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PROVISIONAL INTELLIGENCE REPORT

PRODUCTION OF MILITARY BRIDGING IN THE SOVIET BLOC

CIA/RR PR-59

(ORR Project 31.214)

24 May 1954

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500100001-2

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Approved For Release 1999/09/02 : CIA-RDP79-01093A000500100001-2

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CIA/RR PR-59
(ORR Project 31.214)

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PRODUCTION OF MILITARY BRIDGING IN THE SOVIET BLOC*

Summary

This report indicates that the Russians have been well enough satisfied with their World War II techniques and equipment for bridging rivers to fail to take advantage of improved equipment made available to them either through capture from the Germans or on Lend Lease from the US.

In consequence, the volume of production of military bridging in the USSR is limited to that required for the maintenance of the level of the stocks on hand either with troops or in storage. This production is of minor magnitude and has a negligible impact on the Soviet economy inasmuch as the annual input amounts to only 11,300 tons** of steel and 2.2 million board feet of lumber which are allocated to floating bridging. The fact that there are no indications of production or stockpiling of military fixed bridging can be explained by the diversion of about 100,000 tons of steel per year, beginning in the Fourth Five Year Plan (1946-50), to the rebuilding of war-damaged permanent bridges. The Russians apparently prefer to meet a current need for improvement of their rail and highway system rather than to immobilize the material in a stockpile earmarked for military use.

The importance of the Soviet railroad bridges is self-evident in view of the fact that over 80 percent of all freight is hauled in the USSR by rail. A brief comparison of Soviet techniques with German techniques in replacing damaged bridges in the same area in World War II is therefore included.

During the war the Russians demonstrated their ability to replace quickly a destroyed heavy-duty bridge across a wide river by the use of a temporary pile trestle bridge. They were obliged, however, to start constructing concurrently a longer span steel bridge that would

* The estimates and conclusions contained in this report represent the best judgment of the responsible analyst as of 1 April 1954.
** Tonnages are given in metric tons throughout this report.

[redacted]

be available before the ice, which would be loosened by the next spring thaw, would take out the closely spaced pile trestles. Such double effort could become critical if many bridges were involved.

In contrast the Germans met these conditions by designing and producing during their invasion of Soviet territory some 60,000 tons of new-type military fixed bridging known as the SKR 6. This equipment consisted of a number of easily handled members which could be bolted together in several designs according to the length and strength of the span desired. In particular, this equipment made possible the replacement of a destroyed long span between undamaged piers, a frequent type of damage encountered during World War II because of the difficulty of destroying piers by air attack.

An important advantage of the German bridging equipment was that the easily transportable members could be carried by truck to the sites of two or more destroyed bridges along the same main supply route, where the bridges could then be concurrently rebuilt. This simultaneous construction would not have been possible with heavy members requiring rail transport, which would in turn have necessitated the construction of the first bridge before the material could be brought up to the next site.

It would have seemed logical for the Russians to have adopted this equipment for postwar use. They not only failed to do so, but they also scrapped a stock of equipment which came under their control. It is pertinent to point out the importance of this oversight, because US experience in World War II has shown that small captured stocks of the equipment on the Western Front could be used to excellent advantage. It should also be pointed out that US experience has shown that railroad bridging is the most vulnerable part of the transportation system. Destruction of track required excessive use of time and explosives, and the destroyed track was easily replaceable. Tunnels were extremely difficult to damage more than superficially. It was also found that interchange of classification yards could be readily put back into operation after air attacks. It is also significant that railroad bridges which span dry gullies also require replacement because it is not possible to run a train down hill and up hill again as can be done in the case of a truck highway which by-passes a destroyed bridge.

To sum up the situation, the Russians have emphasized intensive training in the use of their crude but effective World War II floating bridging rather than attempting to replace it with more modern equipment. It is safe to state that they will be able to move their combat troops across water barriers speedily and effectively with the equipment available. Although these floating bridges are sufficient for tactical and operational purposes, the subsequent logistical support of these armies by the Rear Services is contingent upon the replacement of destroyed fixed bridges. The Russians are capable of producing an adequate quantity of steel bridging, as shown by their allocation of about 100,000 tons a year to replacement of war-damaged bridges, but they apparently lack an adequate stockpile of proper material (60,000 tons as determined by German requirements during World War II).

A continual watch should be maintained to determine if there is a change in the Soviet policy either as to stockpiling or as to the adoption of improved types of fixed bridging. Such change would be one indication of an effective military preparation for war.

I. Introduction.

A. Definitions.

Military bridging consists of equipment suitable for rapid erection by troops in the field. This is distinct from commercial bridging, which in general requires longer to erect and involves less portable equipment.

Military bridging is either "fixed" or "floating," depending upon the nature of its supports.

B. Description.

1. Military fixed bridging has the following characteristics:

a. Loading.

Light: for pedestrian traffic.
Medium: for vehicular traffic.
Heavy: for tanks, heavy vehicles, or trains.

b. Material.

Timber.
Metal: steel or aluminum.
Prestressed concrete (military use not confirmed).

c. Type of Span.

Truss: steel or wood.
Unit beam: steel, wood, or prestressed concrete.
Suspension: steel cable.

2. Military floating bridging has the following characteristics:

a. Loading.

Light: up to 36 tons.
Heavy: 36 to 82 tons.
Extra Heavy: over 82 tons.

b. Material for Pontoons.

Wood: preferably plywood.
Metal: sheet steel.
Rubber: impregnated fabric.

c. Material for Superstructure.

Wood.
Metal: steel or aluminum.

C. Development of Industry and Production.

1. World War II and Earlier.

a. Fixed Bridging.

The development of military bridging in the USSR before and during World War II was unimaginative. The USSR utilized locally available timber and abundant manpower and attained a high order of effectiveness in the use of hand and simple power tools.

Soviet military bridge builders were able to provide sufficient river crossings to avoid delays in the forward movement of their armies. See Figure 1.*

The US supplied the USSR with stocks of Bailey bridging for light and medium fixed highway bridges, a more versatile type of bridging than the Soviet metal prefabricated box girder design RMM 4, which approximated the US World War I type H 20.

It is in the important field of building heavy railroad bridges that the Russians failed to take advantage of German World War II developments. A discussion of this German World War II material is given in considerable detail because it was developed to meet conditions encountered by the Germans in southern USSR during their invasion of this territory, conditions which still exist today. At the beginning of the war the Germans were supplied with Roth-Waagner bridging, an Austrian development for spans between 100 and 200 feet, and with broad flanged steel beams for spans up to 100 feet. See Figure 2.* This type of bridging sufficed for requirements in Western Europe. 1/** During the advance into the USSR the Germans were faced with an unexpected situation because of the ice conditions of the Russian rivers, which compelled the use of long spans to avoid the multiplicity of piers which would form ice gorges. The supply of Roth Waagner bridging material was not sufficient to meet the demand, and, in consequence, the German State Railways were called upon to develop a similar but simpler type of bridging material, using commercial shapes which could be produced in any rolling mill. This new type was named SKR 6 (S for Shaper, credited with the design; K for Krupp, where the steel was rolled; and R for Reichsbahn, the German State Railways which were charged with the development. See Figure 3.* This material permitted construction of spans 2/ up to 460 feet in length.

Another type of bridging developed by the Germans was a highway suspension bridge for medium loads, with a span up to 360 feet. This bridging was particularly useful for spans across deep gorges in the mountains where trestles would be out of the question.

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* Following p. 6.

** Footnote references in arabic numerals are to sources listed in Appendix D.

Its light weight (about one-third of a standard bridge) and quick erection time (about one-fifth of that required for a conventional bridge) rendered it valuable for tactical use. This bridging was first fabricated at Duesseldorf 3/ by J. Gollenow und Sohn.

b. Floating Bridging.

In addition to wooden and steel pontoons, the Russians had developed a rubber fabric pneumatic boat, Model A3. This boat proved vulnerable to small arms fire, and for that reason its mission has been subordinated to use as an assault boat rather than a bridge support. Another objection found to rubberized fabric was that it became hard and brittle in cold weather, hence unsuited to winter use in the USSR. During the war the US supplied the Russians with 3,000 rubber pneumatic floats of 6 tons capacity but compartmentalized to render them less vulnerable to small arms fire. 4/

Some pneumatic equipment has been reported in use as late as 1952, but there are no reports of 5/ any current production of this type in the Soviet Bloc.

2. Post-World War II.

a. Fixed Bridging.

Three types of pre-World War II prefabricated fixed bridges are identified in the postwar Soviet Army: 6/ the SMB 2, a wooden bridge for shallow streams; the RMM 4, a box girder bridge similar to the US World War I type H 20; and suspension bridges -- PVM, LVM, and TVM -- which are less effective than the Gollenow material developed by the Germans in World War II. Table 1* shows the characteristics of these types of fixed bridging.

There is a report that East German industry is producing a type of prefabricated bridging similar to the Bailey bridge for 80-foot spans and 72-ton loads, and a lighter one for 30-ton loads, 7/ but no data are available on volume of production. However, the Bailey bridge is fastened together with pins and these pins must have enough clearance to permit insertion and removal. On long spans, this clearance is cumulative in its effect and allows too much play

* Table 1 follows on p. 7.

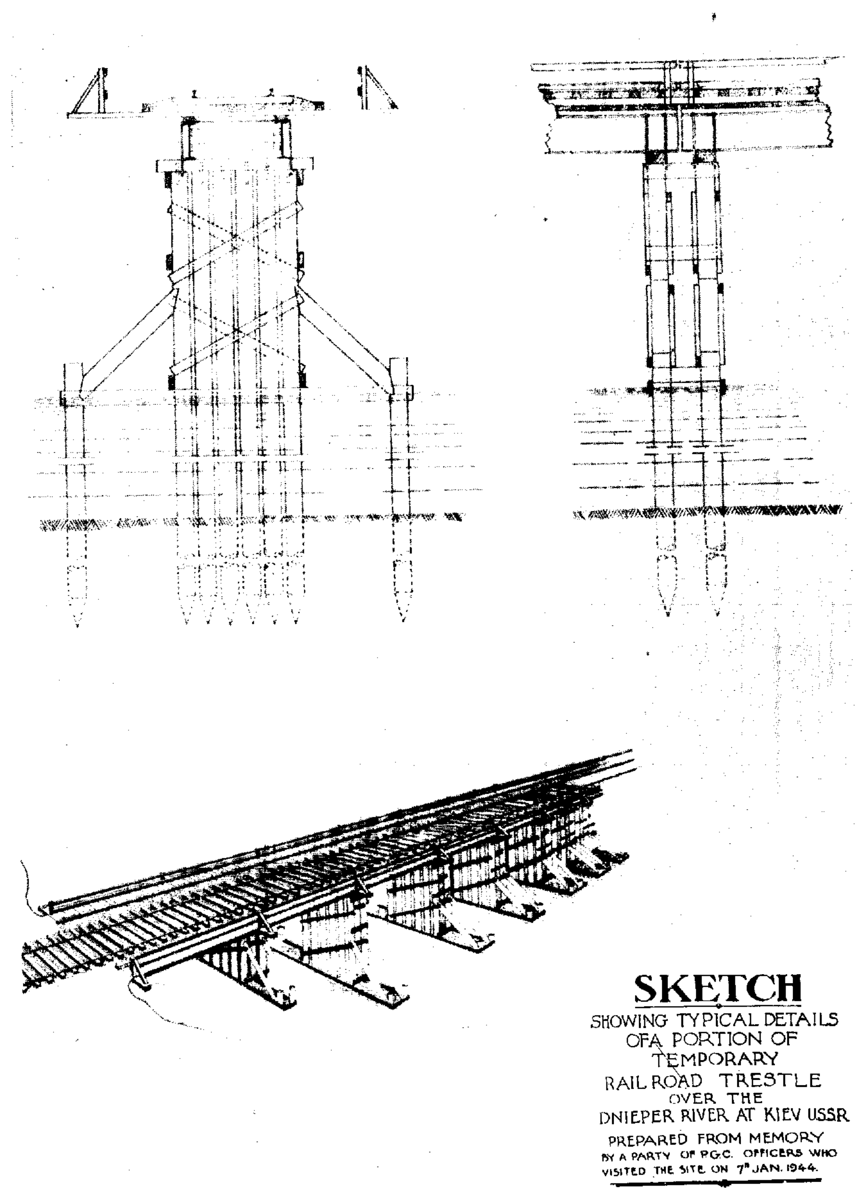

FIGURE 1. SOVIET TEMPORARY BRIDGING DURING WORLD WAR II. This 1,600-foot bridge was built by the Russians in 10 days. Because of the close spacing of the pile trestles, this bridging had to be replaced with a bridge with longer spans as soon as the ice released by the first spring thaw destroyed the trestling.

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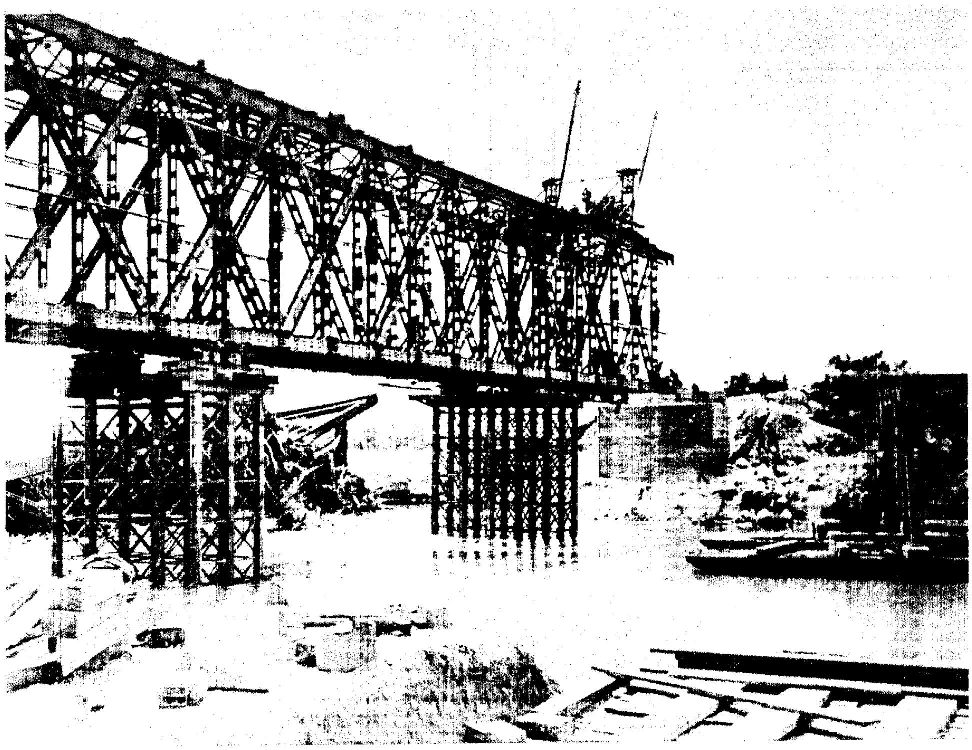

FIGURE 2. US BRIDGING IN ITALY DURING WORLD WAR II. Captured Roth-Waagner bridging was utilized by US engineers to construct a 200-foot through truss span across the Garigliano River near Minturno. When the truss reached the far abutment, the temporary trestling was removed.

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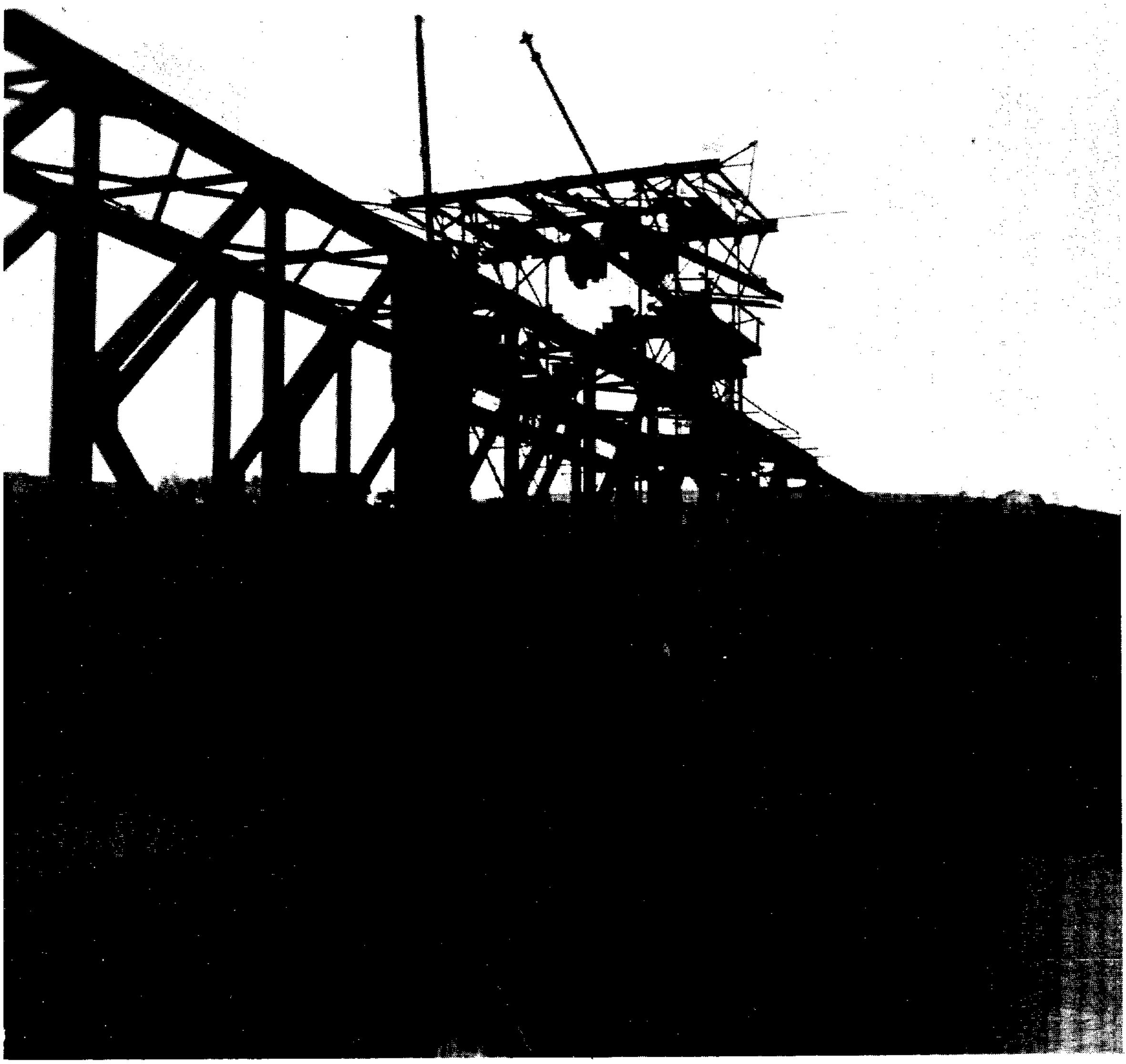

FIGURE 3. US BRIDGING IN GERMANY DURING WORLD WAR II. Captured German SKR 6 bridging was utilized by US engineers to span a 300-foot gap across the Inn River near Passau. The bridging was cantilevered across the gap without requiring false work or other temporary supports. Note the movable erection crane on the top chord of the bridging.

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or sag. Therefore, the use of the Bailey bridge is limited to shorter spans than would be the case with a bolted or riveted type of bridge.

Table 1

Post-World War II Fixed Bridging in the USSR

Designation	Load Class (Tons)	Width of Roadway (Feet)	Bridge Span (Feet)	Weight per Lineal Foot	Remarks
SMB 2 Wooden Bridge	30-50	11.75	21	570	Adjustable in height 5 feet 10 inches to 11 feet 9 inches above bottom of stream
RMM 4 Box Girder Bridge	10	N.A.	N.A.	N.A.	
	16	10	111	224	
	30	13	82	448	
	60	13	52	448	
Suspension Bridges					
PVM	Foot traffic	2.25	393	N.A.	
LVM	2	6.5	260	N.A.	
TVM	10	N.A.	197	N.A.	

There is a gap in intelligence concerning the production of prestressed concrete beams for use in military fixed bridging, although a published technical report by N.I. Polivanov on Reinforced Concrete Bridges (Zhelezo-betonnyye mosty) has even been translated into Korean for the benefit of North Korean forces. 8/

[redacted]

b. Floating Bridging.

Since World War II the Russians have put much emphasis on river crossing exercises and training. Their floating bridge equipment is simple, practical, and adequate for the heaviest loads. The characteristics and types are shown in Table 2. 9/

Table 2

Post-World War II Floating Bridging in the USSR

Type	Maximum Capacity (Tons)	Remarks
Light		
TZ 1 Footbridge	(Foot Soldiers)	Floats are waterproof bags stuffed with hay, etc. Unsinkable under small-arms fire. Standard for Rifle Regiment.
DDP Footbridge	(Foot Soldiers)	Uses wooden pontoons. Expedient bridge built by troops or local labor.
Md PA 3 Light Pontoon Park	15.4	Pneumatic floats easily sinkable by small-arms fire. UVS-A3 type has simplified superstructure.
NLP Light Pontoon Park	17.6	Replaces Md PA 3 and uses folding plywood pontoons. Assigned to the Engineer Battalion of the old style Infantry Division.
DLP Wooden Pontoon Park	36.4	Improved design for the new style Infantry Division. Standard equipment.

Table 2

Post-World War II Floating Bridging in the USSR
(Continued)

Name	Maximum Capacity (Tons)	Remarks
Heavy		
DMP 42 Wooden Bridging Park	55.1	A crude and cumbersome expedient. Constructed of lumber at site by troops and local labor.
N2P 45 Pontoon Park	82.5	Well designed late model of all steel construction. Standard equipment.
Extra Heavy		
TMP Heavy Pontoon Park	110.3	Steel-decked pontoons. Standard equipment.
SP 19 Heavy Bridge Park	132.0	Uses 63.5-foot steel-decked barges as floating supports. Standard equipment. Combination railroad and vehicular bridge.

All of the foregoing floating bridging equipment can also be used to construct rafts for ferrying personnel and equipment across water barriers. Heavy capacity floating bridging is reserved for rear echelon units which are able to effect crossings of the heaviest equipment.

In summation, there is little doubt that the present status of the Soviet floating bridging equipment and techniques will suffice for all tactical requirements.

Floating bridges in comparison with fixed bridges can even permit the crossing of trains, although the delays involved greatly reduce the tonnage capacities of the rail line in the same manner that the steepest, or "ruling," grade lowers the tonnage capacity of an entire line.

II. Production.

A. Production Methods.

1. Fixed Bridging.

Any mill capable of rolling sheets or simple shapes can produce the unit member or girder type of bridging. Likewise, any wire rope or wire cable plant can produce the supporting cable for the suspension bridge. No plants have been reported as devoted to the exclusive production of these specialized end products. The product mix of plants producing these components therefore tends to conceal the identity of the bridging production earmarked for military use.

2. Floating Bridging.

Steel pontoons can be produced in any shipyard or factory capable of fabricating sheet metal. Reports are available* of such production in the Satellites.

Wood pontoons are made in furniture and woodworking plants, and the military use items are mixed with other end items, rendering a separation of the product mix very difficult. In the case of the production of pontoons in East Germany, this work is disguised as "construction of sports-craft." 10/

B. Current Production.

1. Fixed Bridging.

The Fourth Five Year Plan involved the replacement of an enormous quantity of bridging destroyed by the Germans in World War II 11/ averaging over 100,000 tons of steel per year. It is not surprising that no reports of production of military fixed bridging

* See Appendix A.

exist, and it is quite possible that such production does not exist in view of the much greater need for diversion of the steel to the restoration of war-damaged bridges. In support of this theory, Figure 4,* dated July 1953, shows a railroad bridge over the Oder River 1 kilometer north of Podejuch. 12/ It is noted that the left-hand span is a 56-meter truss, constructed of Roth Waagner military bridging by the Germans during World War II. The failure to replace this with a commercial type of welded or riveted span involves constant maintenance to keep the fastening bolts tightened on this military bridging and is indicative of Russian inability to replace war-damaged bridging except on a priority basis. In further confirmation, a photograph, Figure 5,* of a bridge over the Oder near Kruenig 13/ undergoing repairs in July 1953, indicates that gradual replacement of war-damaged bridges is continued into the Fifth Five Year Plan.

Few reports are available of military bridge production in the USSR, and these reports are of low evaluation. Typical examples are a prisoner-of-war report of August 1949 reporting a bridge factory near Slavgansk, Ukrainian SSR, 14/ and a prisoner-of-war report of June 1949 covering a vague description of bridge production at Voronezh, RFSSR. 15/ Neither report mentions the type or amount of end product.

In consequence, the only estimate of the amount of steel required as a stockpile by the USSR for the first year of a war to effectively rebuild destroyed bridges in their line of communication must be determined from German experience in World War II during which the German Army Engineers were called upon to rebuild 26 large railroad bridges, 30 large highway bridges, as well as 36.8 kilometers of small- and medium-length span bridges for railroad and highway traffic. This construction involved an estimated 60,000 tons of steel 16/ and is a reasonable estimate of a stockpile adequate to meet the requirements for a war reserve. The 100,000 tons of steel per year 17/ used for the rebuilding of war-damaged bridges by the USSR since World War II would be immediately available for military purposes in case of war, and this output could be increased many times without crippling the economy.

* Following p. 12.

2. Floating Bridging.

Production of floating bridging utilizing steel pontoons has been reported from Satellite shipyards,* and reports have been received concerning the continued production of wooden pontoons at woodworking and furniture factories* in the Satellites. 18/ These reports, however, are too scattered and inconclusive to sum up as an index of the production attained.

The only method of estimating this production is based on the use of separate depreciation factors for equipment in storage and equipment in the hands of troops. This is based on the reasonable assumption that World War II stocks were adequate and satisfactory, an assumption that is borne out by reports of intensive training with World War II equipment rather than with new types. It is therefore reasonable to assume that current production is limited to the most satisfactory of existing types for the replacement of worn-out equipment rather than the adoption of untried types. On the basis of a 17-percent annual replacement factor for bridging in the hands of troops, which is used in training exercises and exposed to the elements, and 6-percent for that in storage, the annual production rate is 24 light, 14 heavy, and 5 extra heavy bridge parks as shown in Table 3.**

C. Potential Capacity.

The potential capacity of the Soviet steel industry is adequate for the wartime production of fixed and floating bridging because wartime production would actually require less than the output now allocated. (This estimate is based on current allocations of 100,000 tons to the replacement of war-damaged fixed bridges and an estimated wartime requirement of 60,000 tons for fixed bridging as determined by World War II German experience on the Eastern Front, a reasonable assumption in view of the Soviet predilection for pile trestle construction.) The increase in requirements of steel for floating bridging from 11,000 tons to 17,240 tons is no larger, because wood is substituted for steel wherever practicable.

* See Appendix A.
** Table 3 follows on p. 13.

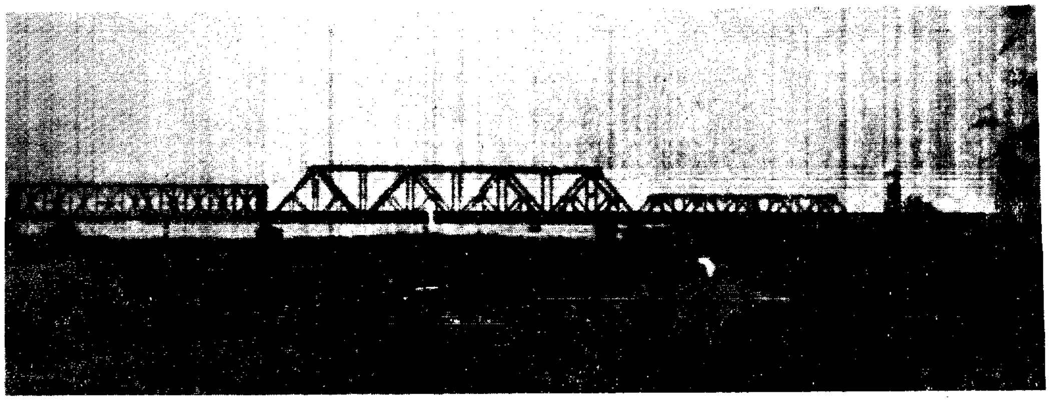

FIGURE 4. RAILROAD BRIDGE OVER THE ODER RIVER NEAR PODEJUCH, EAST GERMANY (July 1953). The span on the left is a 56-meter-long through truss of Roth-Waagner military bridging material bolted together by the Germans during World War II which has not yet been replaced by a permanent riveted span.

FIGURE 5. RAILROAD BRIDGE REPAIRS IN EAST GERMANY (July 1953). This railroad bridge over the Oder River near Kruenig was not replaced for 8 years following its destruction during World War II.

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Table 3

Annual Requirements of the Floating Bridge Park in the USSR

Floating Bridge Parks	Bridges in Hands of Troops		Bridges in Storage		Total Annual Requirements Bridge Parks
	Number	Replacement Factor of 17 Percent	Number	Replacement Factor of 6 Percent	
Light	110	19	78	5	24
Heavy	65	11	47	3	14
Extra Heavy	26	4	20	1	5

III. Input Requirements.

A. Wood.

The current annual input requirements for bridging in the USSR are 2.2 million board feet of lumber. In case of war, the requirements would increase to 21.9 million board feet, as shown in Table 4.* In addition, local standing timber would be used by troops in field expedients. This use would have no impact on the lumber industry.

B. Steel.

The current annual input requirements for steel in the USSR are 100,000 tons for replacement of war-damaged fixed bridging and 11,326 tons for the replacement of floating bridging or a total of about 111,000 tons per year. Wartime input requirements are estimated at 60,000 tons for fixed bridging (based on German requirements) and 17,240 tons required for floating bridging, a total of about 77,240 tons of steel.

* Table 4 follows on p. 14.

Table 4

Input Requirements for Bridging in the USSR

Peacetime Inputs	Units	Steel (Tons)	Wood (Tons)
Replacements, Light Floating Bridge Park	24	36	1,560
Replacements, Heavy Floating Bridge Park	14	1,300	575
Replacements, Extra Heavy Floating Bridge Park	5	9,990	440
Total Replacements, Floating Bridge Park	43	11,326	2,575
Replacements, Civilian Fixed Bridging		100,000	0
Total Peacetime Inputs		111,326	2,575 a/
Wartime Inputs			
Augmentation, Light Floating Bridge Park	126	190	8,200
Replacements, Light Floating Bridge Park	188	280	12,200
Augmentation, Heavy Floating Bridge Park	74	6,370	3,040
Replacements, Heavy Floating Bridge Park	112	10,400	4,600
Total Floating Bridging	500	17,240	28,040
Total Fixed Bridging		60,000	0
Total Wartime Inputs		77,240	28,040 b/

a. The equivalent of 2.2 million board feet.
b. The equivalent of 21.9 million board feet.

IV. Vulnerabilities and Intentions.

A. Vulnerabilities.

The vulnerability of the facilities for the production of bridging is small because of the dispersion and interchangeability of these facilities.

The vulnerability of the finished product in place is great because bridges are obvious bottlenecks in the transportation system and are priority targets for air attack.

B. Intentions.

The stockpiling of supplies of military bridging is an index of preparation for a war of aggression. However, there have been no reports of any activity in stockpiling of this material except for the normal reserve of tactical bridging for units to be called up in case of a general mobilization.

On the other hand, there is a report of the scrapping of 1,000 tons of the advanced type of German SKR 6 railway bridging at the direction of the Russians. 19/ This action clearly indicates lack of interest in or appreciation of the advantages of improved types of heavy fixed bridging by the USSR and constitutes a weakness in the Soviet war potential.

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APPENDIX A

PRODUCTION OF FLOATING BRIDGES IN THE EUROPEAN SATELLITES

Plant Location					
Country	City	Plant Name	Product	Output	Date of Information
Hungary	Budapest 20/	Stieber	Steel pontoons	500 per year	1950
Hungary	Csepel 21/	Rakosi Matyas	Pontoons	200 per year	1951
Hungary	Balatonfured 22/	Balaton Navigation Company	Pontoons	N.A.	Since 1950
Hungary	Budapest 23/	Laczkouvits Shipyard	Pontoons	N.A.	Since 1950
	Baja 24/	Hungarian Ship-building and Re-pair Works (Formerly Kiffera Martina)	Pontoons	250 wood per month 75 steel per month	1953
	Sopron 25/	Sopron Fur-niture Factory	Wood pon-toons	100 per month	1953
Rumania	Braila 26/	Progresul	Pontoons and super-structure	1,200 per year	1952
	Bucharest 27/	23d August Factory	Components	N.A.	N.A.

[redacted]

Plant Location					Date of
Country	City	Plant Name	Product	Output	Information
Rumania	Braila 28/	Sovrom Transport Shipyards	Pontoons	N.A.	Since 1949
Poland	Kamienna Gora 29/	Linen and Auxiliary Machinery Factory (FAMAL)	Pontoons	40 per year	1951
	Glogow 30/	Shipyards	Steel pontoons	N.A.	1952
East Germany	Berlin 31/	Yachtwerft Koepenick	Pontoons	1,210 per year	1952
	Brandenburg 32/	Thaelman-werft	Pontoons	N.A.	N.A.
	Wolgast 33/	Peenewerft	Pontoons (50 T)	N.A.	1952
Czechoslovakia	Usti Nad Labem 34/	CKD Shipyard	Steel pontoons	3 per day	1953
	Melnik 35/	CKD Shipyard	Steel pontoons	N.A.	1953
	Valtirov 36/	CKD Shipyard	Steel pontoons	N.A.	1953

APPENDIX B

METHODOLOGY

The original purpose of this report was to give a factual picture of the production of military bridging in the Soviet Bloc and its impact on the economy of the USSR with particular reference to input requirements of steel.

It was apparent at an early date that pertinent data were lacking and that some other approach was necessary.

In consequence, a study was first made of German and US bridging equipment on the basis that this equipment had come to the attention of the Russians during World War II and might have been the basis of Soviet postwar production. This assumption was not substantiated inasmuch as the Russians were apparently satisfied in general with their World War II bridging and in fact scrapped a supply of splendid German bridge material which came under their control.

The only remaining approach was to examine the Soviet published production of commercial fixed bridging in connection with the Fourth Five Year Plan, and to estimate the annual attrition of the Soviet inventory of floating bridging, which gives anything but an accurate estimate. However, it does indicate quite clearly that the requirements represent but a slight drain on the Soviet economy even when based on a liberal allowance of floating bridge equipment to the units. Rigid economy in the allocation of this equipment as contemplated by [redacted] would reduce the requirements in peace and war to less than 50 percent of the above estimates.

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APPENDIX C

GAPS IN INTELLIGENCE

The security consciousness which surrounds the production of weapons also extends to the production of military bridging. No reports of any value are available concerning the production of bridging in the USSR and only a few are available concerning the Satellites.

Instead of identifying the separate gaps in intelligence it is simpler to state that no firm production or stockpiling data exist on military bridging.

[redacted]

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APPENDIX D

SOURCES

1. Sources.

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

Source of Information	Information
A - Completely reliable	Doc. - Documentary
B - Usually reliable	1 - Confirmed by other sources
C - Fairly reliable	2 - Probably true
D - Not usually reliable	3 - Possibly true
E - Not reliable	4 - Doubtful
F - Cannot be judged	5 - Probably false
	6 - 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 will carry the field evaluation "Documentary" instead of a numerical grade.

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.

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