difficult to handle them in China. U.S. architectural firms like Comerro Coppa Architects, P. C. which is a middle size firm with thirty-five to forty-five employees, has set up a branch firm in Middle East and Asia. The cooperation often handle with the transferring from computers. The firm did most overseas projects in own country. It is quite effective and benefit.

No matter what kind model is chosen, a precondition for all the models is to find a Chinese firm as a cooperator or consultant. It is rule by government, but it is reasonable.

The reasons are: 1) You need Chinese architects as consultants when you undertake Chinese projects because you are not familiar with the regulations, codes, construction conditions etc.. 2) The construction drawings should be translated into Chinese, and Chinese construction procedures so that they can be understood by Chinese construction companies.

Up to now, no U.S. firms have really set up offices in mainland China. Most of them took projects back to The U.S. to design. The reason could be the work just began and they are not sure for the future.

7.2 Examples of Cooperation between Foreign and Chinese Architectural Firms

The first entering the Chinese market was Hong Kong because of its favorable geographic position and the close relationship of culture and tradition. However, the first joint architectural project was designed by a famous U.S. architect, I.M.Pei. of Chinese heritage. The design, for the Xiangshan Hotel won great praise because Chinese architects learned how to combine modern and traditional architectural ideas from a celebrated architect.

Then, more famous architects were attracted to the country. They include the British architect, Rogers, Italian architects Aldo and Rossi, the Japanese architect Kurokawa. Also, a few U.S. firms are working in China. Up to now, about over a hundred foreign architects are working in different cities and FTZs in the country. The following is a list of some of the finished projects designed by foreign architectural firms^[19](see table 12).

Table 12. Some Architectural Projects Designed by Foreign in China (1980-1990)

Project	Unit (m ² / fl.)	City	Country	Firm	Year
Xiang Shan Hotel	30,000 / 1	Beijing	The U.S.	I. M. Pei & Partner	1980-1982
Great Wall Hotel	8,293 / 33	Beijing	The U.S.	Bect Inter. Archit. Co.	1980-1983
Jian Guo Hotel	30,000 / 9	Beijing	The U.S.	C. Y. Chun Archit. Firm	1984
Shanghai Business City	185,500 / 48	Shanghai	The U.S.	J. Poman Archit. Corp.	1984-1990
Chinese-Japanese Young Community Center	N/A	Beijing	Japan	Kisho Kutokawa Archit. Assoc.	1989
Shanghai Garden Hotel	37,000 / 34	Shanghai	Japan	Ohbayashi Archit. Assoc.	1985-1989
New Jinjiang Great Hotel	67,330 / 44	Shanghai	Hong Kong	N/A	1981-1990
Beijing Landmark Tower	107,000 / 48	Beijing	Hong Kong	N/A	1987-1990

7.3 Examples of U.S. Architectural Firms in China

The following examples are projects designed by U.S. architects in recent years. They represent new Western architectural notions mixed into Chinese cultural. Some of them are completed, and some are still under construction.

A) Market in the Heart of Beijing

Redevelopment of the Dong An Market in Beijing is one of the many Asian mixed-use projects providing work for U.S. firms, in this case the Los Angeles office of RTKL. A

podium containing one point five million square feet of retail space, with six stories of offices above, is under construction on the site of what began in 1903 as an open-air market. Located where 200,000 to 500,000 people a day pass by, this retail center will include department stores, a night club, a bowling alley, and a food court in the five-story base and on one of the floors below grade.^[23]

David Brotman of RTKL says that municipal officials and the client, a joint venture of the local Dong An Group and Sun Hung Kai Properties of Hong Kong, “felt it shouldn’t be a copy of ancient Chinese architecture, but they also didn’t want slick contemporary buildings, which would be out of context in this capital city. They felt it should be a contemporary interpretation of classic Chinese architecture.” In designing the project, in association with Wong Tung & Partners of Hong Kong, RTKL studied photos of the earlier market, razed in the 1940s, and elements of classic Chinese architecture, particularly proportions, fenestration, hierarchy, and facade treatments. Brotman says the project satisfies such unusual requirements as having an air raid shelter of the building strong enough to carry a fire truck, and a huge area to accommodate an electrical substation for the Wang Fu Jing District.^[24]

B) Chinese Town for Agricultural Technology

Some U.S. firms are garnering large Asian master-planning jobs. One of the most striking is Kohn Pedersen Fox’s design for Ceres, a new town south of Beijing, dedicated to agricultural research and technology. The irregular 519-acre site is tied together by a sweeping arc of a road, along which will be situated 24 factories and 18 research buildings. Other buildings, each of distinctive design, will sit in a patchwork of small fields. They will be assigned to exhibitors such as foreign agricultural companies, which can use

the plots to demonstrate newly developed agricultural products or processes. The town's 8,000 inhabitants will live mainly in five-story apartment buildings arranged in U-shaped configurations, with generous light, air, and landscaping. What stands out most in the town, however, is the world's fair style architecture of its centerpiece buildings: a globe-shaped structure containing administrative offices, a light-rail station, a greenhouse, and an observation tower. The town is envisioned as a kind of Chinese EPCOT where farmers, who account for well over half of China's population, will come to get an introduction to agricultural progress and a vision of what the developer, the Chinese company Sanju, intends as a representation of "a natural way of life in a new world." Money to build the town is now being raised.^[25]

C) Villas in a Historic Chinese City

Suzhou, a city fifty miles west of Shanghai, is renowned for the beauty of its gardens and canals, and for that reason development is treading more carefully there than in many other parts of China. In the Suzhou Garden Villas mixed-use development, Nelson K. Chen of Wong Chen Architects in Hong Kong designed 88 houses using the gray tile roofs, white walls, geometric openings, and other elements of traditional Suzhou houses. The houses, now under construction by a Hong Kong developer in a joint venture with the municipal government, contain 2,900 to 3,300 square feet and overlooks a network of canals and gardens. Principal rooms face south, as Chinese tradition dictate.^[26]

D) Corbusian Resort on a Chinese Island

As China opens up to foreign investment, resort developments for the affluent are likely to proliferate. HLW of New York won a commission from the Asia Pacific Corporation of Hong Kong to design the Hainan Royal Garden Development, a 2,000,000 square foot

condominium and hotel complex on the southern island of Hainan. The condos are organized in a serpentine ten-story structure of concrete, each unit commanding a view of an adjoining golf course. Elevators stop at every third floor to serve an apartment layout based on Le Corbusier's Unite block section from the 1950's. All the apartments—simplexes, duplexes, and penthouses—extend clear though, giving them natural ventilation. At the southern bend of the complex, a monumental 79-foot-high gateway invites visitors to pass from the paved roads and walkway into the tranquil landscape on the golf course side.

The complex is segmented into eight blocks for phased construction. HLW worked with Hsu & Partners of Taiwan and the Hainan branch of the Xan Xie Design Institute on the project, which calls for a high-rise hotel and an underground parking garage for 1,200 cars. HLW also designed three resort villas, called The Miami, The Dallas, and The Malibu, each of which would have an office suite including small conference facilities for business people. Prospects for building the villas are slim, but the first segment of condos is now under construction.

CHAPTER 8

RECOMMENDATIONS FOR COOPERATION WITH CHINESE ARCHITECTURAL FIRMS

When a U.S. firm works in China, and cooperates with Chinese firms, there are many problems to be met in design and construction. Although Chinese architects might help them to solve some of the problems, two different cultures, philosophies, and design processes can cause many additional disputes.

8.1 Detailed Design

Currently the procedure of architectural design in China is classified in three periods as below:

- A) Preliminary design
- B) Extended preliminary design
- C) Construction drawing design

Foreign architectural firms do not produce such detailed drawings because interior design companies and construction companies will take care of this in detail. This is why Chinese architectural firms are very busy. They are even too busy in considering the detail to have time to think about design. When Chinese architects translate foreign construction drawings, they often have to make more detail drawings for the construction. After the drawings are translated, they become two to three times more than the original.

Therefore, building codes and detailed designs are two of the most important factors for foreign architects, which they have to have Chinese architectural firms as cooperation. If you get a project in China, time is most important. You do not have much time to become

familiar with and understand all the codes which are so complex and chaos. For the design of the project, you may have their ability to control the whole design but you have not enough time to consider the detail of every part, even detail to a hand rail which does not have standard designs in China and is often designed by architects. In the U.S., most parts have standards and prefabricated parts, and you just give a model number when you need them. The construction companies will find them from catalogs. You have more time to think about your design.

8.2 Chinese Officials

Totally unlike the U.S., Chinese government officials are important for everything, especially for a foreign project. It is important for U.S. architects and investors to understand the importance of Chinese officials. As the rule and tradition, decisions should be made by government officials. In fact, in most foreign projects, from the beginning to end, Chinese officials control everything. The larger the project, the more officials. Especially in technical problems, these officials do not understand but they still have their ideas, especially in preliminary design. It is not really good to disagree with them directly or ignore them. Sometimes later opinions from the same or different officials are different from the earlier opinions. Which one should be followed? In situations of this kind, Chinese architectural firms can help. They frequently solve this kind of problems. However, you must remember never infuriate the officials.

8.3 Approvals

The approval process in China is long-term and uncertain. It often happens like this. According to the due date rule for government officials, they should give the answer in fifteen days dated from the day the design was sent by a firm. However, after fifteen days, the firm was told that one thing needed to be modified. The firm did so and sent it . Waiting another fifteen days patiently, the firm was told another thing needed to be added. This happened repeatedly. The design for approval for the Shanghai Business City was for over three months. J Portman firm could not believe anything happened like this in the world. When they asked the Chinese architectural firm whether it was a regular process or unusual action, the answer was regular. For them, it was common and natural. Working in China, you have to learn how to be patient.

For approval, your design must be sent to seven departments. They will examine your design. It is a very complex processes and takes a lot of time. These departments are:

- A) Environmental Protection Department
- B) Health Department
- C) Labor Protection Department
- D) Fire Protection Department
- E) Municipal Administration Department
- F) Construction Department
- G) City Planning Administrative Bureau

Meetings will be held in each department one by one. The most difficult thing is to coordinate with each other. It is a social art. You must not only be familiar with your design, but you should also be very familiar with all the codes and government documents,

even the most current documents. You have to know how to get along with the officials in each department. If you can be a friend to them, you save half the time. If they think you are a reliable person and like being your friend, time may be yours. You should never, ever be arrogant, which many Americans are and think is a good personality. Chinese are really sensitive to this and do not like it.

Every Chinese architectural firm has a special department or office to deal with government officials. Their responsibility ranges from looking for projects to solving all detail troubles made by officials. If your cooperator has such a good department, it will save you time and money and spirit.

8.4 Construction Problems

The relationship between architectural design and the construction process is very close, especially in projects constructed in China. All design must consider local construction habits and abilities. Foreign architects sometimes ignore this important point and make unnecessary trouble. For example, in the design for Shanghai Business City, three boilers were arranged on the roof, above on the forty-second floor. J.Portman used a lot of data and examples to persuade the Chinese to accept the design. In the end, Chinese agreed. However, it became complex during construction. The trouble was how to lift the three huge boilers to such a high level. The best way was to carry them to the roof using a helicopter. It did not work because in China they do not have this kind of service. You could not borrow a helicopter from the U.S. or Japan because according to Chinese law, no flights except international airplanes with contracts are allowed to fly over the border of the country. In the end, engineers made use of roofs which gradually project on every

floor. They set hoisted which lifted the boilers up floor by floor, like climbing stairs. In order to lift these boilers, two years were spent from design to construction. From this case, we get an important lesson that the design should consider local conditions, technical abilities and construction traditions. Always remember that the projects will be constructed in China, a developing country. Do investigation or discuss with Chinese architectural consultants first.

Another serious problem in construction is due dates in construction. Chinese construction companies do not have a serious sense for due dates of work. There are a lot of situations that can delay the project. Construction companies can give a thousand reasons. In the past, they were not fined or responsible for delay. But the delayed projects will influence the architectural firms because they are responsible for the projects until they are closed. They have to spend time and engineers on the projects. Here is an example of the project of Guocheng Plastic Company. There was a mistake in the grade of cement in construction and it caused the roof to leak. The way to solve it was to use correct cement. Construction companies did so but the working term for the project was delayed. The foreign investors refused to pay for the extra work time. The relationship of both sides was stalemated.

In the construction of an exterior wall of the Shanghai Garden Hotel, foreign architects introduced new advanced technology which was to use spray coating of powdered marble combined with glue. The cost per square meter was almost equal to natural marble in the same unit. The advantage was it was easy to construct. It reduced the construction time. Good design displayed in construction completely. The reputation of the architectural firm was raised and it would get more projects.

Another factor causing the delay of projects is human factors. A typical example is the Chinese and foreign cooperative project of the New Jingjiang Hotel. The reasons for project delay were most likely because 1) There were too many construction companies working on the project without the leader of them taking responsibility. 2) The architectural firm was in Hong Kong without an office in Shanghai where the project was under construction. Once problems happened in design, construction companies and Chinese project managers had to sent the information to Hong Kong architectural firm, and then wait for instructions from Hong Kong. 3) The Chinese project manager had no right to make changes. The right was on the side of Hong Kong project managers but they were often in Hong Kong.

CHAPTER 9

CONCLUSION

China's construction market has a great potential for development. Furthermore, the rate of construction continues or accelerates in next ten or more years. The rate has decreased since 1994. However, economic development rate will not stop by adjustment but it could be slower than that of last year. The national economy will keep growing at annual rate of 12%. From the information on China's economic development in the past fourteen years, we predict future successes and good prospects (see figure 4). Therefore, the construction market will not be influenced very much by the adjustment. That is why foreign financial groups continue to invest in this market.

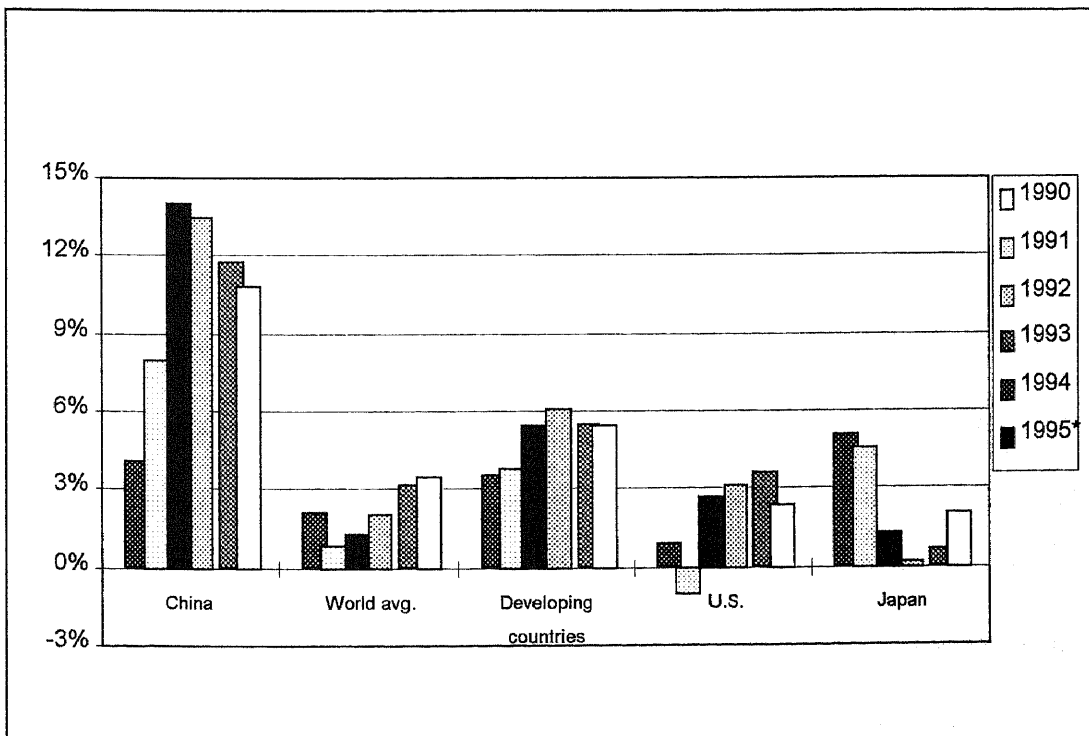


Figure 1. China's GNP Annual Growth Comparison

The next step for investors is probably in the fields of education, financial, and commercial development and housing for middle and low income consumers. A great number of public buildings will be erected to meet the demands.

In this strange, new place American firms will face two disadvantages. The first is anti-foreignism or what is called "local protectionism" which is common in many countries. It means that an American architect is likely to have fewer chances than local architects to get projects such as housing and general public buildings. The second is cultural hinder. Although modern architectural theories are accepted by most Chinese architects, the strong traditions formed by the long history still dominate in the architectural field. These problems will be overcome by market rule. For example, the domestic housing market was to be open to overseas investors in 1994. In 1995, Shanghai government decided to allow and encourage overseas participation. The government announced that there are two situations to be publicized for international bid:

- A) Projects invested by China and foreign company
- B) Technology of projects is high level and Chinese are hard to control

U.S. firms have two advantages. First, advanced technology, high quality design and good service will give U.S. firms advantages over Chinese firms. Second, U.S. firms have more favorable opportunities to win projects by U.S. investors. "You can do things over there that you would never get to do back home," says Christopher Choa, who leads HLW's design work in Asia. "In the U.S. , if you go after a research lab, you're asked how many research labs you have done in the past six months. In China, it's assumed that if you are an U.S. firm, you are qualified to do all kinds of work." This is powerful incentive, one that reinvigorates the U.S. firms and expands their skills.

Large U.S. firms are hired, in part, because they have a reputation for handling projects that modernizing parts of Asia have had limited experience in producing. “The tall building is a specialty of ours,” says Jon Pickard, a senior associate at Cesar Pelli & Associates. “Because we have so much experience with all the complexities involved in tall buildings, we can design them efficiently and with an artistic intention.”

Large mixed-use buildings, common in the U.S., are just beginning to be built in substantial numbers in some parts of Asia. RTKL plays on its mixed-use expertise to get such projects in the Far East. These in turn sometimes allow designers to try new things and master greater challenges.

In China, a mixed-use project may contain a podium of three to seven stories devoted primarily to retailing, with one or more other uses, such as offices, hotels, or apartments, placed above. Where such mixed-use developments have been built in the U.S., they have contained 1.5 to 2.5 million square feet. In Asia, they swell to two to four million square feet, according to David Brotman, vice chairman of RTKL. U.S. also make good candidates for Chinese work because of expertise in resorts, theme parks, suburban housing and urban design, all of which will become more important as Chinese prosperity grows.

The U.S. reputation for trendsetting further aids U.S. firms. “In China today, they are in love with everything Western everything they see on TV.” Brotman says. Son Hackl, president of Loeb Schlossman and Hackl in Chicago, observes, “The Chinese have the perception that The U.S. are at the leading edge of form-giving.” This is an advantage for The U.S. in getting work, but it can also be an invitation to superficial design.

With the emphasis on the world's economy transferring to Asia, China, the largest

economic market, is impossible to ignore by businessmen. More and more U.S. businessmen are going to invest in the market. They need bridges to connect with their subjects, to know Chinese market, and to use high quality architectural firms to extend their business' influence. So do Chinese businessmen. It is a good time for U.S. firms to play the connecting roles. They are good intermediaries much better and more effective than Chinese or The U.S. businessmen themselves looking for cooperative partners in a strange country. On the other hand, there is a good opportunity for them to win the clients by using their reputation and capability.

Up to now, there have been only a few U.S. architectural firms in China. The reasons are many. While culture and geography are two of them, the lack of information and the slow progress by U.S. businesses to enter the Chinese market are other important reasons. This situation is changing. The U.S. has risen from the fourth to the third largest foreign investor in China. Most of the investments are in the fields of industry, infrastructure and communications. Construction needs in these fields are great. At the same time, U.S. construction market has had little growth since 1988 and will have little chance to grow in the futures (see figure 5 and 6). There is a great advantage chance for The U.S. firms to take. Why not The U.S. firms?

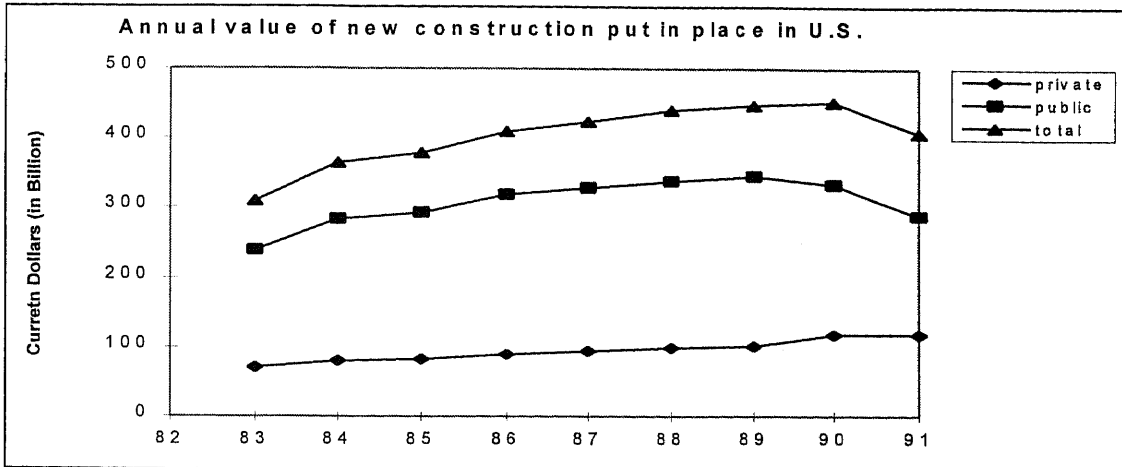


Figure 1. Annual Value of New Construction Put in the United States

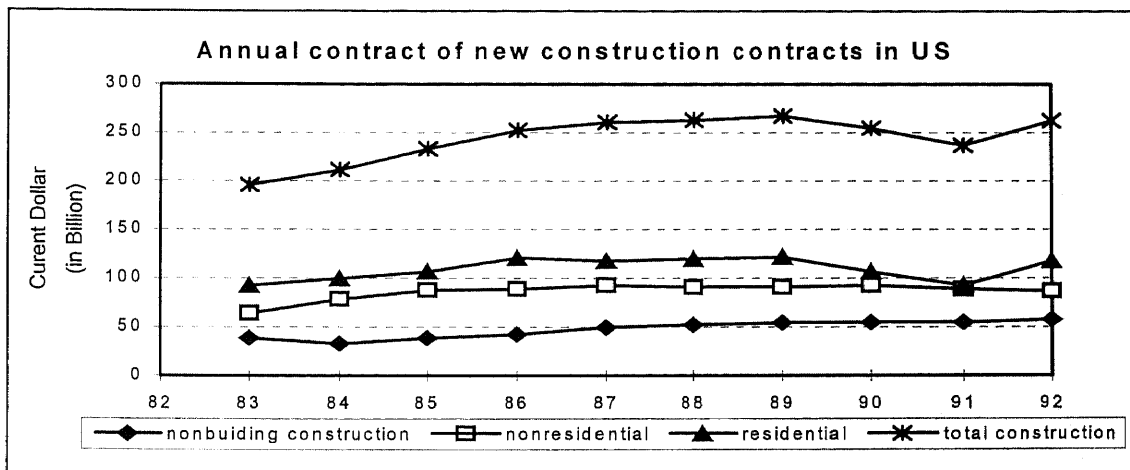


Figure 2. Annual Contract Value for New Construction Contracts in the United States

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