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CONSTRUCTION OF NEW HOUSING IN COMMUNIST CHINA 1953-57

CIA/RR 151
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(Project 47.1965)

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CONSTRUCTION OF NEW HOUSING IN COMMUNIST CHINA*
1953-57

Summary

During the First Five Year Plan (1953-57) in Communist China the goal for the construction of new housing was exceeded by 74 percent. Expenditures for the 80 million square meters (sq m) of new housing** constructed by the state for wage and salary workers during the plan amounted to 4.26 billion yuan,*** or about 8.7 percent of the total investment of 48.78 billion yuan in capital construction. The new housing constituted 40 percent of the total floorspace constructed during the period. Even though the amount of housing constructed was substantially in excess of the plan goal of 46 million sq m, new living quarters were provided for only about 7 million of the 24 million wage and salary workers in China at the end of the plan period. The construction of housing, therefore, did not keep pace with the steady influx of workers and their dependents into the industrial and urban areas. In addition, excessive migration of rural inhabitants to these areas and the state policy of confiscation of private housing reduced the amount of living space available. Official measures to relieve the resulting shortage included (1) attempts to stem the rapid growth of cities by the control of migration from rural areas and (2) attempts to increase the total amount of housing constructed by lowering standards and thereby effecting savings in the cost of construction.

In 1958, therefore, Communist China began the first year of the Second Five Year Plan (1958-62) with the problem of adequate housing for workers only partially met. Although there have been no official

* The estimates and conclusions in this report represent the best judgment of this Office as of 1 August 1958.

** Measurements of housing in Communist China are given most frequently in terms of total floorspace and only rarely in terms of living space. There is no indication that the Chinese have attempted to categorize measurements of housing as has been done in the USSR. The Asian standard of living is such that differentiation in these terms is almost meaningless. In this report, therefore, total floorspace and living space are to be considered as interchangeable.

*** Yuan may be converted to dollars at an exchange rate of 2.46 yuan to US $1, which is not necessarily an accurate reflection of the dollar value. A more realistic ratio for construction work is estimated to be about 4 to 1.

announcements concerning the amount of housing construction planned in the Second Five Year Plan, it is estimated that approximately 160 million sq m of new housing can be constructed without increasing the percentage of total capital construction investment devoted to housing. It is probable that measures will be used to save state investment by aiding private housing construction and repair and by exercising stricter controls over private property in order to increase housing stocks. Even then, the state will need to allocate additional funds for new housing construction, or housing will remain a serious problem in 1962.

I. Introduction.

Housing in the economy of Communist China suffers as a result of conflicting values placed upon it by the state and the individual. The state concentrates its resources and energy on the sectors of the economy which create producer goods, especially heavy industrial items, rather than consumer goods and services. Such an economy, however, cannot be sustained unless at least a minimum standard of living is made available to its labor force. Thus housing must be made available, conveniently located with respect to industrial enterprises and construction sites, if the state is to be assured of an adequate labor supply and an efficient level of labor productivity. Fundamentally, however, the type of housing thus provided by the state often meets only minimum shelter requirements, frequently at the expense of the desires and needs of the individual. The state considers the worker only as a tool to further production and feels required to provide better living conditions only to the degree of assuring his productivity.

When the Communists came to power in China in 1949, their intent to transform gradually an ancient agricultural nation into an industrial state necessitated the creation of a labor force to construct and support the expanding economy. Many of these workers came from cities, towns, and villages and often from the same urban area in which the construction site or enterprise to which they were assigned was located. From years of neglect, existing housing in these areas was squalid and crowded. According to official Chinese Communist estimates, more than 50 percent of all urban housing in 1949 was in a state of complete disrepair.* In Peking, for example, it was estimated that two-thirds of the housing was in this condition. The state considered it necessary, therefore, at the beginning of the First Five Year Plan

* Based on estimates from 166 of the largest cities which would include cities with a population of 100,000 and larger.

to construct new housing adjacent to enterprises as part of the over-all welfare plans for the workers. Only the "wage and salary workers,"* totaling about 24 million at the end of the Five Year Plan 1/** and constituting about 8 percent of an estimated total labor force of 300 million workers, have benefited from these amenities. Since the effort in new housing construction has been limited to wage and salary workers, this report is concerned only with this group and touches on private and urban housing only insofar as they affect this segment of the working population.

It is believed that the amount of new housing constructed by the state between 1949 and 1952 was negligible. 2/ Although the Communists claim that large sums of money were appropriated for the building of workers housing during this period, it is believed that most of this money was spent for repairs. In 1952 a start was made in housing construction with concentration in the industrial areas of the Northeast. In that year a total of about 5 million sq m were constructed in the 5 cities of Peking, Tientsin, Mukden (Shen-yang), An-shan, and Shanghai. 3/ For the most part, however, the reconstruction period, 1949-52, saw little concerted activity in new construction of housing because the major effort was in the direction of the rehabilitation of public utilities. 4/

II. Scope of the Housing Problem.

Because the majority of workers in Communist China were attached to construction sites and enterprises located in urban areas, the problem of housing workers during the First Five Year Plan was closely related to the total problem of urban housing. Two important aspects of the problem of urban housing are a too rapid increase in the urban population*** and a wide area of poor urban housing.****

* This group, hereafter referred to as workers, is roughly similar to the group designated workers and employees in the USSR except that until recently the Chinese have included in this category "non-socialized" workers. Most of the workers in Communist China have been "socialized," so that the two designations now are quite similar. This category of workers, along with industrial workers, includes workers in transportation, communications, commerce, banking, and the like, considered nonindustrial by the Chinese Communists. The common denominator of this group of workers, both industrial and nonindustrial, is the fact that they receive wages and salaries.

50X1

*** Obviously the most congested urban areas were those where the old industrial bases were being expanded or where new bases were being established.

**** It must be remembered that urban housing is privately owned and is one of the few forms of capitalist (footnote continued on p. 4)

The great increase in urban population, in addition to natural increase, has been attributed by the regime to several factors. With the industrialization of cities during the First Five Year Plan, there was a steady influx of workers into urban areas, and this labor often was allocated irrationally in time and space. Construction workers were sent to future construction sites earlier than they were needed or were retained too long after construction was completed. 6/ Workers were brought in from remote areas rather than being drawn from the local labor supply. The number of workers families migrating into urban areas greatly exceeded the amount planned. In addition, rural inhabitants, attracted by better living conditions in the cities, further swelled the urban population. (For a map showing the population of urban areas, see Figure 11.*) As a result, the excess population created overcrowded, squalid living conditions in the cities since it could not be accommodated in the amount of housing available. The lack of adequate urban housing is shown in the comparison of increases in population and increases in housing stock in 1956 above 1949 reported for Shanghai, Peking, and Wu-han as follows 7/:

	Population (Millions)			Housing Stocks (Million Square Meters)			Total Average Floorspace Per Capita (Square Meters)	
City	1949	1956	Increase in 1956 Above 1949 (Percent)	1949	1956	Increase in 1956 Above 1949 (Percent)	1949	1956
Shanghai	5.74	7.0	24	23.59	26.82	14	4.1	3.8
Peking	2.09	4.14	98	13.74	20.46	49	6.6	4.9
Wu-han	0.897	1.45	62	3.64	4.44	22	4.0	3.0

The increased urban population, reported to have reached 92 million in 1957, 8/ was so large that solution of the urban housing problem was still considered a remote possibility. 9/

The other important aspect of the housing problem in Communist China is the condition of the urban housing. In 1957 the Communists estimated that urban housing in 1949 consisted of about 220 million sq m, more than

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ownership that has been allowed to remain by the Communist regime. A recent announcement stated that all houses which are leased would be nationalized by September 1958. Information as to what is involved in the implementation of this new policy is not known, but the policy implies a "distribution" of housing space. Apparently, if a family owns what could be called a large house, other people will be moved in with them to occupy the "excess" space. 5/

* Inside back cover.

half of which were in a state of complete disrepair. They estimated further that more than 100 million sq m of inadequate housing still existed in 1957, a figure which implies that practically no urban housing in China is up to adequate standards.* 10/ After 1949 and throughout the First Five Year Plan, privately owned housing stocks suffered in urban areas. Houses in good condition were confiscated for state use as offices, warehouses, or reception centers, a procedure which cut deeply into the amount of available housing. House owners were reluctant to invest in repair and maintenance of their houses for fear they would be requisitioned. Houses, which could easily be repaired and rented, were left vacant by their owners. In Wu-han it was reported that in 2 streets alone 53 houses could be readily occupied with only minor repairs. 11/ As a result of the state policies toward landlords, a sizable portion of privately owned housing stocks were old and left unrepaired. In Wu-hsi, a city in Kiangsu province, for example, it was estimated that in 1957 the proportion of old housing to total housing was as follows 12/:

Age of Housing (Years)	Proportion of Total Stock (Percent)
Over 100	11
50 to 99	34
30 to 49	30
10 to 29	18
Under 10	7
Total	100

This tabulation implies that over three-fourths of the houses were dilapidated and in need of major capital repairs.

Since the worker is an integral part of the expanding economy, the state considers it necessary to construct new housing for workers as a measure to insure production. Because of higher priority requirements in the productive sector of the economy, only limited amounts of funds and materials can be allocated for the construction of this housing. In 1953, attempts were made to plan urban construction. One designing department in each city was to be given the responsibility of coordinating urban construction, especially with relation to the construction of housing by the various construction units. 13/ Residential areas were to be built near plants, and public structures, consisting of boiler rooms, stores, bath houses, schools, nurseries, and recreation halls were to be constructed adjacent to living quarters in order to economize on land use and to reduce construction costs and administrative expenses. Distances from the center of the city to the outlying areas where enterprises were usually located were to be kept within

* Based on estimates from 166 of the largest cities which would include cities with a population of 100,000 and larger.

limits so that public utilities, such as sewage, water supply, and communication lines could be fully utilized with a minimum investment.

The implementation of these plans, however, fell far short of the intended goal. Instead of making headway toward the solution of the housing problem, inexperience in planning, lack of coordination and controls in construction, and a policy of expediency have succeeded only in contributing to the continued existence of this problem. Old sections of cities were indiscriminately destroyed to make way for the construction of roads, plants, and public buildings. In Peking, Wu-han, T'ai-yuan, and Lan-chou, about 2,080,000 sq m of old housing were reported torn down between 1949 and 1957. In Kuei-yang, 138,000 sq m of residential construction was razed in 1956, two and one-half times as much as was newly constructed. 14/ The selection of industrial sites was poorly coordinated with available housing, a mistake which caused workers to travel long distances to work. Such new industrial cities as T'ai-yuan, Sian, Lan-chou, and Lo-yang were too extensive in scale and overextended in design. 15/ When living quarters in the Chien-hsi industrial area of Lo-yang were completed, for example, the water supply, drainage, and service facilities were still under construction, leaving the workers without water and food supplies. 16/ Individual enterprises were given the responsibility of providing housing for their workers, but in implementing construction plans, some enterprises used housing funds for other types of construction, so that the workers had to provide housing for themselves as best they could. Other enterprises attempted to raise the living standards of the workers too rapidly by construction of high-cost housing, thereby depleting their funds before enough housing had been constructed. Workers, therefore, were often crowded into buildings designed to accommodate at least half the number of persons assigned to them.

In the long run, much of the new housing constructed for workers may add to the housing problem and cause losses to the state. Most of the new housing constructed for workers before 1955 consisted of multistoried, permanent structures of brick and tile, with an estimated life of about 50 years. Since 1955, when economy in construction was stressed, the trend has been toward construction of a temporary and simple type of housing, with an estimated life expectancy ranging from 5 to 20 years (see the Table*). Not only has the average life expectancy of housing been decreased by the type of housing constructed but the over-all quality of construction, even of permanent housing, has been poor. Inferior construction materials have been used and inept techniques employed. The new housing constructed, therefore, must be properly maintained or it will merely contribute more inadequate

* P. 18, below.

housing to the inadequate housing stocks already existing in urban areas and eventually prove costly to the economy as a whole.

III. Performance in New Housing Construction During the First Five Year Plan (1953-57).

A. National Construction.

1. General.

In December 1957 the Chinese Communists announced that a total of 80 million sq m of new housing had been constructed for workers during the period of the First Five Year Plan, 17/ thus overfulfilling the original goal by 74 percent. Even with this accelerated construction, only about 7 million workers and their dependents,* out of the total of 24 million workers in 1957, were provided with new housing. Although the volume of housing constructed during the period was about 40 percent of the total volume of capital construction, the 80 million sq m of floorspace provided housing for little more than the equivalent of the increase of 5.2 million workers added to the labor force during the same period. 20/

The First Five Year Plan called for the construction of 46 million sq m of housing for workers. 21/ Performance during the first 3 years of the plan was as follows 22/:

Year	Housing Constructed (Million Square Meters)
1953	12
1954	13
1955	14
Total	39

* This estimate probably overstates the number of workers housed during the First Five Year Plan. The Chinese Communists estimate that there was an average of 4 sq m of floorspace per capita in urban housing in 1957. 18/ Based on this average of 4 sq m of floorspace per capita, the 80 million sq m would provide housing for 20 million persons. Assuming that for each worker there is an average of 2 dependents, the 20 million persons can be equated to about 7 million workers. The number of workers and dependents provided with new housing, however, undoubtedly would be much smaller than 7 million if the actual distribution of living space were known. It was reported in 1958, for example, that each railroad worker in Peking was [footnote continued on p. 8].

By the end of 1955, about 85 percent of the plan goal had been completed. Even with this accelerated construction, adequate housing could not keep pace with the growth of the economy and the steady influx of workers and their dependents into the urban and industrial areas In Mukden (Shen-yang), for example, it was reported that by 1956 the number of workers had increased 217 percent* whereas the total area of new housing construction had increased only 31.2 percent. 23/ The poor situation in respect to housing threatened to become worse in 1955 when the construction industry cut back on nonproductive construction and stressed economies in construction. The need for additional housing was so serious, however, that the state felt required to construct substantially more housing.

In 1956, about 27 million sq m of housing were constructed, not only greatly exceeding the annual plan goal of 13 million sq m but also overfulfilling the First Five Year Plan goal 1 year ahead of schedule. 24/ Throughout 1957, there was an increasing ambiguity in official announcements on the amount of housing constructed by the end of 1956. Apparently some of the announcements were cumulative and included housing constructed during 1957. Regardless of the ambiguity of announcements on performance in 1956 and 1957, the final announcement that 80 million sq m of housing had been constructed during the First Five Year Plan indicates that the greatest amount of housing was constructed during the last 2 years of the plan.

The construction of 41 million sq m during 1956-57 is a feasible increase compared with the period 1953-55, when 39 million sq m were reported constructed. 25/ In 1955 the annual plan of 11 million sq m 26/ was overfulfilled by 3 million sq m, or about 27 percent. It is possible that lowering construction standards and reducing construction costs in 1955 enabled substantially more housing to be constructed with but a slight increase in expenditure during the remainder of the plan period.**

Even though the regime may construct 160 million sq m of new housing during the Second Five Year Plan,*** the amount will not be

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allotted space in new housing according to rank as follows: directors, 60 sq m; "high functionaries," 40 sq m; and "ordinary" employees, 20 sq m. 19/ Although the number of directors and high functionaries is much smaller than the number of ordinary employees, this uneven distribution of floorspace would reduce the number of workers that could be housed in any given total of square meters of housing constructed.

* This percentage undoubtedly included workers dependents.
** See III, B, p. 10, below.
*** See Appendix B, Methodology.

enough to provide housing for the total number of workers, which is planned to be increased to nearly 31 million by 1962. Continued lowering of construction costs and standards, the means by which the volume of housing construction was nearly doubled during the First Five Year Plan, would enable more workers to be housed, but it would only contribute to the further deterioration of housing stocks.* Even by exercising stricter controls over private housing and migration of rural population into urban areas, the state cannot gain a large area of adequate housing unless capital repair is made on existing housing stocks.** Thus the Communist planners will buy time in their attempt to meet the housing problem but will necessarily continue to prolong the period during which the housing problem will remain acute.

2. Selected Economic Sectors.

The expanding economy of Communist China requires that large numbers of workers be housed near industrial plants, mines, and construction sites. Each ministry or bureau is responsible for housing the workers in its employ. Implementation of this responsibility is left to individual enterprises under the jurisdiction of the central state organization. Statistics on the amount of workers housing constructed at the national level has been reported by a few of the ministries and bureaus. These housing figures usually duplicate a portion of the amount of housing reported as constructed in urban areas where units of the particular enterprises were located.

In January 1957 the Ministry of the Metallurgical Industry announced that from 1952 to 1956 new housing for metallurgical workers had a total floorspace of more than 5.6 million sq m. 27/ In June of 1956 the Ministry drafted a workers welfare plan with emphasis on housing. 28/ It provided for the construction of 3.7 million sq m of housing during 1957 and 1.5 million sq m to be added annually during 1958 and 1959. During the same 3 years, between 500,000 and 1 million sq m of living quarters were to be reconstructed or repaired. Part of the workers living quarters which had been taken over for such things as business offices and hospitals were to revert shortly to their original use.

The amount of housing reported as constructed for workers in other economic sectors by the end of the First Five Year Plan period (see the Graph, Figure 1***) is as follows 29/:

* See IV, B, 2, p. 17, below.
** See II, p. 3, above.
*** Following p. 10.

Economic Sector	Amount of Construction (Million Square Meters)
Railroads	5
Coal mining	2.9
Electrical	1.726
Chemical	1.48
Petroleum	0.61
Post and telecommunications	0.4

Housing constructed for railroad workers was financed by state investment and loans. Financing of part of this construction by loans indicates that some of the 5 million sq m of housing were constructed by the workers themselves.* Before 1956, most of the housing constructed for petroleum workers was only of a very temporary nature. In 1956, permanent housing amounting to some 610,000 sq m was constructed, and, in addition, 490,000 sq m were planned for 1957. 30/ Early in 1957, one of the economy measures adopted by the Ministry of the Petroleum Industry provided that no workers housing was to be built in areas where petroleum was the only industry but, instead, that living quarters were to be provided in nearby localities. 31/ Coal miners were probably among the first groups of workers to be provided with state-financed housing before 1953. Even with the completion of 2.9 million sq m of housing by the end of 1956, housing was still one of the most urgent problems of the coal industry. It was planned, therefore, to add 1.3 million sq m of housing for miners during 1957. 32/

B. Expenditures for Housing.

In December 1957 the Chinese Communists announced that a total of 4.26 billion yuan had been invested** for the construction of 80 million sq m of new housing for workers during the First Five Year Plan. 33/ Investment in housing construction was about 8.7 percent of the total investment of 48.78 billion yuan in capital construction. 34/ Of the 11 billion yuan invested in nonproductive construction, housing accounted for about 37 percent.***

* See C, p. 12, below.

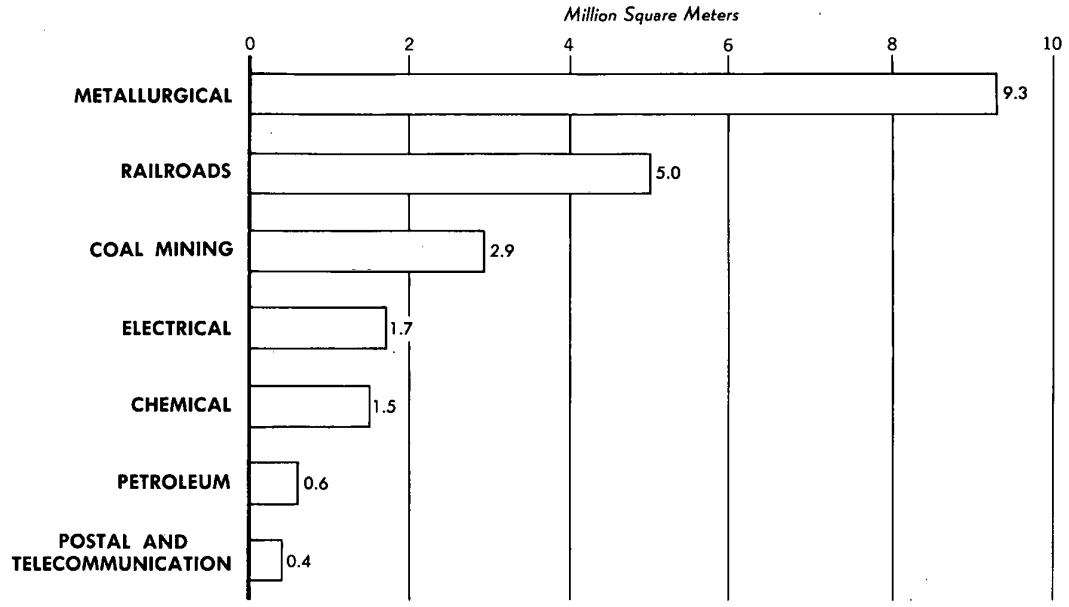
** The First Five Year Plan did not give a figure for planned investment in housing construction, either in an actual amount of yuan or as a portion of nonproductive capital construction investment. Nonproductive construction covers fixed assets which contribute to the wellbeing of the people but which do not directly influence the production of goods; included under this heading are workers housing, cultural and educational facilities, health institutions, and public installations.

50X1

Figure 1

COMMUNIST CHINA

NEW HOUSING FOR WORKERS IN SELECTED ECONOMIC SECTORS, 1957



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In the first 4 years of the First Five Year Plan, 1953-56, the total investment in housing construction reportedly amounted to 3.7 billion yuan, leaving 560 million yuan as the investment for 1957. 36/ Using the annual investment figures announced earlier for 1954 through 1956, a distribution of investment for the Five Year Plan can be made as follows 37/:

Year	Investment (Million Yuan)	Housing Constructed (Million Square Meters)
1953	1,540*	12
1954	735	13
1955	570	14
1956	855	27
1957	560	14
Total	4,260	80

Although the tabulation above is an estimate, it illustrates that considerable cost reductions have been made since 1953. At the beginning of the First Five Year Plan, inexperience and an unrealistic attitude of raising the housing standards of workers too rapidly led to high construction costs. Some actual costs of housing constructed before 1955 were reported as follows 38/:

Enterprise	Cost per Square Meter (Yuan)
An-shan Iron and Steel Company	163
Dairen Petroleum Research Office	100
Harbin Electric Meter and Instrument Plant	102
Liaoning Machinery [redacted]	100

50X1

In 1955 the construction industry cut back on nonproductive investment projects and stressed economies in construction. Construction unit costs for housing were reduced from 90 yuan per square meter to between 20 yuan and 60 yuan per square meter, depending on the geographical location and design of the intended structure. 39/ The standard construction cost of 90 yuan per square meter implies that an initial investment of more than 4 billion yuan was needed to construct the 46 million sq m called for in the First Five Year Plan. Reduction of

* The annual investment figure for 1953 was derived by adding the investment figures for 1954-57 and subtracting the sum from the total investment of 4.26 billion yuan.

costs, therefore, was substantial enough to enable 80 million sq m of housing to be constructed at approximately the same amount of investment initially required for the construction of 46 million sq m of housing.

In 1958, there have been indications that reductions will be made in the nonproductive sector of the economy. If a reduction in the total investment for nonproductive capital construction is made, it is probable that the portion of investment allocated to public structures* and public utilities will be decreased. Investment in housing apparently will retain the same percentage relationship with relation to the total investment in capital construction as it had in the First Five Year Plan. Continued accumulation of savings through reduced construction costs probably will be the main source of additional funds, as there is no indication that the proportion of capital investment allocated to housing will be increased in the immediate future.

C. Private Housing Constructed by Workers.

During the last years of the First Five Year Plan in Communist China there was increasing pressure on workers to build their own homes in order to relieve the housing shortage more quickly and to save on investment and construction materials. Reportedly, 100,000 workers had provided new homes** for their families in this way during the plan period. 40/ By encouraging workers to use discarded materials and their own labor, housing could be constructed at very low cost. This program of "self-construction with public aid" provided workers with housing without any investment by the state. The capital required reportedly could be borrowed by the enterprise from the State Construction Bank or could be advanced from welfare funds belonging to the enterprise. 41/ The worker repaid the loan over a period of from 3 to 5 years at a low interest rate. If a worker was required to move to another locality because of work, he was to be compensated for his house on the basis of a standard depreciation rate. 42/

During 1955 a total of about 17,984 sq m of self-constructed housing reportedly was built by railroad workers. 43/ The Hankow Transportation Bureau of the Cheng-chou Railroad Administration, for example, planned to assist in the design of 2,000 housing units and to furnish the construction materials. Each housing unit, consisting of 1 room of 19 sq m and a kitchen, was estimated to cost under 200 yuan per unit. 44/ During the same year, coal miners built a total of 381,522 sq m of self-constructed housing. 45/ In 1956 the Pao-t'ou Engineering Company

* For what is included in public structures, see II, p. 3, above.
** These homes probably totaled more than 2 million sq m of floorspace. This is based on an estimated 22 sq m of floorspace per family. (See Appendix B, Methodology.)

furnished its workers with discarded materials, and about 36,730 sq m of housing were constructed with a total investment of 200,000 yuan, or about 5 yuan per sq m. 46/

Occasionally, however, this method of solving the housing problem did not have the desired results. For example, the Fu-shun Bureau of Mining Affairs in 1955 furnished its workers with inferiorly mixed adobe brick, so that the houses crumbled within a few days after construction. Other brick was improperly protected from the elements and became a pile of mud with the first rain. 47/ In 1957 it was reported that about 90,000 sq m of self-constructed housing in Fu-la-erh-ch'i [redacted] built by the construction workers under the Ministry of Construction and Engineering were disintegrating as a result of rain. These houses were only simple mud-and-thatch houses but reportedly caused a loss in state property estimated at 70,000 yuan. 48/ 50X1

IV. Housing Characteristics.

A. Types of Housing.

The type of new housing constructed by the state for workers during the period of the First Five Year Plan in Communist China consisted of multistoried and single-story types of dwellings. (See Figures 2-5.*) Multistoried dormitories from 2 to 4 stories in height were constructed for both single workers and workers with families. Workers were housed also in two-story and single-story dwellings. Generally, the ratio of multistoried dwellings to single-story dwellings was high. In some urban areas it may have amounted to between 80 and 90 percent of the total housing constructed. 49/ In 1955 the number of multistoried dormitories constructed was reduced when an economy drive was initiated in an attempt to lower construction costs and save on construction materials. The tendency in the last years of the First Five Year Plan was for the construction of a greater proportion of two-story and single-story dwellings. Early in 1957, for example, the T'ai-yuan City Construction Administration planned to reduce the number of residences of three or more stories from 70 percent to 30 percent of the total number constructed. 50/

1. Family.

For many centuries the greater proportion of Chinese families have lived in crowded quarters. The traditional form of Chinese housing was a series of rooms built around a central courtyard which served as a work, play, and dining area. These houses were usually one-story dwellings, but as the family grew in numbers or in prosperity

* Following p. 14.

rooms could be added as a second story or around new courtyards adjacent to the side or rear of the house. These added courtyards sometimes were rented to other families. At least 3 generations of 1 family or several families were often housed under 1 roof. In later years a new type of housing in the form of apartment buildings was constructed in urban areas. The majority of the housing, however, was of the courtyard type.

The "average" type of housing for a family in Communist China is difficult to describe because the type of housing varies widely. The climatic variations within the country, the construction materials available, the size of the family, the priority for housing accorded workers, and the policies of individual state enterprises toward housing are all determining factors in the type of housing. Some generalizations can be made, however. Workers employed by state enterprises are usually better paid and better housed. (See Figure 6.*) In state-constructed housing a small family** lives in 1 room and a large family in 2 rooms. In some instances, light, water, and heat are provided. Most of the family quarters consist of one room plus a kitchen or the use of a kitchen in both dormitories and in houses. Internal hallways and closets are nonexistent, and toilet facilities, if they exist indoors at all, are usually shared by several families. In the Northeast, rent for such accommodations ranges from 3 to 5 percent of the workers wages. 51/ The majority of workers, however, live under less favorable conditions. Even in state-constructed housing, water is obtained from a single tap outdoors, and cooking is done on a portable stove which is also the only source of heat during the winter. Living space for families averages about 22 sq m per household.*** As housing shortages became more acute during the First Five Year Plan, allotments of living space were reduced. In some state-constructed housing the number of families in the building is twice that for which the building was designed.

2. Single Workers.

The major type of housing constructed by the state for single workers, both men and women, has been multistoried dormitories. In general, each floor has a series of bedrooms, shared toilet facilities, and a small vestibule with a heating stove. The rooms are about the

* Following p. 14.

** The estimate that for each worker there is an average of two dependents applies to workers in the aggregate, including both married and single workers. It is believed, however, that the "average" family or household has more than three members. Apparently a small family has up to 5 members, and a large family has more than 5 members.

*** Reports of actual occupancy indicate that this figure is realistic. (See Appendix B, Methodology.)

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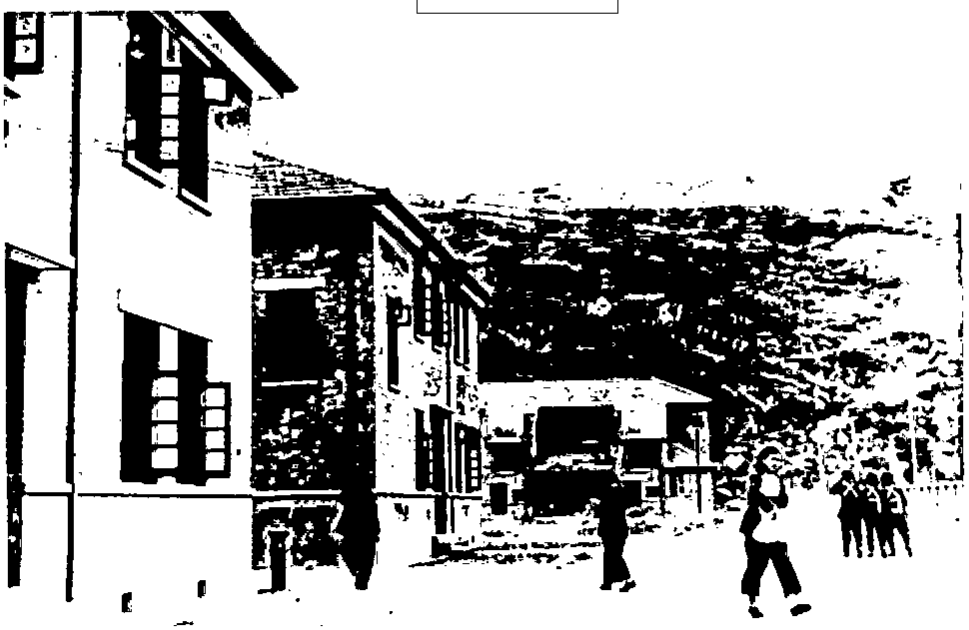

Figure 2. Communist China: Two-Story Housing for Workers at State Cotton [redacted] in Wu-han, Hupeh Province. 50X1

Figure 3. Communist China: Single-Story Housing for Coal Miners at Huai-ning, Anhwei Province.

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[redacted] 50X1

50X1

Figure 4. Communist China: Multistoried Housing for Workers at State Automobile [redacted] at Ch'ang-ch'un, Kirin Province.

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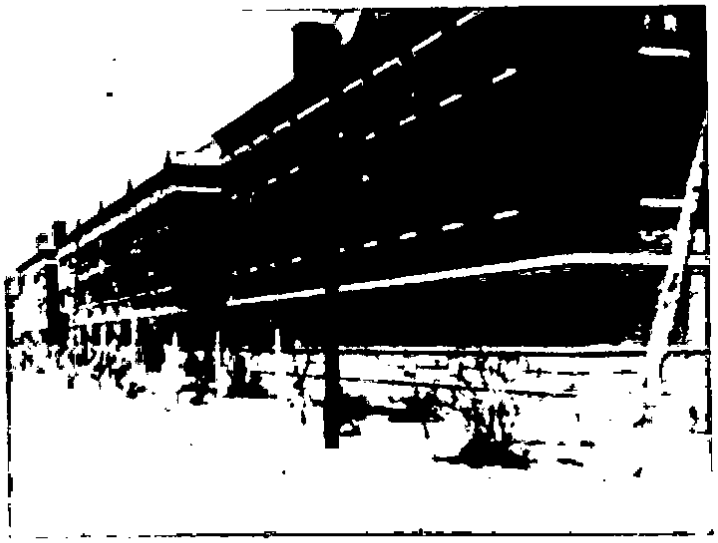

Figure 5. Communist China: Multistoried Housing for Workers at An-shan, Liaoning Province.

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Figure 6. Communist China: Interior of a Model Dwelling for Workers at An-shan, Liaoning Province.

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50X1

same size as the rooms in family dormitories, excluding the kitchen, with a floorspace of from 18 to 20 sq m. From 4 to 5 workers share a room. Dining halls and bath houses are usually constructed adjacent to these dormitories. Better paid workers are housed in these accommodations and are charged a low rental. The less fortunate workers, and even well-paid transient workers, are housed in temporary wooden barracks, tents, and huts. The attitude of some state enterprises, especially those in charge of construction projects, is to house workers only sufficiently to protect them from wind, rain, and dampness. 52/

B. Quality of Housing.

On the whole the quality of housing constructed during the First Five Year Plan in Communist China was poor. In many instances, inferior construction materials were used, and inept techniques employed. A lack of interest in civil construction and in proper housing inspection resulted in a low qualitative level. 53/ With no definite control system, uniform construction norms, or strict supervision by higher level construction organs, serious waste resulted. It is reported that at 1 plant 47 percent of the total investment was wasted. 54/ Although waste often resulted from the use of higher standard designs and improper allocation of funds, lack of coordination in all phases of construction was the dominant contributing factor.

1. Design.

During 1955, with the cutback on nonproductive investment projects and the stress on economy in construction, the standards of construction costs* for dwellings were lowered from 90 yuan to from between 20 and 60 yuan per square meter of floorspace. 55/ This meant that the designs for workers housing would have to be changed and certain structural features eliminated to meet the new standards. Each enterprise was to have the continuing responsibility for adapting blueprints from the central designing office to its own particular circumstances of locality, climate, and availability of construction materials, within the range of cost set by the state. The coal industries, for example, set construction costs per square meter of housing at 45 yuan for areas north and 30 yuan for areas south of the Yangtze River. 56/ The Northeast Construction Design Office of the Ministry of Construction and Engineering set the following cost norms per square meter of floorspace for three different types of workers dormitories: low-standard, 21 to 26 yuan; medium-standard, 28 to 37 yuan; high-standard, 43 to 47 yuan. 57/

* For what is included in estimating construction costs, see Appendix A.

At the beginning of the First Five Year Plan the plans and designs of workers housing were ambitious by Asian standards. Residential areas were to be built adjacent to enterprises. They were to fit into an over-all urban plan so as to utilize land and public facilities such as water supply, sewage, and roads. Schools, nurseries, stores, bath houses, and other public buildings were to be constructed within each residential area to service the workers living there. Workers housing was to be a permanent, dormitory type of structure of 2 to 4 stories, usually of brick. Each family was to be provided with a kitchen, running water, electricity, and toilet facilities. Housing of this type reportedly was constructed in Shanghai, Tientsin, and Mukden in 1953. 58/ Apparently, only model workers were allowed accommodations in this better housing. Wherever this type of housing was constructed, however, it usually ran well above the standard cost of 90 yuan per square meter of floorspace.*

In 1955 the General Bureau of Design of the Ministry of Construction and Engineering had the responsibility for drawing up new designs and plans for housing. 59/ It was considered possible to design and construct dormitories 2 to 4 stories high within the limit of 60 yuan per square meter, except for regions with temperatures below freezing. In accordance with climatic conditions and the prices then prevailing in the Peking area, a building equipped with water, electricity, and heat and toilet facilities could be constructed at a cost of 52 yuan per square meter, providing certain structural changes were made. By reducing the thickness of outside walls 13 millimeters, a saving of more than 6 yuan per square meter could be made. By filling in cracks around windows and by using single-barreled heating pipes along corridors only, the total building cost could be cut 3.5 yuan per square meter. In addition, by reducing the thickness of floors, economizing on construction materials, limiting each story to 3 meters in height, and adopting shared kitchens and toilet facilities, construction costs could be reduced even more. 60/ Illustrations of three of the new designs made up by the General Design Bureau are shown in Figures 7-9.** These dormitories were especially designed for the area of North China. 61/

The front elevation of a three-story family dormitory and a cutaway view of the floorplan are shown in Figure 7.** Each complete unit contains 2 suites; 1 has 3 bedrooms and the other 4 bedrooms. A possible arrangement of furniture is shown for the four-bedroom suite. The unit can provide living quarters for several families or for about 18 persons and is designed for workers with fairly high incomes. The floorplan of each suite includes a kitchen, a storeroom, which may be

* See III, B, p. 10, above.
** Following p. 16.

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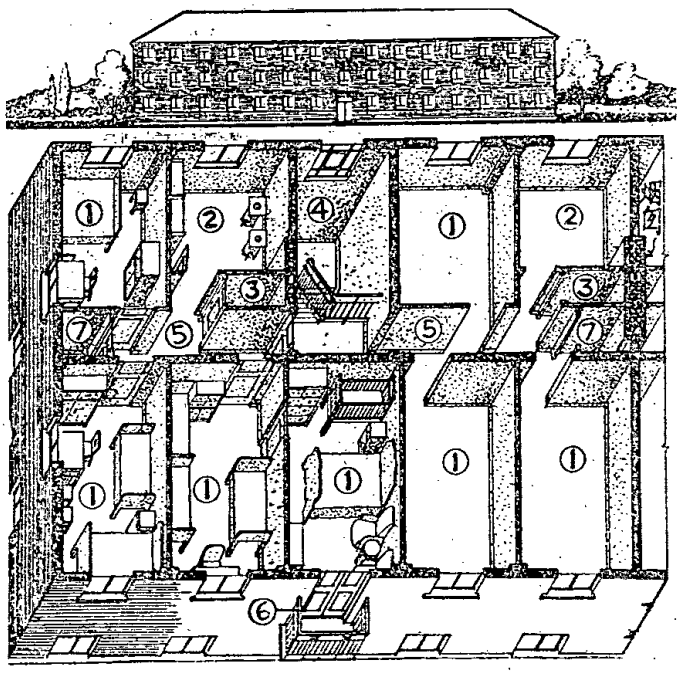

Key:

1. Bedroom
2. Kitchen
3. Toilet
4. Stair Well
5. Corridor
6. Balcony
7. Storeroom

Figure 7 Plan 1. Communist China: Multistoried Dormitory for Family Housing, Suitable for North China.

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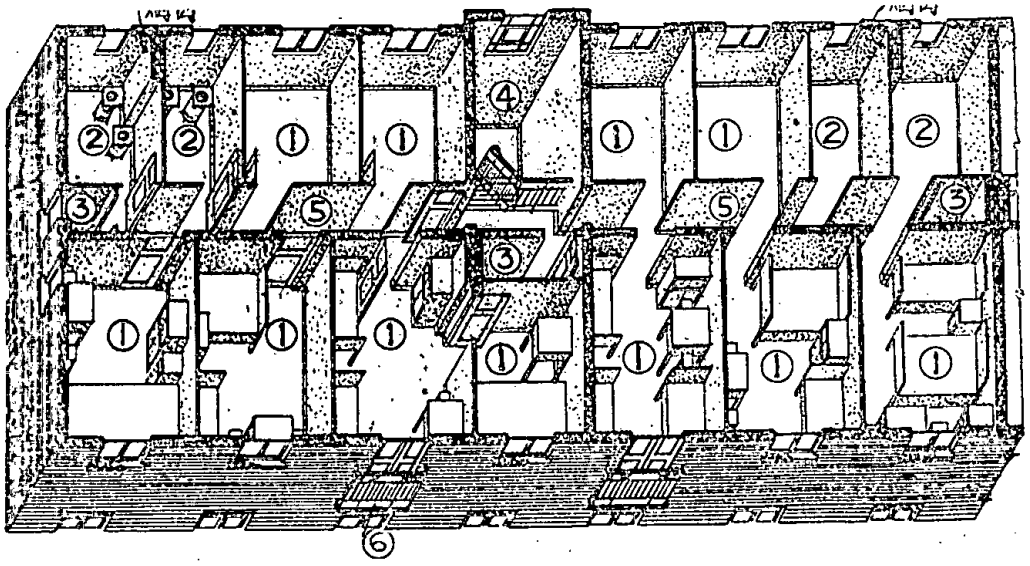

Key:

1. Bedroom
2. Kitchen
3. Toilet
4. Stair Well
5. Corridor
6. Balcony

Figure 8 Plan 2. Communist China: Multistoried Dormitory for Family Housing, Suitable for North China.

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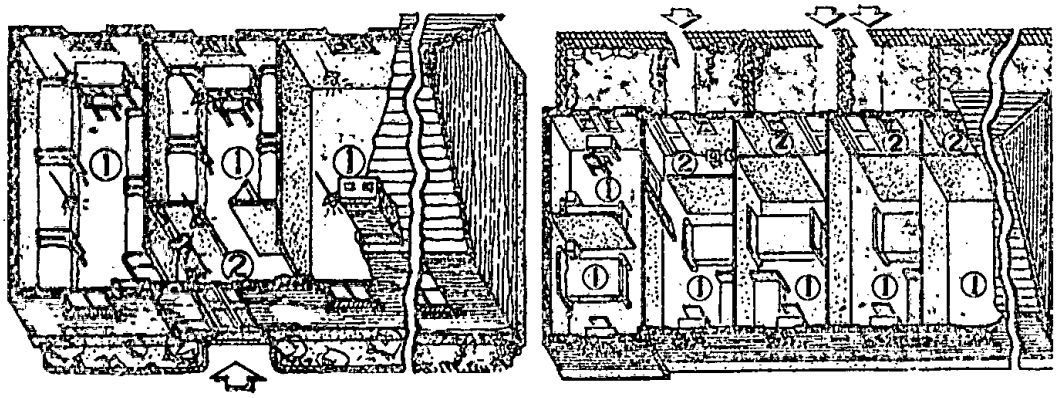

Nonfamily

1. Bedroom 2. Vestibule

Family

1. Bedroom 2. Kitchen

Figure 9. Communist China: Single-Story Dormitories for Nonfamily and Family Housing, Suitable for North China.

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converted into a shower stall, and toilet facilities. Each suite is equipped with electricity, running water, steam or hot-air heat, and a kitchen sink. The estimated construction cost for this type of dormitory is about 60 yuan per square meter.

A cutaway view of an entire floor for another type of three-story family dormitory is shown in Figure 8.* Each unit in this design has 11 bedrooms. Most small families would occupy 1 bedroom, and large families would occupy up to 3 bedrooms depending on the size of the family. There are 4 kitchens in each unit serving 2 to 3 families each. The unit is equipped with electricity, running water, and kitchen sinks and can be heated either by hot air or by individual stoves. If hot-air heating is used, the estimated construction cost is about 47 yuan per square meter; if stoves are used, it is about 44 yuan per square meter. This type of housing is considered suitable for so-called average employees and would provide living quarters for 30 or more persons.

The designs shown in Figure 9** are for two types of single-story dormitories. The toilet facilities and plumbing are located outside the buildings. The estimated construction cost for both dormitories averages from 34 to 35.6 yuan per square meter. In the family dormitory (on the right), each suite has a 16-sq m bedroom, which can accommodate 4 persons, and a 4-sq m kitchen. If a nursery is desired, or if separate rooms are required for older children, the bedroom area can be reduced and the kitchen enlarged so that extra beds can be set up in the kitchen at night. In the dormitory (on the left) for single workers, each complete unit has 3 bedrooms totaling 56 sq m, enough living space to accommodate 16 persons. The vestibule at the entrance is equipped with a large stove which provides heat for the entire unit during the winter.

2. Construction.

The quality of construction, together with the design and materials used, determines the life of a building. Obviously, the better the quality of construction and materials the less need for maintenance and repair and the longer the life of the building. According to official statements, the estimated cost and the estimated life of housing in Communist China for the period 1955-57 are shown in the Table.***

One of the major problems affecting the quality of construction which confront the Chinese Communists in solving the housing

* Following p. 16.
** Following p. 16.
*** The Table follows on p. 18.

Table

Estimated Cost and Estimated Life of Housing in Communist China
1955-57

Description of Housing	Location	Estimated Life (Years)	Estimated Cost per Square Meter (Yuan)
Three to 4-story dormitory	Lo-yang	50 a/	52 to 60
More-than-one-story house	National	40 to 60 b/	48
Single-story bungalow	Peking	15 c/	22
Single-story house	National	10 to 15 d/	29
			Estimated Cost per House (Yuan)
Brick and wood house with tile roof	Wu-han	15 to 20 e/	150 to 240
Bamboo and wood house with tile roof	Wu-han	8 to 10 e/	120 to 150
Bamboo wattle and mud house with straw thatch or oil-felt roof	Wu-han	3 to 5 e/	60 to 100

a. 62/
b. 63/
c. 64/
d. 65/
e. 66/

shortage is the construction of permanent versus temporary housing. Depending on the requirements for housing, this problem involves considerations of design, cost, life of the structure, availability of funds, and land. Apparently, early in the plan period it was decided by many of the enterprises to build permanent multistoried housing of brick and tile with higher standards of design at a fairly large initial investment. By building multistoried buildings, less land is required, and the tie-in with public utilities is more economical per person housed. The construction of multistoried buildings, however, used more construction materials and equipment and required skilled labor to construct. The use of construction equipment increased proportionately to the number of stories built. It was stated that in constructing structures of more than three stories such equipment would be transferred from use on other construction projects for as long as 9 months. 67/ This permanent type of housing, even though of better quality construction and longer structural life, was costly to the economy as a whole. Moreover, it was not an expedient solution to the housing shortage. Even with overcrowding, too few workers could be housed in relation to the need for housing.

With the economy drive in 1955 and in the face of the continually increasing pressure of the workers needs for adequate housing, construction standards were lowered, buildings intended for other purposes were hastily converted to living quarters, and workers were encouraged to construct their own housing.* The result of these decisions tended to increase the construction of temporary housing. Probably the number of single-story houses and low-standard two-story houses increased by two-thirds above the number constructed in the first 3 years. The construction of small dwellings enabled more people to be housed in a shorter period of time at a much lower initial construction cost, with the additional advantages of utilization of local construction materials and unskilled labor. On the other hand, excessive construction of small dwellings used a greater amount of land and spread low-quality construction over a wide area. Unless funds are allocated for the extension of public utilities and capital repairs, slum conditions are imminent within a few years in areas where the construction of small dwellings predominates.

3. Materials and Techniques.

The construction material most widely used for the construction of multistoried housing during the First Five Year Plan in Communist China was kilned brick. Red brick dormitories with tile roofs were constructed for workers in many areas, especially in the Northeast. Together with brick dormitories, multistoried housing of reinforced

* See III, C, p. 12, above.

concrete also was constructed. It is reported that more than 1 million sq m of reinforced concrete housing were constructed at An-shan before 1955. 68/

To comply with the reduction in construction costs and to save on construction material in 1955, new construction techniques were introduced, and less expensive materials were employed. In the construction of multistoried dormitories, consumption of steel and cement was cut in half by using brick instead of reinforced concrete for a portion of the floorwork. Brick beams were substituted in upper floors for reinforced concrete beams where feasible. Bamboo was substituted for steel rods in reinforced concrete walls and floors. This method was used widely by the construction industry in 1956 and was reported to have reduced costs of reinforcement 45 percent. 69/ Bamboo-reinforced concrete housing reportedly was constructed for workers in Mukden (Shen-yang), Dairen, Canton, and Wu-han. 70/ The prefabrication of structural parts, another technique introduced by the construction industry, was applied incidentally to the construction of housing. Prefabricated, concrete cinder blocks reportedly were used in the construction of a bungalow type of house in Peking during 1955. It was claimed that these houses could be assembled by 31 workers in 8 days at a cost of 22 yuan per square meter. 71/ There is no indication, however, that this method of housing construction was used widely. Another type of prefabricated housing was reported to be manufactured in Harbin for use as temporary housing for workers in the Karamai and Tsaidam oil-prospecting areas. This portable type of housing could be made from fiberboard at a cost of 20 yuan per square meter of floorspace. 72/

In 1955 the decision to restrict the amount of multistoried housing constructed brought a change in the composition of residential buildings. After 1955 the proportion of brick and wood structures and other simple housing increased in general and the proportion of concrete structures decreased. 73/ The demand for housing was still so serious it was felt that single-story houses and low-standard two-story houses could be constructed in a shorter time at a savings in construction materials and initial cost. In 1955 the Pao-t'ou Iron and Steel Combine effected a savings of more than 50 percent per square meter in construction costs by abandoning a plan to construct multistoried dwellings of brick and tile and instead constructing single-story dwellings with the same materials. 74/

During 1956, a year of accelerated construction throughout the economy, widespread shortages of cement became noticeable 75/ and necessitated the use of less expensive construction materials in housing. The Bureau of Light Industry, faced with a shortage not

only of cement but of brick and tile as well, used a mortar of natural cement,* second-grade tile, and chipped or cracked fired brick for construction of workers housing. It was estimated that with such materials nearly twice the quantity of housing could be constructed with the same amount of expenditure. 76/

In the construction of single-story and other simple housing, local materials could be utilized readily. The geographical location and climatic conditions determined the nature of the materials used. Mud was used for adobe brick, for a plastering material, and for walls. Bamboo wattle was woven for walls, on which mud plastering was later applied, or was used alone for wall construction. (See Figure 10.**) In forested areas, rough timber was used for construction of log houses. Roofing materials consisted of straw, oiled felt, and various grades of ceramic tiling. Such local materials could provide livable housing at low cost and could be handled by semiskilled labor.

V. Outlook for Housing, 1958 and the Second Five Year Plan.

Communist China in 1958 began the period of the Second Five Year Plan (1958-62) with the problem of the housing shortage for workers only partially solved. The 80 million sq m of new housing reportedly constructed by the state during the previous 5 years provided housing for only 7 million workers out of the total of 24 million workers in the labor force at the end of the First Five Year Plan. The Communists claim that 6 million to 7 million workers will be added to the wage and salary worker group during the Second Five Year Plan. 77/

Even though confronted with this growing labor force, there are indications that further reductions will be made in the nonproductive sector of the economy. There has been no official announcement of the amount of new workers housing planned to be constructed during the Second Five Year Plan, but it is estimated that approximately 160 million sq m can be constructed without any increase in investment in housing with relation to the total investment in capital construction.*** If a reduction in the total investment for nonproductive capital construction is made, it is probable that the portion of investment allocated to public structures and public utilities rather than to housing will be decreased. 78/ The investment for housing apparently will retain the same percentage relationship with relation to the total capital construction investment as it had in the First Five Year Plan, since there is no indication that investment in housing will be increased.

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* Natural cement is a mixture of lime and clay.

** Following p. 22.

*** See Appendix B, Methodology.

Measures to reduce the urban population are considered of paramount importance by the Chinese Communists. This is done by mobilizing the surplus labor force for work in rural areas and controlling the influx of rural inhabitants. 79/ Since about 1955, forced return of the transient urban population to agricultural areas has been a continuing policy. The Communists have gradually perfected and tightened the techniques of population control since that time, and it is believed that in the future they will be successful in reducing the flow of population into the urban areas.

In an effort to increase the housing stocks, more attention may be given to repair and maintenance of existing housing and tighter controls exercised over private housing. Workers will probably be encouraged further to build their own houses as this has helped to relieve the housing shortage with a minimum amount of public aid. Undoubtedly the construction of single-story and low-standard two-story housing will continue with some multistoried housing in congested urban areas or in industrial areas where land is scarce. Continued construction of low-quality housing with a shorter building life, however, will require constant maintenance and renewal.

Even by exercising tighter controls over the population and private property, the state cannot solve the problem of adequately housing its workers quickly. It will need to allocate considerable funds for both new construction and capital repair, or housing will remain a problem in 1962.

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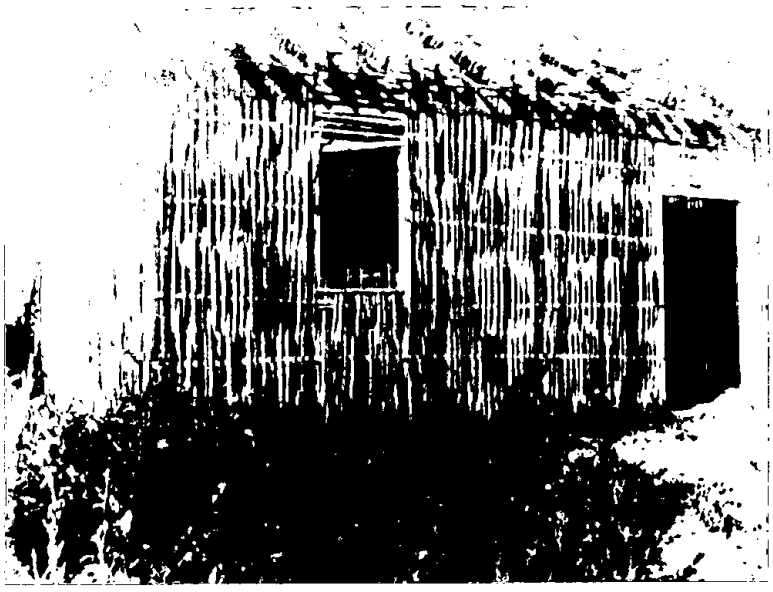

Figure 10. Communist China: Light Bamboo Wall Construction Before Plastering.

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APPENDIX A

COMPONENTS OF ESTIMATED CONSTRUCTION COST

In Communist China, construction standards were issued in 1955 for use in estimating the cost of housing. The estimated construction cost is for materials and labor only and does not include miscellaneous costs. 80/* The costs of materials and labor are estimated separately for each component of the construction cost so that a percentage distribution can be made. The estimate of construction cost for a single-story, brick and wood family structure of under 1,000 cubic meters (eave height 3.5 meters; net room height 3 meters) is estimated to be 92.391 yuan** per square meter or 25.935 yuan per cubic meter. Using the figure of 25.935 yuan per cubic meter for such a structure, the percentage distribution of material and labor costs within the construction cost is as follows 82/:

Components of Construction Cost***	Per Cubic Meter (Yuan)	Materials and Labor (Percent)
General building costs	20.332	78
Water supply and drainage****	1.948	8
Heating****	3.416	13
Electric lighting†	0.239	1
Total	25.935	100

* In the US, miscellaneous cost is included in the estimated construction cost and covers such things as final grading, design, land purchase, and insurance. The percentage relationships of the components of the total estimated construction cost vary from 90 to 95 percent for materials and labor and from 5 to 10 percent for miscellaneous costs under optimum conditions.

** Base prices are given on the basis of the JMP (Jen-min P'iao -- Peoples Currency) yuan; material prices are given on the 1955 budgeted prices of materials in Peking. 81/

*** Generally, basements are not included and must be estimated separately. 83/ Simple foundations, however, are included.

**** Drainage includes connecting the interior drainage system to the main exterior underground drainage system; water supply includes intake pipes but does not include pressure pumps, reserve water tanks, air compressors, and the like; heating is estimated on the basis of a double-pipe hot-water heating system. Also included are excavation and backfill of trenches for sewer and water lines and the necessary painting and insulation of lines. 84/

† Electric lighting includes the entire light fixture. 85/

APPENDIX B

METHODOLOGY

1. Floorspace per Family, First Five Year Plan.

The First Five Year Plan called for the construction of 46 million sq m of housing to meet the needs of about 2 million families, 86/ or an average of 23 sq m per family. By the end of 1956, a total of 66 million sq m of housing had been constructed 87/ for about 3.2 million families, 88/ or an average of 21 sq m per family. At the national level, therefore, space per family averaged about 22 sq m. Reports of actual space allotted to families are as follows 89/:

Date	Description	Floorspace (Square Meters)
1955	Floorspace allotted by the textile industry to each worker's family	25
1956	Floorspace available to each family in Shanghai, based on a limited survey	22.5
1956	Average floorspace per family constructed by the Wu-han Metallurgical Construction Company	13.5
1950-56	Average floorspace of family housing constructed in Liaoning province	25
1956	Floorspace allotted to each family in Pench'i, on the basis that 98,000 sq m of housing was constructed for 4,500 families	22
1956	Floorspace allotted to each family in Pao-t'ou, on the basis that the Pao-t'ou Engineering Company constructed 36,700 sq m of housing for 2,000 families	18
1956	Floorspace allotted to each family by the Ta-tung Engineering Company	30
1957	Average floorspace of family housing for the coal miners in East China, on the basis that 1 million sq m were constructed for 50,000 families	20

2. Floorspace To Be Constructed, Second Five Year Plan.

Total investment in capital construction during the First Five Year Plan was 48.777 billion yuan, 90/ of which investment in housing was 4.26 billion yuan, 91/ or about 8.7 percent. Although the Second Five Year Plan has not been published, preliminary announcements have stated that investment in capital construction will be doubled. Assuming that investment in capital construction will be doubled and that the percentage for housing construction will not be increased, a total of approximately 8.487 billion yuan will be invested in housing construction for the years 1958-62. Using the average construction cost of 53 yuan per sq m (80 million sq m of housing at an investment of 4.26 billion yuan for the First Five Year Plan), a total of about 160 million sq m of housing can be constructed during the Second Five Year Plan.

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