

~~SECRET~~

PROVISIONAL INTELLIGENCE REPORT

THE CONSTRUCTION INDUSTRY IN BULGARIA
1947-57

CIA/RR PR-157

(ORR Project 47.1667)

NOTICE

The data and conclusions contained in this report do not necessarily represent the final position of ORR and should be regarded as provisional only and subject to revision. Comments and data which may be available to the user are solicited.

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

~~SECRET~~

S-E-C-R-E-T

CONTENTS

	<u>Page</u>
Summary	1
I. Organization	2
A. Centralized Planning of Construction	2
B. Construction Industry	3
II. Postwar Construction	4
A. General	4
B. Volume of Construction	4
C. Distribution of Investment	6
D. Construction in Major Economic Sectors	8
1. Industry	8
2. Housing	14
3. Transport	16
4. Agriculture	17
III. Major Inputs	18
A. Labor	18
1. Labor Force	18
2. Labor Productivity	19
B. Construction Materials	20
IV. Limitations and Prospects	21

Appendixes

Appendix A. Gaps in Intelligence	23
Appendix B. Source References	25

- iii -

S-E-C-R-E-T

S-E-C-R-E-T

Tables

	<u>Page</u>
1. Index of Construction in Bulgaria, 1947-55	5
2. Comparison of Year-to-Year Increases in Gross Fixed Investment and Investment Projects Completed in Bulgaria, 1949-54	7
3. Distribution of Gross Fixed Investment in Bulgaria, by Sector, 1949-54	8
4. Major Projects in Industrial Construction in Bulgaria Since 1947	10
5. Major Powerplants Constructed in Bulgaria Since 1947	13
6. Construction of Housing for Workers and Employees in Cities and Industrial Areas in Bulgaria, 1949-56	15
7. Production of Cement and Bricks in Bulgaria, 1948-57	20

S-E-C-R-E-T

S-E-C-R-E-T

CIA/RR PR-157
(ORR Project 47.1667)

THE CONSTRUCTION INDUSTRY IN BULGARIA*
1947-57

Summary

From its assumption of control in September 1944 until the end of 1946, the Communist regime in Bulgaria was concerned primarily with consolidating its hold on the country, and it devoted little effort to reconstruction and development. The Two Year Plan (1947-48) initiated an intensive construction program which has continued through two subsequent Five Year Plans.

Throughout the postwar period the regime has tended to plan for investment projects beyond the capabilities of the economy, and goals for planned investment have been consistently underfulfilled. Construction activity, however, increased at least threefold between 1947 and 1955, despite such major shortcomings in the construction industry as faulty planning; poor organization of construction work; and a shortage of engineers, technicians, and skilled workers. The economic plans of Bulgaria, like those of other Communist countries, have emphasized the development of industry, particularly heavy industry. From 1949 to 1954, 38.4 percent of total gross fixed investment was devoted to industry (33.2 percent to heavy industry and 5.2 percent to light industry), and notable achievements were made in establishing an industrial base in Bulgaria. Housing construction has been grossly inadequate, however, and a housing shortage remains one of the major economic problems facing the regime. Furthermore, the failure properly to implement plans for investment in agriculture has been one of the major causes of a consistent failure to fulfill plans for agricultural production.

Despite the inducement of relatively high wages for skilled construction workers, the construction industry has failed to attract a sufficient number of trainees to meet the growing needs for skilled cadres. A shortage of engineers, technicians, and skilled construction

* The estimates and conclusions contained in this report represent the best judgment of ORR as of 1 March 1957.

S-E-C-R-E-T

S-E-C-R-E-T

workers has been a major drawback to the construction industry, with many projects being delayed, or even canceled, because of a lack of skilled cadres. This shortage has been offset to some extent, however, by rising labor productivity resulting from the improved technical efficiency of permanent construction workers and the increased mechanization of construction work. An intensive program for development of industrialized methods of construction using prefabricated elements is now under way, but the use of such methods has not yet reached significant proportions. Measures being taken to mechanize and industrialize construction work, however, together with continuing technical training of workers, indicate progressive planning which will be reflected in improved performance by the construction industry in future years.

I. Organization.

A. Centralized Planning of Construction.

Planning and organization of construction activity in Bulgaria are highly centralized, cumbersome, and inefficient, with responsibilities widely dispersed among several government ministries. The planning and implementation of construction projects in the fields of industry, electrification, transport, agriculture, education, and health and social welfare are the responsibility of the respective government ministries responsible for these activities. The Ministry of Communal Economy and Public Works is responsible for the planning of workers' housing construction in industrial areas and for all housing and municipal construction in towns and villages. It appears from available information that in Sofia and other large cities planning of certain municipal housing and public works is executed by the local Peoples Councils in cooperation with, and probably under the direction of, the Ministry of Communal Economy and Public Works. 1/*

The planning and design of construction projects is carried out in the various responsible ministries by specially constituted planning units consisting of engineers and architects. Initial plans are submitted to the Committee on Construction and Architecture, which

* For serially numbered source references, see Appendix B.

S-E-C-R-E-T

S-E-C-R-E-T

is an agency of the State Planning Commission. After approval of the initial plans by this committee, the special planning units draw up detailed plans and documentation and direct the construction of planned projects. 2/

B. Construction Industry.

The construction industry in Bulgaria was predominantly under private ownership when economic planning was started in 1947. Under a law of December 1947, all private construction firms were nationalized, 3/ and private construction engineers, architects, electricians, plumbers, and other construction specialists were organized into "collectives," or government construction firms, specializing in particular types of construction work. 4/ Contracts for construction are placed by the investing ministries with one or more of these nationalized construction firms.

Little is known about the number or the structure of these firms. Available information indicates that the firms are composed of cadres of engineers, technicians, and other specialists which move from project to project and recruit necessary unskilled labor in the vicinity of the project. 5/ The subordination of the nationalized construction firms is not clear, but it is probable that they are under the jurisdiction of the Ministry of Construction. The fact that the various investing ministries must contract with the firms, coupled with reported complaints that the firms make little attempt at the most efficient use of investment funds, 6/ seems to indicate that the various investing ministries do not maintain direct control over construction organizations.

It appears probable that there are construction organizations subordinate to the Peoples Councils in all the major cities. The Sofia Peoples Council has under its jurisdiction several construction organizations which engage in construction and maintenance of streets and roads, municipal housing, and other municipal structures. These organizations are also available for construction work for departments and enterprises outside the jurisdiction of the Sofia Peoples Council. 7/ It is a reasonable assumption that this example in Sofia is representative of the other large cities in Bulgaria.

- 3 -

S-E-C-R-E-T

S-E-C-R-E-T

II. Postwar Construction.

A. General.

From their assumption of power in September 1944 until the end of 1946, the Bulgarian Communists, with the assistance of the USSR, were primarily engaged in consolidating their power over the country and directed but little effort toward reconstructing or expanding war-damaged facilities. Under the Two Year Plan (1947-48), this early period of very limited construction activity gave way to a program of intense activity which has continued through two subsequent Five Year Plans.

The two basic aims of the Two Year Plan were to rehabilitate the economy from the effects of the war and two successive summer droughts and to begin laying the foundation for industrial expansion. 8/ The First Five Year Plan (planned for 1949-53 but announced as completed in 1952) and the Second Five Year Plan (1953-57) emphasized the development of heavy industry. Although over-all investment plans have been consistently underfulfilled, 9/ significant progress has been made in establishing an industrial base in Bulgaria. Housing construction has been grossly inadequate, however, and plan goals in agriculture have been substantially underfulfilled. Under the impact of the "new course," a greater share of investment was devoted to housing and agriculture in 1954 and 1955. These increases were accomplished, however, without any significant sacrifice to industrial development.

B. Volume of Construction.

Reports of construction in Bulgaria concern, for the most part, individual construction projects in the various economic sectors, without reference to actual expenditures for construction. Over-all construction output is not reported either in absolute amounts or as a percentage of the preceding year, and announcements of the volume of capital investment do not indicate the proportion of total investment accounted for by construction and equipment, respectively.* In the absence of data for construction output, capital investment data afford the best measure of construction activity. The index of construction in Bulgaria in the

* In the First Five Year Plan, construction was to account for 62 percent of capital investment and machinery and equipment for 38 percent. 10/ No other information is available on planned or actual ratios of construction to investment.

S-E-C-R-E-T

S-E-C-R-E-T

period from 1947 through 1955 is shown in Table 1. The index is based on reported investment and probably reflects reasonably accurately the growth in the volume of construction since 1947.

Table 1

Index of Construction in Bulgaria
1947-55 a/

								1955 = 100
<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>
28 b/	35 c/	54	55	67	78	87	92	100 d/

a. Index numbers for the years from 1949 through 1954 are based on figures for "gross fixed investment," including unplanned investment; those for 1947, 1948, and 1955 are based on announced increases in "capital investment," which may not be strictly comparable to "gross fixed investment." 11/

b. Source 12/ reports investment in 1948 as 25 percent above the 1947 level.

c. Source 13/ reports investment in 1949 as 54 percent above the 1948 level.

d. Source 14/ reports investment in 1955 as 8.2 percent above the 1954 level.

The construction portion of investment was relatively high during the Two Year Plan, when the foundation for industrial expansion was being laid. About 35 percent of total investment in 1947-48 was expended for construction on projects to be completed in later years. 15/ Thus it is likely that the index overstates the actual growth in construction in the period from 1947 through 1955.

There appears to be no consistent trend in the ratio of construction to investment after 1948. Although the actual ratios of construction to investment cannot be determined, the trend of the ratio can be estimated from a comparison of gross fixed investment with the value of

S-E-C-R-E-T

S-E-C-R-E-T

investment projects completed. A comparison of year-to-year increases in gross fixed investment and investment projects completed in Bulgaria in the period from 1949 through 1954 is shown in Table 2.*

Construction may be expected to account for a relatively large share of investment outlays when total investment substantially exceeds the value of completed projects. The share of construction in investment declines when the value of projects completed increases faster than total investment because project completion involves the machinery and equipment component of investment. This relationship is particularly true of investment in industry, which accounted for 38.4 percent of all investment in the period from 1947 through 1954. ^{16/} Thus it appears from Table 2 that the ratio of construction to investment declined in both 1950 and 1951, increased in both 1952 and 1953, then declined again in 1954. On the basis of data in Table 2, it is estimated that the ratio declined further in 1955.

It is expected that the volume of construction in 1956 will have been lower than in 1955. Planned investment for 1956 actually was lower than the level of investment in 1955. ^{17/} This lower level should result in planning of construction goals more in line with the capabilities of the industry than has been true in the past.

C. Distribution of Investment.

The major construction effort in the postwar period has been directed toward development of industry. From 1949 through 1954, 38.4 percent of all investment was in industry. In the same period, 14 percent of total investment was devoted to agriculture and 11.1 percent to housing construction. ^{18/} Investment outlays for transportation are not available, but the allocation to this sector in the First Five Year Plan of 21.9 percent of total investment indicates the importance attached to the development of transport. ^{19/} The yearly distribution of gross fixed investment in Bulgaria, by sector, in the period from 1949 through 1954 is shown in Table 3.**

* Table 2 follows on p. 7.

** Table 3 follows on p. 8.

S-E-C-R-E-T

S-E-C-R-E-T

Table 2

Comparison of Year-to-Year Increases in Gross Fixed Investment
and Investment Projects Completed in Bulgaria a/
1949-54

	<u>1949</u>	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>
Gross fixed investment (million leva) b/	3,491	3,521	4,339	5,022	5,605	5,970
Yearly increase (percent)		0.9	23.2	15.7	11.6	6.5
Investment projects completed (million leva) b/	2,572	3,022	4,526	3,617	3,208	4,690
Yearly increase (percent)		22.2	49.8	-20.1 c/	-11.3 c/	46.2

a. 20/

b. Million postreform leva at 1952 prices.

c. Decrease.

- 7 -

S-E-C-R-E-T

S-E-C-R-E-T

Table 3

Distribution of Gross Fixed Investment in Bulgaria
by Sector a/
1949-54

	Percent						
	1949 Through 1954	1949	1950	1951	1952	1953	1954
Gross fixed investment	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Heavy industry	33.2	26.7	33.0	37.2	31.9	34.7	33.8
Light industry	5.2	7.3	3.9	5.5	4.6	5.4	4.9
Total	38.4	34.0	36.9	42.7	36.5	40.1	38.7
Agriculture	14.0	13.3	9.1	16.3	13.3	13.9	16.6
Housing	11.1	13.4	14.3	8.8	9.6	8.8	12.7
Schools, cultural construction	2.3	2.3	2.8	2.4	1.7	2.5	2.5
Health, social estab- lishments	1.2	1.8	1.4	1.3	1.1	0.9	1.0
Other (including transport)	33.0	35.2	35.5	28.5	37.8	33.8	28.5

a. 21/D. Construction in Major Economic Sectors.1. Industry.

The construction industry has played a major role in the development of the Bulgarian economy under the three postwar long-range economic plans. The rapid development of industry has transformed Bulgaria from a predominantly agrarian country to an industrial-agricultural country. The main emphasis in Bulgarian economic planning was on the rapid development of heavy industry, which was relatively insignificant before World War II. From 1949 through 1954, 33.2 percent of gross fixed investment was in heavy industry, as compared with 5.2 percent in light industry. The development of heavy industry from the relatively

- 8 -

S-E-C-R-E-T

S-E-C-R-E-T

small base existing at the beginning of 1947 required an extensive program of industrial construction. A large number of installations have been constructed for new enterprises in the chemical, metallurgical, machine building, shipbuilding, and electrical-engineering industries, and significant progress has been made in providing new capacity for the production of electric power. Since 1953 the major construction effort has been devoted to the development of the coal, electric-power, and ferrous and nonferrous metals industries. The major projects in industrial construction in Bulgaria since 1947 are shown in Table 4.*

A major program of electric-power development has been necessary to meet the growing needs of industry and the population. The Second Five Year Plan (1953-57) called for construction of powerplants with a combined capacity of 430,000 kilowatts (kw), more than the total capacity of existing powerplants in 1952. ^{22/} Capital investment planned for construction of powerplants was 87 percent greater than in the First Five Year Plan and constituted 28 percent of total planned investment in industry in the Second Five Year Plan. ^{23/} The major powerplants constructed in Bulgaria since 1947 are shown in Table 5.**

Several other smaller hydroelectric powerplants were scheduled for completion during the Second Five Year Plan. Details of planned new thermal electric powerplants for the Second Five Year Plan are not available. Capacity of thermal electric powerplants was to be increased in the period from 1953 through 1957 by 100,000 kw by expanding the capacity of the 3 major plants now operating, as follows:

<u>Plant</u>	<u>Capacity (Kilowatts)</u>
Nadezhda	to 50,000 kw ^{24/}
Republika	to 75,000 kw ^{25/}
Maritsa II	to 50,000 kw ^{26/}

Although the record outlined above for installation of new electric-power capacity appears impressive, the plan goals for construction of dams and power plants have not been fulfilled, primarily because of poor planning and organization of investment projects. Failure to***

* Table 4 follows on p. 10.
 ** Table 5 follows on p. 13.
 *** Continued on p. 13.

S-E-C-R-E-T

Table 4

Major Projects in Industrial Construction in Bulgaria Since 1947

Installation	Location	Remarks
Lenin Metallurgical Combine	Dimitrovo	Completed in 1953 as the first large-scale metallurgical combine in Bulgaria. Annual capacity: 80,000 metric tons of crude steel. <u>a/</u> * Combine is currently being expanded to increase annual capacity to 250,000 metric tons of crude steel by the end of 1957. <u>b/</u>
State Lead and Zinc Plant	Madan	The first stage of this plant was completed and put into operation in 1955. <u>c/</u> A second stage was to be constructed in 1956. <u>d/</u>
Georgi Dimitrov Agricultural Machinery Plant	Ruse	Plant was set up in 1948 in buildings of a small former German firm. Construction has proceeded almost constantly in the past 8 years. The plant is Bulgaria's major producer of agricultural machinery.
Vulcan Cement Plant	Dimitrovgrad	Construction of this cement plant, the largest of its kind on the Balkan peninsula, was begun in 1947. By 1953 the plant had a capacity of over 300,000 metric tons per year. <u>e/</u>

* Footnotes for Table 4 follow on p. 12.

S-E-C-R-E-T

S-E-C-R-E-T

Table 4

Major Projects in Industrial Construction in Bulgaria Since 1947
(Continued)

Installation	Location	Remarks
Stalin Chemical Combine	Dimitrovgrad	One of the key projects of the First Five Year Plan. Construction was completed in 1951. <u>f/</u> Expansion of the plant so as to double its 1955 output was to start in 1956. <u>g/</u>
Karl Marx Soda Works	Reka Devnya	Although construction was started in 1949 and planned for completion by 1953, the plant was not put into full operation until 1955. Plant produces soda ash, caustic soda, and sodium bicarbonate for a wide variety of industrial uses. <u>h/</u> About one-half of the output of the plant covers domestic needs, with the balance available for export. <u>i/</u>
State Penicillin Plant	Razgrad	Constructed, like most other Bulgarian enterprises, with Soviet assistance, plant began operations in 1954, and by 1955 was able to more than satisfy domestic requirements. A planned expansion, to begin in 1956, is expected to double its output. <u>j/</u>

S-E-C-R-E-T

S-E-C-R-E-T

Table 4

Major Projects in Industrial Construction in Bulgaria Since 1947
(Continued)

Installation	Location	Remarks	
Cement Plant	Devnya	New cement plant currently under construction is scheduled for operation in 1958. Plant will have an annual capacity of over 300,000 metric tons, a large part of which will be for export. <u>k/</u>	
Electrolytic Copper Plant	Pirdop-Zlatitsa area	Construction was started in November 1955. A complete metallurgical complex with over 80 structures is to be completed at this site by the end of 1958. <u>l/</u>	
a. <u>27/</u>	d. <u>30/</u>	g. <u>33/</u>	j. <u>36/</u>
b. <u>28/</u>	e. <u>31/</u>	h. <u>34/</u>	k. <u>37/</u>
c. <u>29/</u>	f. <u>32/</u>	i. <u>35/</u>	l. <u>38/</u>

S-E-C-R-E-T

S-E-C-R-E-T

Table 5

Major Powerplants Constructed in Bulgaria Since 1947

Installation	Location	Capacity (Kilowatts)
Thermal electric		
Republika <u>a/</u> Maritsa I (14,000 kw) and Maritsa II (6,000 kw) <u>b/</u> Maritsa III <u>c/</u> Nadezhda (Stalin) <u>d/</u>	Dimitrovo Dimitrovgrad Dimitrovgrad Sofia	50,000 20,000 50,000 24,000
Hydroelectric		
Pasarel (to be completed in 1956) <u>e/</u> Kokalyane (to be completed in 1956) <u>e/</u> Stara Zagora (to be completed in 1956) <u>e/</u> Beli Iskar (to be completed in 1956) <u>e/</u> Studen Kladenets (under construc- tion, completion date unknown) <u>e/</u> Batak Waterway (three plants, to be completed in 1956) <u>f/</u>	Pasarel) Kokalyane) Stara Zagora Samakov Pancherevo	48,000 22,000 16,000 60,000 98,000
a. <u>39/</u> b. <u>40/</u> c. <u>41/</u>		d. <u>42/</u> e. <u>43/</u> f. <u>44/</u>

provide the necessary research, plans, and documentation before the start of construction resulted in numerous delays or even postponement of construction. During the First Five Year Plan in particular, the tendency was to have too many widely scattered projects under construction simultaneously, with the result that the necessary building materials and cadres were often lacking. 45/ Although over-all

S-E-C-R-E-T

S-E-C-R-E-T

construction has been much greater than during the First Five Year Plan, effort during the Second Five Year Plan has been concentrated on construction of a smaller number of high-capacity powerplants. ^{46/}

2. Housing.

Although Bulgaria reports significant progress in the construction of private houses by cooperatives and individuals, the construction of urban workers' housing by the state and the local Peoples Councils has continued to be inadequate. The heavy influx of workers from rural to industrial areas, together with natural population increases and the effects of wartime destruction, resulted in a critical housing shortage in urban areas. Experience in Sofia provides a good example. At least 2,500 to 3,000 new apartments are needed yearly in Sofia to accommodate the natural increase in population of about 12,000 to 13,000 persons annually. ^{47/} The Bulgarian press, however, announced toward the end of 1953 that only 6,112 new apartments had been built in Sofia since the end of the war. ^{48/} In 1953, 1954, and 1955 combined, only 5,400 new apartments were made available. ^{49/} From available data it appears that urban housing construction has not even kept pace with the natural increase in population, while the influx of workers from rural to urban areas has intensified over-crowding in existing accommodations. ^{50/} Construction of housing for workers and employees in cities and industrial areas in the period from 1949 through 1956 is shown in Table 6.*

Figures in Table 6 indicate that the regime made little effort to relieve the growing shortage in urban housing until 1954, when planned construction was increased by 250 percent over 1953 achievement. Despite the lower volume of construction planned for 1956 and possibly for 1957, the goal of the Second Five Year Plan for construction of 2.2 million square meters (sq m) of workers' housing ^{51/} appears certain of achievement. Fulfillment of the plan, however, will still leave Bulgaria with a serious shortage in workers' housing. The poor performance in workers' housing construction in the postwar period reflects primarily the lower priority for construction resources assigned to housing construction as Bulgaria pursued a policy of rapid industrial expansion. The planned decline in construction in 1956 is in line with the lower level of over-all planned investment in 1956, as a greater share of the national income than in previous years is to be allocated to consumption.

* Table 6 follows on p. 15.

S-E-C-R-E-T

S-E-C-R-E-T

Table 6

Construction of Housing for Workers and Employees
in Cities and Industrial Areas in Bulgaria
1949-56

Thousand Square Meters	
Year	Amount
1949	74 <u>a/</u>
1950	80 <u>a/</u>
1951	196 <u>a/</u>
1952	200 <u>a/</u>
1953	200 <u>b/</u>
1954	500 <u>c/</u>
1955	560 <u>d/</u>
1956 (Plan)	527 <u>e/</u>

a. Estimates are based on 1951 announcement in source 52/.

b. Announced figures for investment in housing construction and total square meters constructed in the period from 1953 through 1955 indicate that the total number of square meters constructed in 1953 was at about the 1952 level.

c. Based on plan data in source 53/.

d. 54/

e. 55/

Bulgarian reports concerning construction of private houses by cooperatives and individuals appear to be exaggerated and are difficult to appraise. It is claimed that in the period from 1949 through 1952, cooperatives and individuals built 50,250 private houses. Of this number, 41,000 (2,460,000 sq m*) were in rural areas.** 57/ For 1955 alone, 12,600 private houses (756,000 sq m) were reported built in rural areas. 58/ These claims for rural

* Based on a conversion ratio of 60 sq m per house in rural housing as reported by the UN. 56/

** As used in Bulgarian statistics, the term rural areas includes small towns and villages as well as strictly rural areas.

- 15 -

S-E-C-R-E-T

S-E-C-R-E-T

housing construction imply a capacity for construction and construction materials output which does not exist in Bulgaria. Private housing, and particularly rural private housing, reported as constructed in Bulgaria probably consists for the most part of crude structures built of purely local materials (clay, mud, and the like). In view of the persistent housing shortage in cities and industrial areas and the adverse effects of the shortage on labor stability and efficiency, it is doubtful that significant quantities of cement and brick are made available for private house building.

3. Transport.

Since 1947, substantial investments have been made in improving the transport system to meet the demands imposed on it by the program of industrialization. According to the First Five Year Plan, 21.9 percent of total investment was to be allocated to transport from 1949 through 1953. 59/ Significant progress by 1953 toward providing the economy with an adequate transport system is indicated by the sharp reduction in transport's share of total investment to less than 12 percent in the Second Five Year Plan.* 60/

Most of the investments in transport (about 70 percent in the First Five Year Plan 61/) have been in rail transport, which carries about 80 to 82 percent of the internal freight in Bulgaria. 62/ About 140 kilometers (km) of new lines were constructed during the Two Year Plan 63/ and 361 km during the First Five Year Plan. 64/ The Second Five Year Plan called for construction of 130 km of new lines. 65/ This total of 631 km of new lines constructed or to be constructed by the end of 1957 represents an increase of 17 percent over the estimated route length of the railroad network in 1946.** One of the more significant railroad projects was the construction of a 96-km section of the Sub-Balkan rail line, which

* The Second Five Year Plan allocates 12 percent of total investment to transport and communications combined, but the distribution between them is not available. In the First Five Year Plan, transport accounted for about 90 percent of the total allocation to transport and communications combined.

** Source 66/ gives the prewar length of the railroad network as 3,423 km and states that at the end of 1948 the network was 13 percent longer than in prewar years. Allowing for the 140 km constructed in 1947-48, the length of the network in 1946 can be estimated to be 3,728 km.

- 16 -

S-E-C-R-E-T

S-E-C-R-E-T

added to the network a new line from Sofia to the Black Sea ports of Stalin and Burgas. 67/ Of international significance was the completion in 1954 of the two-level railroad and highway bridge over the Danube between Ruse, Bulgaria, and Giurgiu, Rumania. The bridge affords a link between the Bulgarian and Rumanian railroad systems and is of both economic and strategic significance. 68/

4. Agriculture.

The persistent failure to utilize investments for agriculture to the extent envisaged in the economic plans has been a major contributing cause of the serious lag in agricultural development since 1947. As indicated in Table 3,* the share of agriculture in total investment from 1949 through 1952 was substantially lower than the 17.6 percent envisaged in the First Five Year Plan. 69/ And although agriculture was allotted 21.4 percent of total investment in the Second Five Year Plan, in 1953 and 1954 the actual share of investment in agriculture was 13.9 percent and 16.6 percent, respectively.

No accurate estimate can be made from available data, but it appears likely from official statements that the greater part of agricultural investment has been for machinery and equipment. Construction in agriculture has been along two main lines: (a) farm buildings and housing for LCAF's (collective farms), machine tractor stations, and state farms, and (b) expansion of the irrigation system. 70/ Performance in the building of structures has generally been unsatisfactory. An uneven flow of building materials, improper use of available materials, failure properly to utilize local materials, and poor management of construction have been cited as the causes of the lag in the building of agricultural structures. 71/ Considerable progress appears to have been made in the construction of irrigation systems. The irrigated surface increased from 357,000 decares** in 1944 to 1,263,000 decares in 1950 and 2,004,000 decares in 1952. 72/ A number of irrigation schemes now under construction are planned to increase irrigated surface to 5 million decares by the end of 1957. 73/

* P. 8, above.

** One decare equals 0.2471 acre.

S-E-C-R-E-T

S-E-C-R-E-T

III. Major Inputs.

A. Labor.

1. Labor Force.

The extensive use for construction work of volunteers, labor troops, and forced labor precludes estimates of the total number of workers engaged in construction in Bulgaria. Available information indicates that the permanently constituted construction labor force consists of cadres of engineers, technicians, skilled and semiskilled workers, and trainees, with most unskilled labor being recruited locally in accordance with needs at specific construction projects.* It is not uncommon for construction firms to advertise for workers in local newspapers. 75/

Throughout the postwar period a shortage of engineers, technicians, and skilled workers has been a major shortcoming of the construction industry in Bulgaria. A lack of skilled cadres has been a common cause of delays, or even postponements, at construction sites. 76/ It is reported that from 1948 to 1955 employment in construction increased by 34.8 percent to a total of about 80,000 workers. 77/ Although there is no conclusive evidence to this effect, it is probable that the stated increase refers to the number of workers in permanent cadres. This increase of 34.8 percent in the number of permanent construction workers may be compared with increases in employment of 71.4 percent in industry, 72.7 percent in transportation, and 125.8 percent in trade. 78/ Even relatively high wages in construction have failed to attract to the construction industry a sufficient number of workers to meet the growing need for skilled cadres. According to statistics of the Central Statistical Administration of the Ministerial Council, the average yearly wage in construction (presumably based on wages of engineers, technicians, and skilled workers only) is higher than in any other sector of the economy. 79/ The failure of this relatively high wage to attract more workers to the construction industry can probably be explained by the seasonal nature of construction and poor housing and working conditions at construction sites.

* A recent Bulgarian periodical places the number of workers in construction in 1955 at 125,588. 74/ This figure apparently includes members of permanent cadres; transients employed as unskilled construction workers; and auxiliary workers employed in shops, quarries, transport, municipal services, and other enterprises serving construction.

S-E-C-R-E-T

S-E-C-R-E-T

An important source of labor for construction projects is the Labor Troops (Trudovatsi) of the Main Administration for Labor Service in the Ministry of National Defense. ^{80/} Trudovatsi generally are recruited from among those who are politically unreliable or physically unfit for regular military service and receive only a very small compensation. ^{81/} Trudovatsi are used for the most part on projects requiring large numbers of unskilled workers. Their present strength is not known, but in 1952 there were 25,000 of these workers under the Main Administration for Labor Service. ^{82/} In addition to the Trudovatsi, large numbers of prisoners are employed in construction. It was reported that during 1952 between 29,000 and 34,000 prisoners from forced labor camps were being employed in the construction of powerplants, irrigation canals, railroads, and highways. ^{83/}

In addition, all possible forms of unpaid labor are employed by the Bulgarian government at construction sites. The formation of volunteer youth brigades is encouraged. During the construction of the Alexander Stamboliyski Dam near Sevlievo in 1953, workers were mobilized from among the local population, and youth volunteers were called from other provinces. In addition, workers were required to work two extra hours a day without pay. ^{84/} It was also reported that late in 1954 thousands of farmers were mobilized to build roads, for which their only compensation was food and lodging. ^{85/}

2. Labor Productivity.

Labor productivity in construction has been increased substantially since 1947 by the training of technicians and skilled workers and the increased mechanization of construction activities, particularly earth moving and concrete mixing. In the First Five Year Plan, investment in the construction industry itself was to account for 3 to 4 percent of total planned investment in industry, ^{86/} and it is likely that a similar policy is being followed in the Second Five Year Plan. The Second Five Year Plan called for an increase in labor productivity in the construction industry of 45 percent in 1957 over 1952. ^{87/} The claimed increases in 1953 and 1954 were 13.9 percent and 7.1 percent, respectively. ^{88/} The 1955 Plan called for a modest increase of 1.3 percent, ^{89/} and the 1956 Plan for a further increase of 7.8 percent. ^{90/} If it is assumed that the plans for 1955 and 1956 were achieved, an increase of about 9 percent in 1957 would assure the 45-percent increase envisaged in the Second Five Year Plan. In view of the continuing technical training and growing mechanization in construction, achievement of the plan goal appears probable.

- 19 -

S-E-C-R-E-T

S-E-C-R-E-T

B. Construction Materials.

The construction materials industry in Bulgaria has been expanded significantly since 1947 to meet the requirements of construction during the three postwar economic plans. Comparing 1955 with 1948, brick production increased over 5 times, and cement production more than doubled. Production of cement and bricks in the period from 1948 through 1955 and the 1956 and 1957 Plans for cement production are shown in Table 7.

Table 7

Production of Cement and Bricks in Bulgaria
1948-57

<u>Year</u>	<u>Cement (Thousand Tons)</u>	<u>Bricks (Million Units)</u>
1948	380 <u>a/</u>	130 <u>b/</u>
1949	486 <u>a/</u>	233 <u>b/</u>
1950	594 <u>a/</u>	335 <u>c/</u>
1951	630 <u>a/</u>	438 <u>c/</u>
1952	680 <u>a/</u>	540 <u>c/</u>
1953	714 <u>a/</u>	567 <u>d/</u>
1954	793 <u>a/</u>	618 <u>d/</u>
1955	825 <u>a/</u>	655 <u>d/</u>
1956 (Plan)	881 <u>e/</u>	N.A.
1957 (Plan)	1,210 <u>e/</u>	N.A.

a. 91/

b. 92/

c. Estimated on the basis of a straight-line increase from 1949 to 1953.

d. 93/

e. 94/

There is little possibility that the planned increase in cement production of 78 percent will be achieved during the Second Five Year Plan. 95/ Production of 825,000 tons in 1955 was below the planned figure of 879,000 tons for that year. 96/ In planning for the

S-E-C-R-E-T

S-E-C-R-E-T

sharp increase in cement production in 1957, it probably was envisaged that a new cement plant at Devnya, with a capacity of over 300,000 tons per year, would be in operation in 1957. 97/ The plant, however, is now scheduled for completion in 1958. 98/

As previously noted, a lack of materials has often been cited as a major cause of delays in carrying out construction plans, but these delays may be more the result of poor planning and coordination of construction efforts than of actual shortages of materials. The ability of the construction materials industry to produce adequate supplies of materials for the domestic economy is difficult to appraise because of the lack of information about exports and imports, particularly in the case of cement. Numerous sources confirm that Bulgaria exports cement to many Middle Eastern countries and to other Satellites and imports cement from the USSR, but whether there is an export or an import balance and what the extent of the balance may be is not known.

Although emphasis on the use of precast concrete construction elements has been increasing in recent years, Bulgaria has made only minor progress in this field. The Vibrocon (reinforced concrete) Factory in Sofia is the only plant in Bulgaria producing precast concrete elements. 99/ With the use of precast concrete elements planned for about 200 projects in 1956, the Ministry of Construction has begun the construction of "polygons" (open concrete-paved areas for the manufacture of precast elements) in 7 major cities in order to supplement the output of the Sofia plant. 100/ At this time, however, industrialized methods of construction using prefabricated elements are of minor significance in Bulgaria.

IV. Limitations and Prospects.

Poor planning has characterized the construction program in Bulgaria in the postwar years. There has been a tendency, particularly during the First Five Year Plan, to have under construction at the same time more projects than could be adequately supplied with materials and trained cadres. This policy resulted in numerous delays in construction, excessive costs, and failure to complete and commission projects on schedule. 101/ The directives of the Second Five Year Plan indicated an attempt to overcome this weakness by a greater concentration of construction effort on a smaller number of more essential projects, but continuing reports of delays in construction and failure to finish projects on time suggest that overplanning continues.

- 21 -

S-E-C-R-E-T

S-E-C-R-E-T

The principal shortcomings of the construction industry have been improper organization and management of construction projects and the shortage of technicians and other skilled workers. Poor organization is most often cited as the cause of failures in construction plans. There appears to be little effort on the part of construction organizations to make the most efficient use of labor and materials resources. A lack of labor discipline, high labor turnover, and considerable waste of materials, all attributable to bad organization and management, are common at construction sites. 102/ A possible explanation of this apparent indifference by construction organizations may be the inadequacy of control over the organizations by the investing agency.

Bulgaria has made a concerted effort since 1952 to overcome the backwardness of its construction industry. About 3 to 4 percent of total investment in industry was allocated to the construction industry in the Second Five Year Plan, 103/ largely for the purpose of mechanization. Mechanization of earthwork increased from 22.5 percent in 1952 to 42.2 percent in 1954, 104/ and mechanization of certain types of earthwork (principally irrigation canals) is planned to increase to 96 percent by the end of 1957. 105/ Nevertheless, plans for increasing mechanization in construction have been and will continue to be largely dependent on the ability of Bulgaria to obtain machinery and equipment from the USSR or other European Satellites. As noted earlier, progress to date in applying industrialized methods of construction using prefabricated elements has been insignificant. The measures currently being taken to industrialize and mechanize construction, however, indicate progressive planning which will significantly increase the capabilities of the construction industry in future years.

- 22 -

S-E-C-R-E-T

S-E-C-R-E-T

APPENDIX A

GAPS IN INTELLIGENCE

Analysis of the construction industry in Bulgaria is difficult because of a scarcity of information on almost all phases of construction. No data are available on the over-all volume of construction output, either in absolute terms or as a proportion of investment. Other significant gaps in information occur in the following fields: (1) labor force and labor productivity, (2) wages and salaries in construction, (3) the extent to which voluntary labor is used, (4) construction costs, (5) organization of the construction economy, and (6) exports and imports of building materials.

- 23 -

S-E-C-R-E-T

S-E-C-R-E-T

APPENDIX B

SOURCE REFERENCES

Most of the information on which this report is based was fragmentary and in many cases vague and conflicting. Numerous reports are available on the construction of specific industrial projects, but seldom is there any information on the cost of construction or the relation of a specific project to the over-all effort in industrial construction. Bulgaria recently has begun supplying the UN with statistical series on investment and construction materials production which are of considerable value in assessing the performance of the construction industry. Such reports do not indicate, however, the shares of investment expended for construction-installation work and equipment, respectively.

Open sources provided most of the information for this report. Publications of the FDD, FBIS, and UN proved to be the most fruitful sources of information concerning the construction industry in Bulgaria.

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

- 25 -

S-E-C-R-E-T

S-E-C-R-E-T

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

- 25X1A 1. [REDACTED]
2. Ibid.
 3. State, OIR. ERS, series 1, no 160, Bulgarian Economy, Jan 52, p. 23. S. Eval. RR 3.
 4. State, Tel Aviv. Dsp 668, 21 Jan 53, p. 2. C. Eval. RR 3.
 5. CIA. FDD Summary no 824, 16 Feb 56, p. 39. OFF USE. Eval. RR 3.
 6. State, Tel Aviv. Dsp 668, 21 Jan 53, p. 4. C. Eval. RR 3.
 7. CIA. FDD Summary no 621, 17 Aug 55, p. 28. OFF USE. Eval. RR 3.
 8. Terpeshev, Dobri. Bulgaria's Five Year Plan, Sofia, 1949, p. 16. U. Eval. RR 1. (report submitted to the Fifth Congress of the Bulgarian Communist Party)
 9. State, OIR. Rpt no 4800.88, Soviet Affairs, May 56, p. 25. S. Eval. RR 2.
 10. Ibid., p. 53. S. Eval. RR 2.
 11. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. 240. U. Eval. RR 3.
 12. Terpeshev, op. cit. (8, above), p. 26. U. Eval. RR 3.
 13. CIA. FDD Summary no 776, 6 Jan 56, p. 43. C. Eval. RR 2.
 14. [REDACTED]

STATSPEC

15. Terpeshev, op. cit. (8, above), p. 27. U. Eval. RR 2.
16. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. 241. U. Eval. RR 3.
17. Ibid., p. 185. U. Eval. RR 1.
18. Ibid., p. 241. U. Eval. RR 3.
19. CIA. FDD Summary no 776, 6 Jan 56, p. 42. C. Eval. RR 2.
20. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. 241. U. Eval. RR 3.
21. Ibid., p. 240. U. Eval. RR 3.

25X1A

22. [REDACTED]
23. Ibid., p. 2. OFF USE. Eval. RR 1.

25X1A

24. [REDACTED]
25. CIA. FDD Summary no 858, 15 Mar 56, p. 62. OFF USE. Eval. RR 3.

25X1A

26. [REDACTED]
27. [REDACTED]

STATSPEC

S-E-C-R-E-T

S-E-C-R-E-T

28. [REDACTED]
STATSPEC
29. [REDACTED]
30. CIA. FDD Summary no 865, 20 Mar 56, p. 69. OFF USE. Eval. RR 3.
31. [REDACTED]
STATSPEC
32. CIA. FDD Summary no 776, 6 Jan 56, p. 44. C. Eval. RR 3.
33. Ibid., no 865, 20 Mar 56, p. 70. OFF USE. Eval. RR 3.
34. [REDACTED]
STATSPEC
- Ibid., 65059, Sofia, 12 Aug 55. OFF USE. Eval. RR 1.
35. [REDACTED]
25X1A
36. [REDACTED]
37. CIA. FDD Summary no 999, 18 Jul 56, p. 24. OFF USE. Eval. RR 1.
38. Ibid., no 865, 20 Mar 56, p. 70. OFF USE. Eval. RR 3.
39. Ibid., no 858, 15 Mar 56, p. 62. OFF USE. Eval. RR 2.
40. [REDACTED]
25X1A
41. [REDACTED]
25X1C
42. [REDACTED]
25X1A
43. [REDACTED]
- STATSPEC
25X1A 44. [REDACTED]
- CIA. FDD Summary no 865, 20 Mar 56, p. 69. OFF USE. Eval. RR 3.
45. [REDACTED]
STATSPEC
46. Ibid.
47. CIA. FDD Summary no 858, 15 Mar 56, p. 33. OFF USE. Eval. RR 2.
48. [REDACTED]
25X1C
49. CIA. FDD Summary no 882, 4 Apr 56, p. 87. OFF USE. Eval. RR 2.
50. [REDACTED]
25X1C

S-E-C-R-E-T

S-E-C-R-E-T

STATSPEC51. [REDACTED]

52. CIA. FDD Summary no 734, 1 Dec 55, p. 40. OFF USE. Eval. RR 3.

STATSPEC [REDACTED]

54. Ibid., 27 Jan 56, p. KK 9. OFF USE. Eval. RR 3.

55. CIA. FDD Summary no 852, 9 Mar 56, p. 27. OFF USE. Eval. RR 2.

56. UN, ECE. Quarterly Bulletin of Housing and Building Statistics for Europe, 4th Quarter 1955, May 56. U. Eval. RR 2.

57. CIA. FDD Summary no 490, May 55, p. 25. OFF USE. Eval. RR 3.

58. UN, ECE. Quarterly Bulletin of Housing and Building Statistics for Europe, 4th Quarter 1955, May 56, p. 107. U. Eval. RR 3.

59. Terpeshev, op. cit. (8, above), p. 53. U. Eval. RR 2.

STATSPEC [REDACTED]

61. Terpeshev, op. cit. (8, above), p. 57-58. U. Eval. RR 3.

25X1A [REDACTED]

63. Terpeshev, op. cit. (8, above), p. 24. U. Eval. RR 3.

64. National Committee for a Free Europe, Inc., Free Europe Press. News from Behind the Iron Curtain, Apr 56, p. 17. U. Eval. RR 3.

65. Ibid.

STATSPEC [REDACTED]

67. National Committee for a Free Europe, Inc., Free Europe Press. News from Behind the Iron Curtain, Apr 56, p. 18. U. Eval. RR 3.

68. Ibid.

69. CIA. FDD Summary no 776, 6 Jan 56, p. 44. OFF USE. Eval. RR 2.

STATSPEC [REDACTED]

71. Ibid., 18 Aug 54, p. KK 1. OFF USE. Eval. RR 3.

25X1A [REDACTED]

73. Ibid.

74. Mladenov, Dimitur. "Growth of the Working Class in Bulgaria," Trud, Sofia, 1 Sep 56, p. 2-3. U. Eval. RR 3.

75. CIA. FDD Summary no 621, 17 Aug 55, p. 28. OFF USE. Eval. RR 2.

STATSPEC [REDACTED]

77. Mladenov, op. cit. (74, above).

78. Ibid.

79. Ibid.

80. CIA. FDD Summary no 805, 27 Jan 56, p. 42. C. Eval. RR 1.

25X1A [REDACTED]

- 28 -

S-E-C-R-E-T

S-E-C-R-E-T

- 25X1A 81. [REDACTED]
82. [REDACTED]
83. [REDACTED]
84. Radio Free Europe. Item no 231/55, 14 Jan 55, p. 3. U. Eval. RR 3.
85. [REDACTED]
- 25X1A 86. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. 225. U. Eval. RR 3.
87. [REDACTED]
- STATSPEC 88. Ibid., 4 Feb 54, p. KK 8. OFF USE. Eval. RR 3.
89. [REDACTED]
- 25X1A 90. [REDACTED]
91. UN, ECE. Quarterly Bulletin of Housing and Building Statistics for Europe, 4th Quarter 1955, May 56, p. 109. U. Eval. RR 2.
92. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. B-36. U. Eval. RR2.
93. Ibid.
94. Ibid.
95. [REDACTED]
- STATSPEC 96. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. B-36. U. Eval. RR 1.
97. [REDACTED]
- 25X1C 98. CIA. FDD Summary no 999, 18 Jul 56, p. 24. OFF USE. Eval. RR 3.
99. Ibid., no 865, 20 Mar 56, p. 49. OFF USE. Eval. RR 3.
100. Ibid.
101. [REDACTED]
- STATSPEC 102. Otechestven front, vol 12, no 3236, Sofia, 27 Jan 55, p.1. U. Eval. RR 2.
103. [REDACTED]
- STATSPEC 103. UN, ECE. Economic Survey of Europe in 1955, Geneva, 1956, p. 225. U. Eval. RR 3.
104. Ibid.
105. [REDACTED]
- STATSPEC [REDACTED]

S-E-C-R-E-T