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FM 101-10

WAR DEPARTMENT

STAFF OFFICERS' FIELD MANUAL

ORGANIZATION, TECHNICAL AND LOGISTICAL DATA

June 15, 1941

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FM 101–10

STAFF OFFICERS' FIELD MANUAL

ORGANIZATION, TECHNICAL, AND LOGISTICAL DATA

Prepared under Direction of the Chief of Staff

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WAR DEPARTMENT,

WASHINGTON, *(June 15, 1941).*

FM 101-10, *Staff Officers' Field Manual, Organization, Technical, and Logistical Data,* is published for the information and guidance of all concerned.

This manual and FM 101-5, *Staff Officers' Field Manual—The Staff and Combat Orders,* are compilations of information and data to be used as a guide for the operations in the field of the general staff or a similar staff group of all units in peace and war.

Much of the data herein are not exact values as they represent the average of widely varying conditions of field service and troop training. A constant fluctuation in the value of approximated data should be expected to conform to the changes which develop in field conditions. In cases where experience has not indicated the limits of variation to be expected, a reasonable factor of safety should be allowed.

(A.G. 062.11 (6-15-41).)

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

E. S. ADAMS,
Major General,
The Adjutant General.

DISTRIBUTION:

D (15); B (10); R (10); B (5).
(For explanation of symbols, see FM 21-6.)

TABLE OF CONTENTS

	PARAGRAPHS	PAGES
CHAPTER 1. — ORGANIZATION	1–34	1–76
SECTION I. — Organization of Field Forces	1– 4½	1– 7
II. — Division Organizations	5–19	8–47
III. — Army Corps, Armored Corps, and Field Army	20–24	48–53
IV. — GHQ Reserve and Army Air Force Units	25–28	54–61
V. — Data Pertaining to Supply and Evacuation Units	29–34	62–78
CHAPTER 2. — TROOP MOVEMENTS	35–67	79–148
SECTION I. — General Unit of Fire-Art weapons	35–53	79–123
II. — Infantry Division (Square)	54–58	124–131
III. — Infantry Division (Triangular)	59–64	132–140
IV. — Cavalry Division (Horse)	65–66	141–143
V. — Armored Division and GHQ Tanks	67	143–148
CHAPTER 3. — SUPPLY	68–153	149–218
SECTION I. — General	68–101	149–180
II. — Infantry Division (Square)	102–113	180–188
III. — Infantry Division (Triangular)	114–118	188–190
IV. — Infantry Division (Triangular, Motorized)	119–120	190–191
V. — Armored Division	121–133	192–202
VI. — Cavalry Division (Horse)	134–140	202–208
VII. — Army Corps	141–145	209–211
VIII. — Field Army	146–149	211–213
IX. — GHQ Reserve Units	150–153	214–218
X. — Air Force Units		
CHAPTER 4. — EVACUATION, REPLACEMENTS, AND PRISONERS OF WAR	154–170	219–237
SECTION I. — Evacuation	154–162	219–228
II. — Replacements	163–168	229–235
III. — Prisoners of War	169–170	236–237
CHAPTER 5. — MILITARY MAPS	171–179	238–249
CHAPTER 6. — CHARACTERISTICS OF MATERIEL	180–191	250–272
CHAPTER 7. — FIELD ENGINEERING DATA	192–198	273–288
CHAPTER 8. — SIGNAL COMMUNICATION DATA	199–237	289–321
SECTION I. — General	199–202	289–291
II. — Message Center	203–208	291–293
III. — Airplane Messengers and Pigeons	209–210	293
IV. — Radio Communication	211–224	293–309
V. — Visual Communication	225–229	309–310
VI. — Wire Communication	230–235	311–316
VII. — Tables of Signal Equipment	236–237	317–321
CHAPTER 9. — CAMPS AND BIVOUAC AREAS	238–242	322–324
CHAPTER 10.—MOVEMENT BY AIR TRANSPORT	243–256	325–337
CHAPTER 11.—MISCELLANEOUS DATA	257–268	338–358

LIST OF FIGURES

FIGURE		PAGE
1	— Corps Area boundaries and National Guard Division areas	4
2	— Army, Corps, Division, and Coast Artillery District assignments	5
3	— Defense command areas — continental United States	7
4	— Average time-lengths of cavalry, men on foot, and animal-drawn field artillery columns	81
5	— Forced march graph	85
6	— Brake wheel clearance	91
7	— Securing light and medium tanks	93
8	— Securing half tracks	95
9	— Securing four-wheel trucks and passenger cars	97
10	— Securing six-wheel trucks	99
11	— Securing 37, 75, 90, and 105-mm mounted gun or howitzer	101
12	— Securing 155-mm gun M-1 — 8″ howitzer carriage	103
13	— Securing 3-inch antiaircraft gun	105
14	— Securing 37-mm antiaircraft gun	107
15	— Securing one or more two-wheel motorcycles	109
16	— Securing one or more three-wheel motorcycles	111
17	— Patterns for blocks used in securing vehicles	113
18	— Average road space of motor columns at various speeds — close column	117
19	— Average time-length of motor columns at various speeds — close column	118
20	— March route	121
21	— March graph	122
22	— Class I supplies obtained by daily telegram	158
23	— Distribution of Class I supplies	159
24	— Graph of tonnage requirements of Class I and Class III supplies	161
25	— Graph of conversion of tons to trucks or trucks to tons	162
26	— Requisition and shipment of Class II and Class IV supplies	163
27	— Requisition and shipment of Class III supplies	165
28	— Graph of estimated gasoline consumption	168
29	— Call and shipment of Class V supplies	170
30	— Graph of small-arms ammunition tonnage	171
31	— Allocation of ammunition	177
32	— Ammunition reports	178
33	— Medical service of a square division	223
34	— Medical service of a triangular division	224
35	— Evacuation and hospitalization of personnel	225
36	— Evacuation and hospitalization of animals	226
37	— Personnel replacement system	235
38	— Evacuation of prisoners of war	237
39	— Trench nomenclature	283
40	— Simple standing trench	284
41	— Triangular antitank ditch and log hurdle	288
42	— Trapezoidal antitank ditch and log hurdle	288
43	— Side hill antitank ditch	288
44	— Type radio nets, square division	295
45	— Type radio nets, triangular division	296
46	— Type radio nets, cavalry division — antiaircraft-antitank warning net	297
47	— Type radio nets, cavalry division — division command net	297
48	— Type radio nets, cavalry division — cavalry brigade	298
49	— Type radio nets, cavalry division — division artillery	299
50	— Type radio nets, cavalry division — reconnaissance squadron, mechanized	300
51	— Type radio nets, army corps (less field artillery brigade, and cavalry regiment, horse and mechanized)	303
52	— Type radio net, army corps — field artillery brigade	304
53	— Type radio net, army corps — cavalry regiment, horse and mechanized	305
54	— Type wire nets, square division	314
55	— Type wire nets, triangular division	315
56	— Type wire nets, army corps	316
57	— Layout of a tent camp	323
58	— Movement by air transport	326
59	— Latitude and longitude, North America	342

Chapter 1
ORGANIZATION

		PARAGRAPHS
SECTION I.	Organization of field forces	1–4½
II.	Division organizations	5–19
III.	Army corps, armored corps, and field army	20–24
IV.	GHQ Reserve and Air Corps units	25–28
V.	Data pertaining to supply and evacuation units	29–34

SECTION I

ORGANIZATION OF FIELD FORCES

1. Organization of Field Forces:

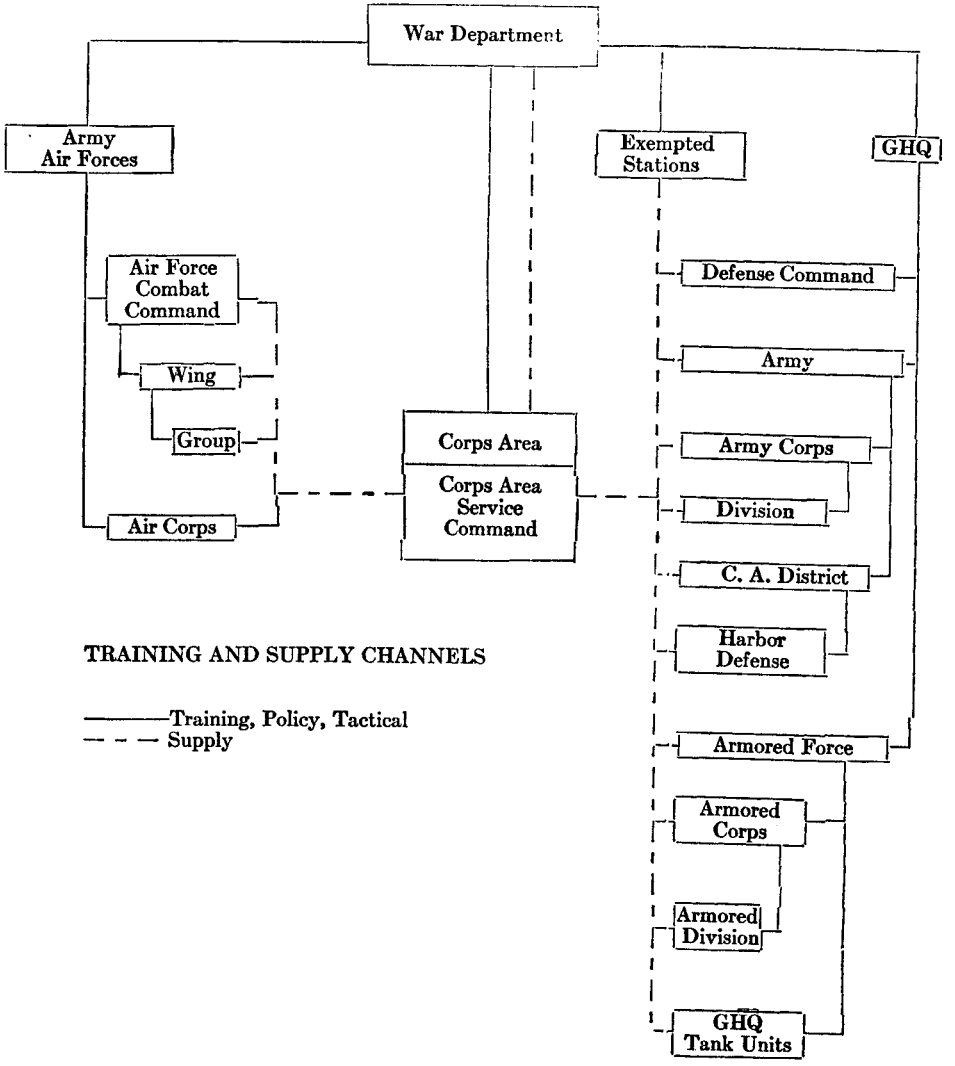
NOTE

(1) GHQ supervises and coordinates training of ground forces and combined training except:
(a) Ground services and other forces assigned to the Air Forces.
(b) Active Air Defense by Interceptor Commands.
(c) Overseas Garrisons.
(2) GHQ exercises superior command of Theaters of Operations, Task Forces, Defense Commands, Base Commands, Overseas Garrisons, and Reserves after these are passed to its control by the War Department.

NOTE

Corps Areas responsible, under War Department, for supply and housekeeping of all troops. Also directly in control of Corps Area Service Commands, including 17 of the *21 Replacement Centers* (averaging 11,000 men each).

2. TRAINING AND SUPPLY CHANNELS:



■ 3. CORPS AREA BOUNDARIES AND NATIONAL GUARD DIVISION AREAS:

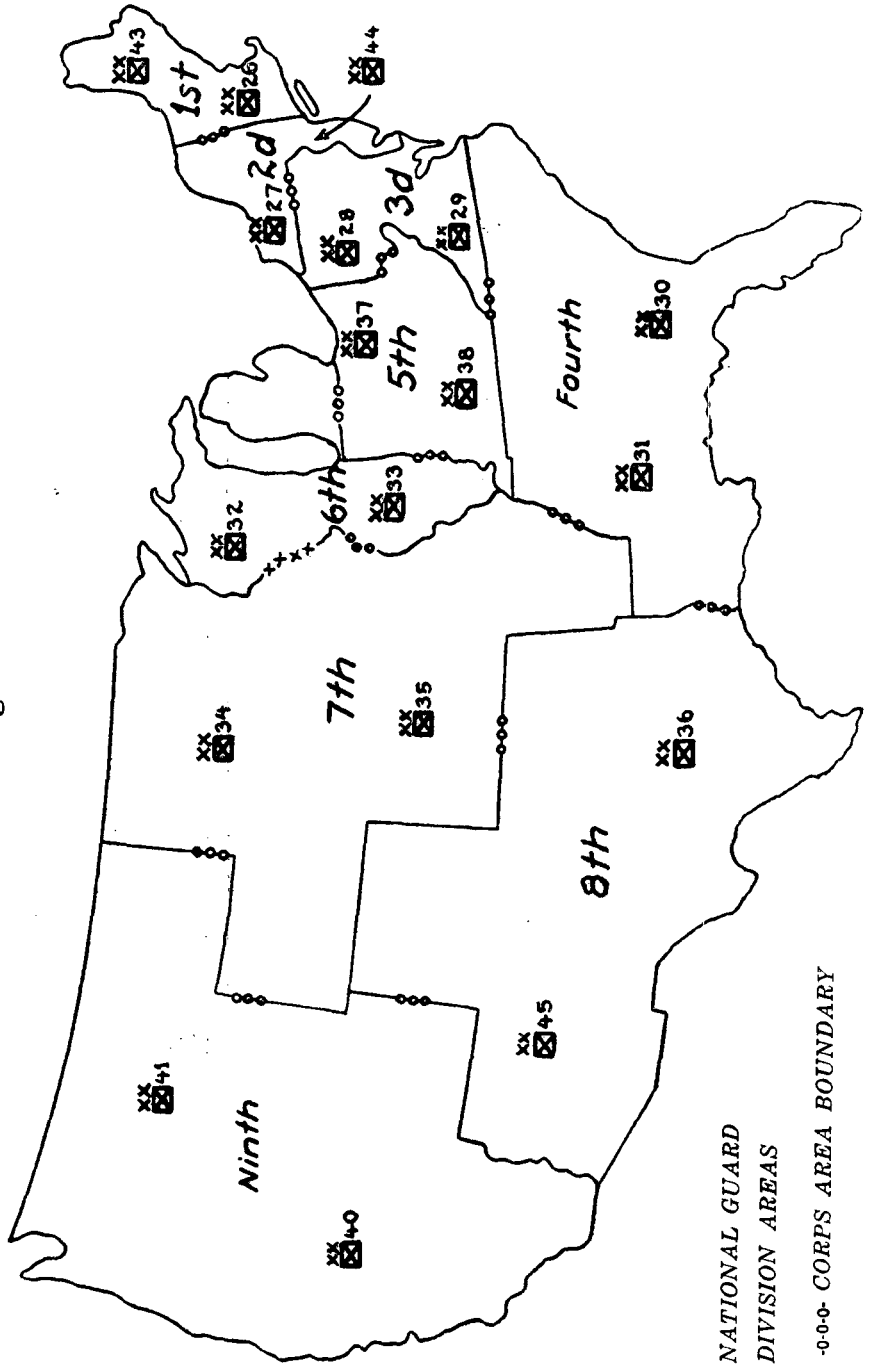
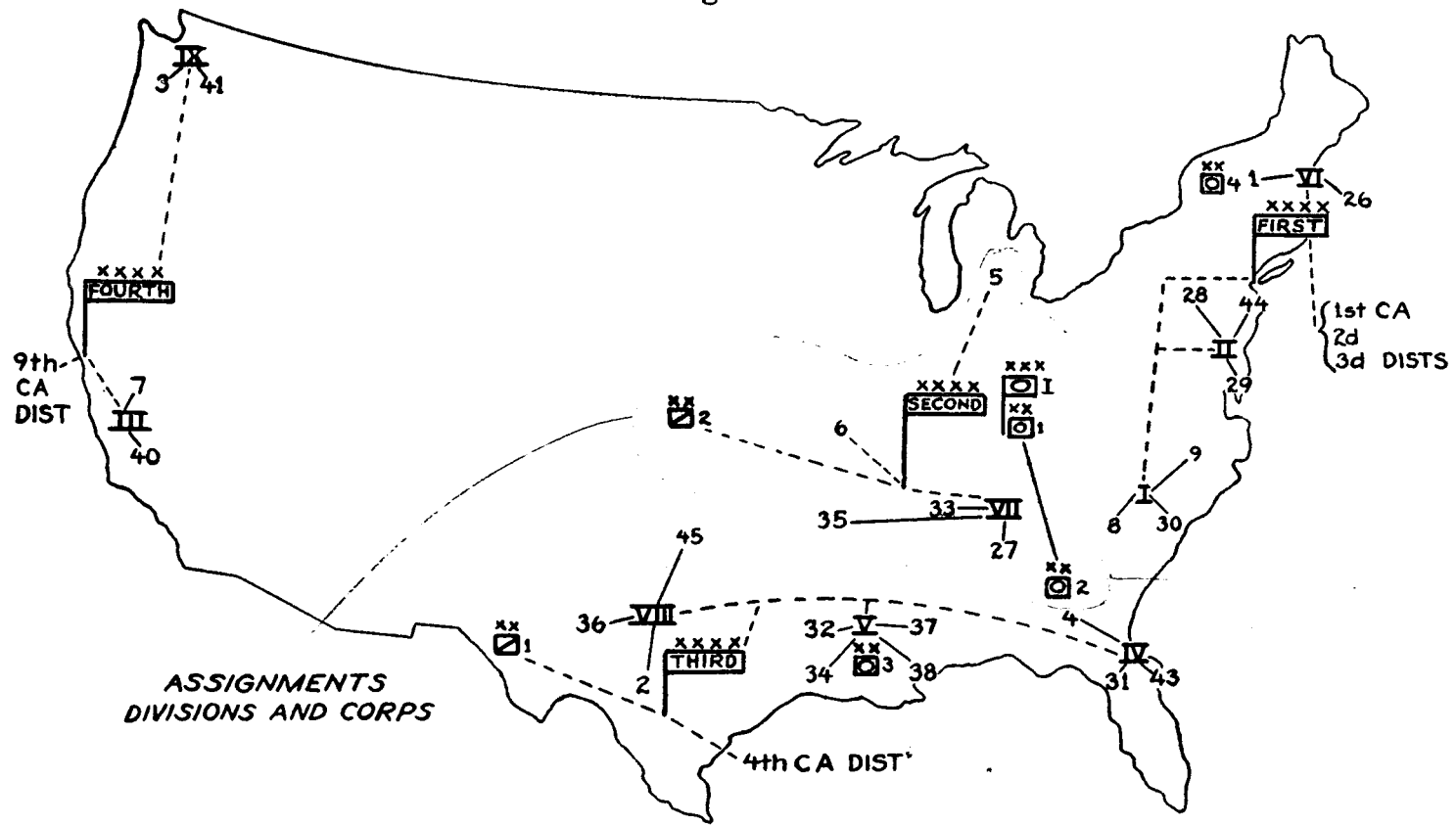


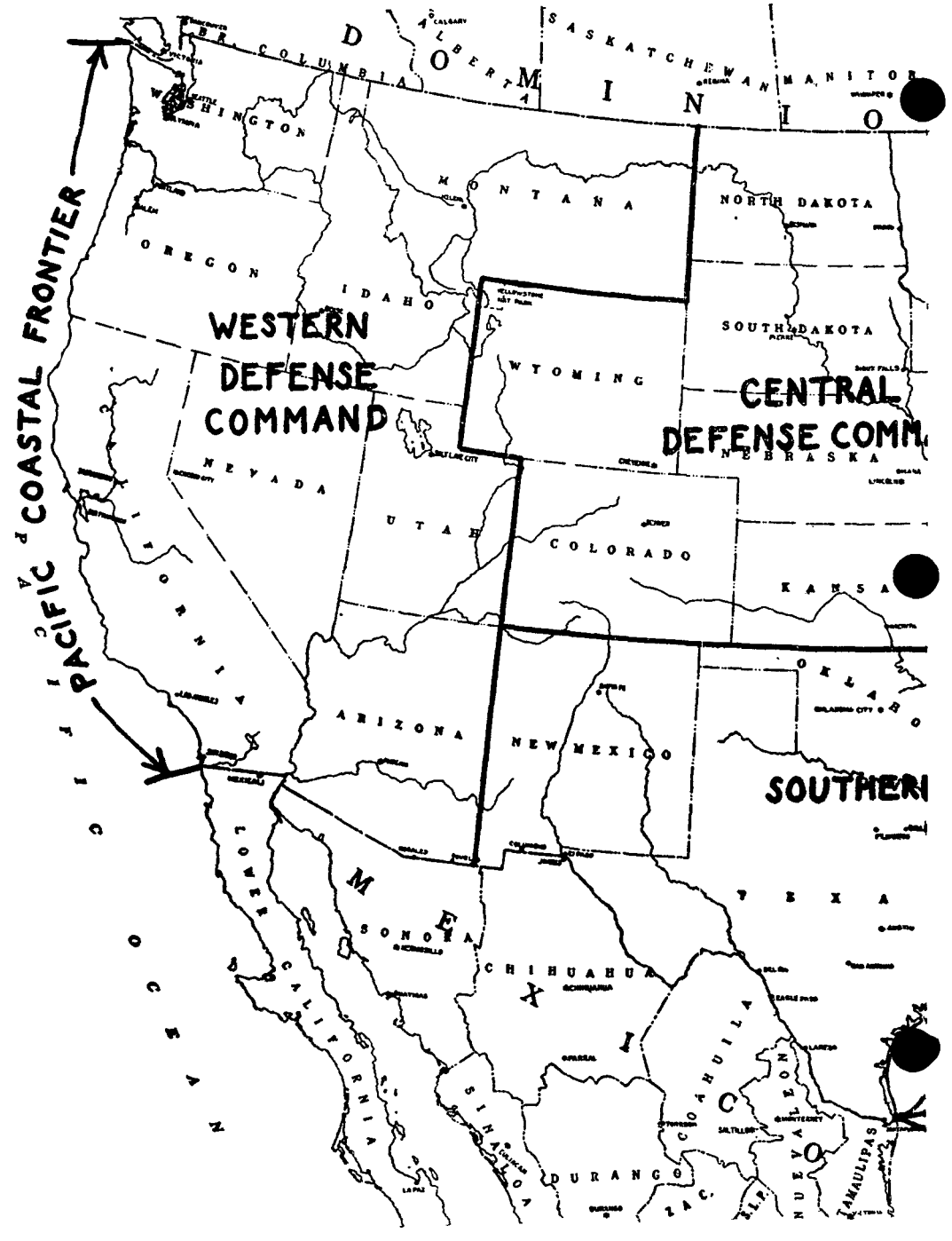
Figure 1

■ 4. ARMY, CORPS, DIVISION, AND COAST ARTILLERY DISTRICT ASSIGNMENTS:

Figure 2



■ 4½. DEFENSE COMMAND AREAS—CONTINENTAL UNITED STATES.



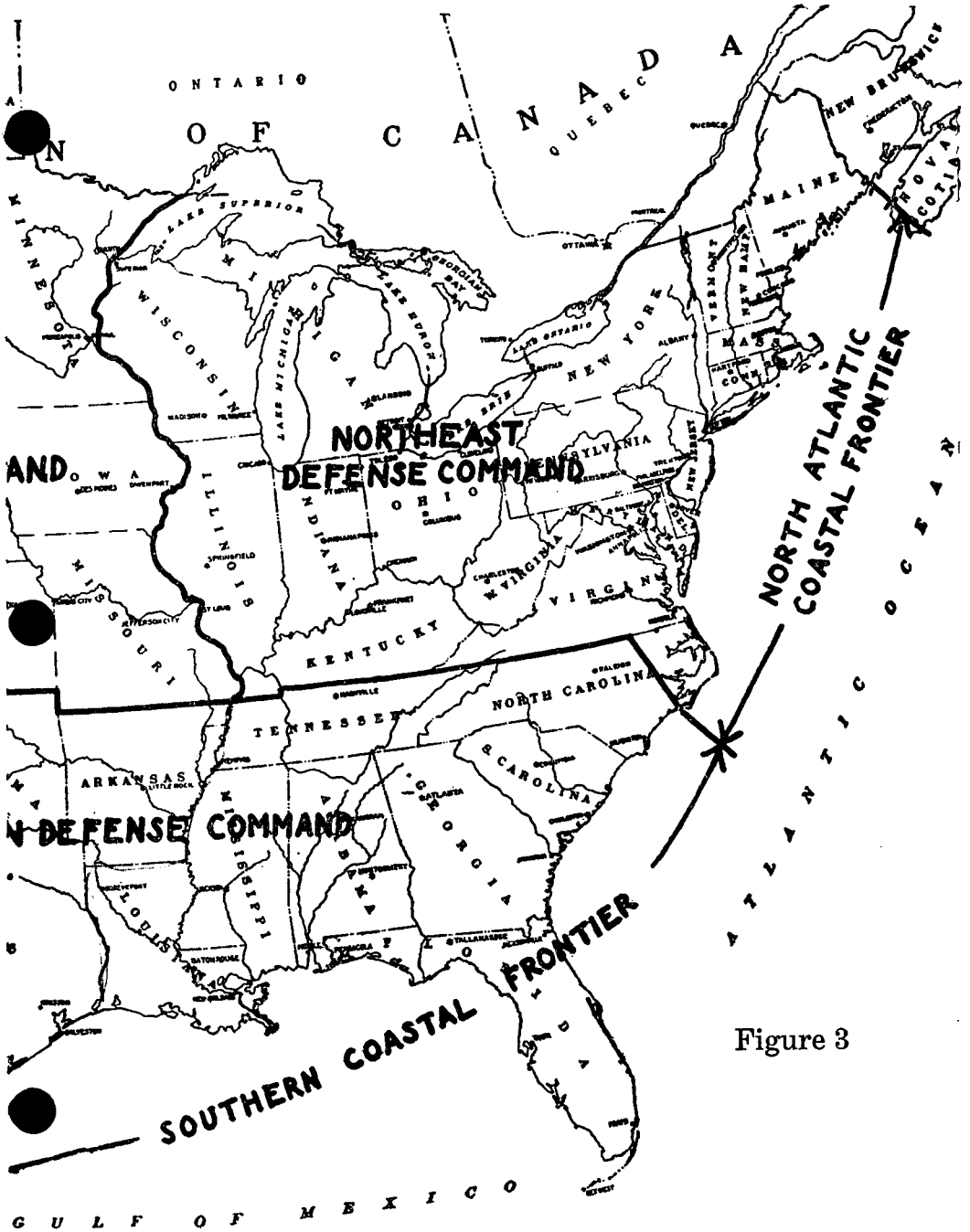
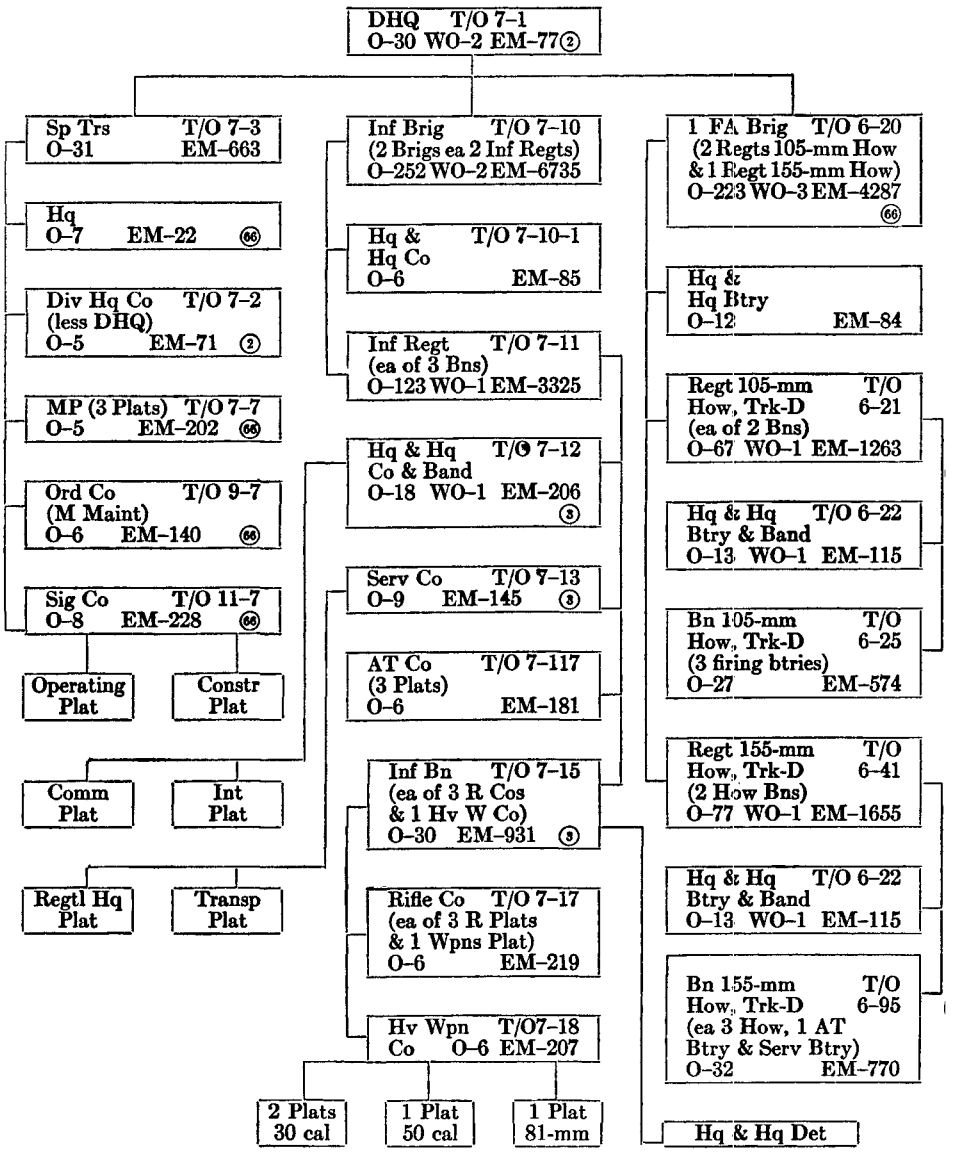

ONTARIO
QUEBEC
CANADA
NEW BRUNSWICK
NOVA SCOTIA
MAINE
VERMONT
NEW HAMPSHIRE
MASS.
NEW YORK
LAKE SUPERIOR
LAKE MICHIGAN
LAKE ONTARIO
LAKE ERIE
MICHIGAN
WISCONSIN
MINNESOTA
IOWA
ILLINOIS
INDIANA
OHIO
PENNSYLVANIA
NEW JERSEY
WEST VIRGINIA
VIRGINIA
KENTUCKY
MISSOURI
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ARKANSAS
MISSISSIPPI
ALABAMA
FLORIDA
NORTHEAST DEFENSE COMMAND
N DEFENSE COMMAND
NORTH ATLANTIC COASTAL FRONTIER
SOUTHERN COASTAL FRONTIER
ATLANTIC OCEAN
GULF OF MEXICO

Figure 3

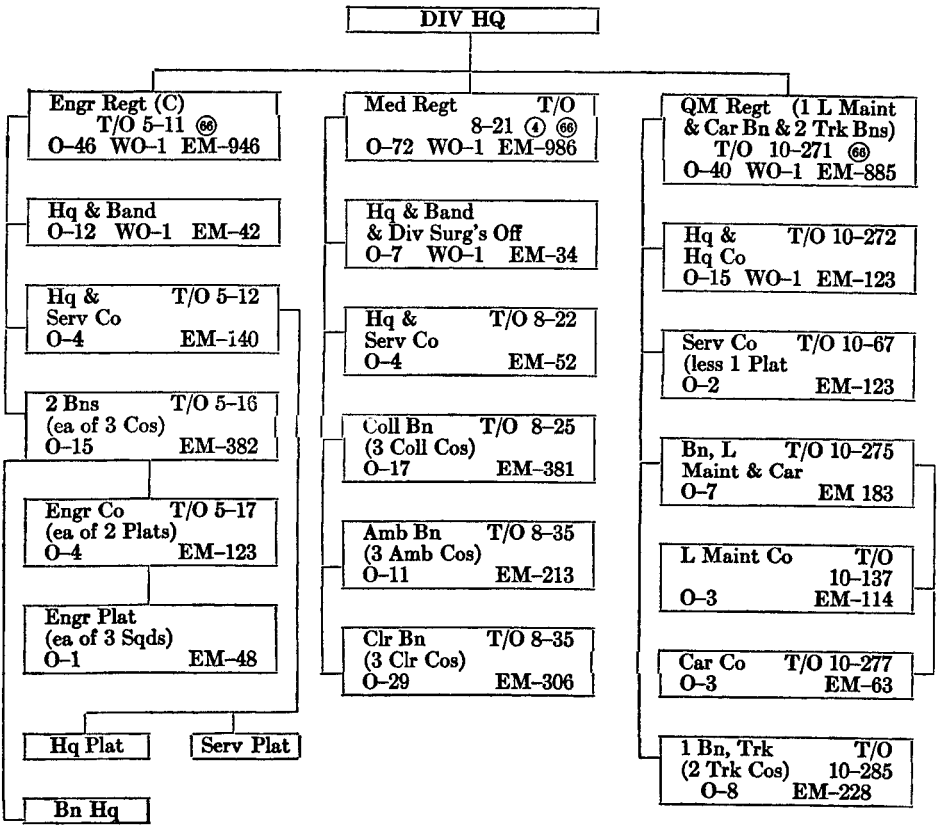
SECTION II

DIVISION ORGANIZATIONS

■ 5. INFANTRY DIVISION (SQUARE) ①⑤—DIAGRAM:



INFANTRY DIVISION (SQUARE) (Continued):



NOTES

① Strength shown includes attached medical personnel and chaplains.
② Car Company, Quartermaster Regiment furnishes transportation for Division Headquarters.
③ In tactical situations, each Infantry Battalion has attached to it:

Bn. Sec., Com Plat, Regt. Hq. Co. O—1 EM-17
Bn. Sec., Trans. Plat, Serv. Co. O—1 EM-17

In the diagram, the above are included in the strength shown for the Headquarters Company & Service Company, and not in those for the Battalion.

④ Includes Division Surgeon's Office.
⑤ Based on War Department tables dated November 1, 1940 (Field Artillery, Infantry Regiment and Quartermaster Truck Company, tables dated October 1, 1940.)
⑥⑥ Moves by organic transport.

6. TABLE OF ORGANIZATION No. 7, *(November 1, 1940):*

INFANTRY DIVISION (SQUARE)

Designation: ①.....Division

1	*1* Unit	*2* Sp Ratings (class)	*3* Div Hq (T/O 7-1)	*4* Sp Trs (T/O 7-3)	*5* 2 Inf Brigs (T/O 7-10)	*6* FA Brig (T/O 6-10)	*7* Engr Regt (T/O 5-11)	*8* Med Regt & Div Surg's Office (T/O 8-21)	*9* QM Regt (T/O 10-271)	*10* Total	*11* Atchd Med	*12* Atchd Ch	*13* Aggregate
2	Major general		1							1			1
3	Brigadier general				2	1				3			3
4	Colonel		1		4	3	1	1	1	11			11
5	Lieutenant colonel		13	2	18	11	1	5	1	51			51
6	Major		5		20	19	2	3	3	52	8		60
7	Captain		9	5	80	62	14	22	13	205	38	9	252
8	First lieutenant		1	14	200	76	14	39	10	354	25	11	390
9	Second lieutenant			6	128	30	7		7	178			178
10	TOTAL COMMISSIONED		30	27	452	202	39	70	35	855	71	20	946
11	Warrant officer			2	4	3	1	1	1	12			12
12	Master sergeant			9	22	21	5	4	4	65			65
13	First sergeant			4	74	36	7	10	8	139			139
14	Technical sergeant			11	34	22	7	3	4	81	8		89
15	Staff sergeant			28	102	52	20	29	22	253	22		275
16	Sergeant			50	1,230	374	65	73	48	1,840	9		1,849
17	Corporal			39	1,290	439	63	46	71	1,948	22		1,970
18	Private, first class } including			204	3,524	1,096	261	294	235	5,614	173		5,787
19	Private }			381	6,810	2,118	480	527	469	10,785	355		11,140
20	Specialist	1st		(13)			(1)		(2)	(16)			(16)
21	Specialist	2d		(26)	(20)	(12)	(5)	(1)	(20)	(84)			(84)

TABLE OF ORGANIZATION No. 7 (*November 1, 1940*) (Continued):

	1	2	3	4	5	6	7	8	9	10	11	12	13
22	Specialist	3d		(55)	(246)	(172)	(34)	(42)	(43)	(592)	(7)		(599)
23	Specialist	4th		(57)	(302)	(167)	(30)	(80)	(48)	(684)	(43)		(727)
24	Specialist	5th		(130)	(676)	(624)	(184)	(172)	(201)	(1,987)	(155)		(2,142)
25	Specialist	6th		(80)	(1,140)	(695)	(129)	(227)	(188)	(2,459)	(88)		(2,547)
26	Unrated			(167)	(6,806)	(1,161)	(279)	(225)	(122)	(8,760)	(179)		(8,939)
27	Basic			(57)	(1,144)	(383)	(79)	(74)	(80)	(1,817)	(56)		(1,873)
28	TOTAL ENLISTED			726	13,086	4,158	908	986	861	20,725	589		21,314
29	AGGREGATE		30	755	13,542	4,363	948	1,057	897	21,592	660	20	22,272
30	Air compressor, motorized						7			7			7
31	Assault boat						20			20			20
32	Electric lighting set						1			1			1
33	Power earth auger, motorized						1			1			1
34	Trailer, map reproduction						1			1			1
35	Water purification unit, portable						4			4			4
36	Gun, machine, cal .50				48	96				144			144
37	Gun, machine, heavy, cal .30				96		24			120			120
38	Gun, machine, light, cal .30				72					72			72
39	Gun, 37-mm, antitank				48	36				84			84
40	Gun, 75-mm, antitank					16				16			16
41	Howitzer, 105-mm					48				48			48
42	Howitzer, 155-mm					24				24			24
43	Mortar, 60-mm				108					108			108
44	Mortar, 81-mm				48					48			48
45	Pistol, cal .45			562	4,796	4,363	217		594	10,532			10,532
46	Rifle, cal .30			101	8,506		730		204	9,541			9,541
47	Rifle, automatic, cal .30			6	500					506			506
48	Tractor, medium with bulldozer						7			7			7
49	Truck, artillery repair			1						1			1
50	Truck, automotive repair			1						1			1
51	Truck, emergency repair			4						4			4
52	Truck, instrument repair			1						1			1
53	Truck, machine shop			1						1			1
54	Truck, small arms repair			2						2			2

TABLE OF ORGANIZATION NO. 7 (*November 1, 1940*) (Continued):

1	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*
	Unit	*Sp Ratings (class)*	*Div Hq (T/O 7-1)*	*Sp Trs (T/O 7-3)*	*2 Inf Brigs (T/O 7-10)*	*FA Brig (T/O 6-10)*	*Engr Regt (T/O 5-11)*	*Med Regt & Div Surg's Office (T/O 8-21)*	*QM Regt (T/O 10-271)*	*Total*	*Atchd Med*	*Atchd Ch*	*Aggregate*
55	Truck, spare parts			4						4			4
56	Truck, tool and bench			1						1			1
57	Truck, welding			1						1			1
58	Truck, wrecking			1						1			1
59	Ambulance, cross country							60		60	6		66
60	Car, light, 5-passenger sedan				6	1	1	2	10	20			20
61	Motorcycle, solo						14	7		21			21
62	Motorcycle, with sidecar			33	112	72	8	12	44	281	6		287
63	Trailer, 1-ton, cargo			18	62	193	40	25	199	537	1		538
64	Trailer, tank, water, 250-gallon			1				13		14			14
65	Truck, ½-ton, carry-all			6						6			6
66	Truck, ½-ton, command			10	138	117	11	17	18	311	19		330
67	Truck, ½-ton, pick-up			19			16	11	18	64	3		67
68	Truck, ½-ton, radio			5	12	15				32			32
69	Truck, ½-ton, weapons carrier				434	68				502	48		550
70	Truck, 1½-ton, cargo			44	182		1	20		247	12		259
71	Truck, 1½-ton, dump						77			77			77
72	Truck, 1½-ton, tractor						1			1			1
73	Truck, 2½-ton, cargo			7		435	2	31	244	719	10		729
74	Truck, 2½-ton, wrecker								6	6			6
75	Truck, 4-ton, cargo					32	7		39	39			39
76	Truck, 4-ton, wrecker								2	2			2

Column 14 — Remarks

① Insert number of division.

[A.G. 320.2 (11-1-40).]

■ 7. NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION (SQUARE):

	1	2	3	4	5	6	7	8
1	Load	Hq Sp Troops	DHQ & Hq Co	MP Co	Sig Co	Ord Co (M Maint)	Inf Brig Hq & Hq Co	Inf Regt
	AMBULANCE							
2	Ambulance, field							
	CARS, PASSENGER AND TRUCKS, ¼-TON							
3	Cars, L, 5-passenger						1	1
4	Command	1	1	4		1	3	
5	Command & Reconnaissance				3			33
6	Carry All				6			
7	Pick-up or cargo		2		13	4		
8	Radio & Com				5		2	2
9	Weapons carriers						3	107
10	Atchd Med (Cmd) (& Cmd & Rcn)							2
11	Atchd Med (Pick-up or weapons carrier)							12
12	SUB-TOTAL	1	3	4	27	5	9	157
	TRUCKS, 1½-TON							
13	Kitchen		2	1	1		1	15
14	Motor Maintenance			1	1			5
15	Organization Equipment		2	1	1			4
16	Personnel			9				3
17	Personnel & tools							
18	Personnel & baggage	1	1		3		1	2
19	Command & Operations						1	1
20	Signal Communications				20		2	
21	Ammunition							13
22	Special Equipment							
23	Atchd Medical	1						2
24	SUB-TOTAL	2	5	12	26		5	45
	TRUCKS, 2½-TON							
25	Kitchen					1		
26	Motor Maintenance					1		
27	Organization Equipment					4		
28	Supplies							
29	Surplus							
30	Personnel							
31	Personnel & Baggage				1			
32	Command & Operations							
33	Signal Communications							
34	Ammunition							
35	Prime Movers							
36	Atchd Medical							
37	SUB-TOTAL				1	6		
	TRUCKS, 4-TON							
38	Prime movers							
39	Ammunition							
40	Motor Maintenance							
41	SUB-TOTAL							
	MOTORCYCLES							
42	Motorcycle, solo							
43	Motorcycle, with side car	1		29	2	1	4	26
44	Atchd Med (Mtcl w/s/c)	1						1
45	SUB-TOTAL	2		29	2	1	4	27
	TRUCKS, MISCELLANEOUS, AND TRAILERS							
46	Air compressor, Mtzd							
47	Power earth auger, Mtzd							
48	Tractor, Mtze, w/bulldozer							
49	Tractor, truck, 1½-ton							
50	Trailer, map reproduction							
51	Trailer, 1-ton		5	2	10	1	1	15
52	Trailer, with tank, 250-gallon					1		
53	Trucks, miscellaneous					17		
54	SUB-TOTAL		5	2	10	19	1	15
55	TOTALS	5	13	47	66	31	19	244

NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION (SQUARE) (Continued).

	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1	Hq & Hq Co & Band (Regt)	Serv Co	AT Co	Bn	Bn Hq Det	Hq Wpns Co	Rifle Co	FA Brig Hq & Hq Bry	Regt — 105-mm How	Hq & Hq Btry (Regt)	FA Bn — 105-mm	Hq & Hq Btry (Bn)	Serv Btry	How Btry 105-mm	Regt — 155-mm How	Hq & Hq Btry (Regt)	FA Bn — 155-mm	Hq & Hq Btry (Bn)	Serv Btry
AMBULANCE																			
2									2		(1)	(1)			2		(1)	(1)	
CARS, PASSENGER AND TRUCKS, ¼-TON																			
3	(1)							1											
4								4	35	(5)	(15)	(6)	(3)	(2)	43	(5)	(19)	(6)	(3)
5	(6)	(2)	(4)	(7)	(2)	(5)													
6																			
7									4		(2)	(2)			4		(2)	(2)	
8	(1)		(1)					1	4		(2)	(2)			6		(3)	(2)	
9	(10)	(4)	(21)	(24)	(2)	(16)	(2)	2	18		(9)	(9)			18		(9)	(9)	
10	(2)								3	(1)	(1)	(1)			3	(1)	(1)	(1)	
11				(4)	(4)				1	(1)					1	(1)			
12	(20)	(6)	(26)	(35)	(8)	(21)	(2)	8	65	(7)	(29)	(20)	(3)	(2)	75	(7)	(34)	(20)	(3)
TRUCKS, 1½-TON																			
13	(1)	(1)	(1)	(4)		(1)	(1)												
14		(5)																	
15		(4)																	
16			(3)																
17																			
18	(2)																		
19	(1)																		
20																			
21		(13)																	
22																			
23	(2)																		
24	(6)	(23)	(4)	(4)		(1)	(1)												
TRUCKS, 2½-TON																			
25								1	11	(1)	(5)	(1)	(1)	(1)	13	(1)	(6)	(1)	(1)
26								1	17	(1)	(8)	(1)	(4)	(1)	17	(1)	(8)	(1)	(3)
27								1	11	(1)	(5)	(1)	(1)	(1)	13	(1)	(6)	(1)	(1)
28									4		(2)		(2)		4		(2)		(2)
29																			
30									2	(2)					2	(2)			
31																			
32								3	12	(2)	(5)	(2)		(1)	12	(2)	(5)	(2)	
33								3	21	(3)	(9)	(3)		(2)	21	(3)	(9)	(3)	
34									36		(18)		(12)	(2)	40		(20)		(12)
35									30		(15)			(5)	16		(8)		
36									3	(1)	(1)	(1)			3	(1)	(1)	(1)	
37								9	147	(11)	(68)	(9)	(20)	(13)	141	(11)	(65)	(9)	(19)
TRUCKS, 4-TON																			
38															24		(12)		
39															6		(3)		
40															2		(1)		(1)
41															32		(16)		(1)
MOTORCYCLES																			
42																			
43	(4)	(6)	(4)	(4)	(2)	(2)		2	20	(2)	(9)	(4)	(2)	(1)	30	(2)	(14)	(4)	(2)
44	(1)																		
45	(5)	(6)	(4)	(4)	(2)	(2)		2	20	(2)	(9)	(4)	(2)	(1)	30	(2)	(14)	(4)	(2)
TRUCKS, MISCELLANEOUS, AND TRAILERS																			
46																			
47																			
48																			
49																			
50																			
51		(15)						4	61	(3)	(29)	(4)	(16)	(3)	67	(3)	(32)	(4)	(16)
52																			
53																			
54		(15)						4	61	(3)	(29)	(4)	(16)	(3)	67	(3)	(32)	(4)	(16)
55	(31)	(50)	(34)	(43)	(10)	(24)	(3)	23	295	(23)	(136)	(38)	(41)	(19)	347	(23)	(162)	(38)	(41)

NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION (SQUARE) (Continued).

	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
1	How Btry—155-mm	AT Btry	Engr Regt	Hq & Hq Serv Co (Regtl)	Engr Bn	Lettered Co	Med Regt & Div Surg's Off	Hq & Hq Serv Co & Band	Coll Bn	Amb Bn	Clr Bn	QM Reg	Hq & Hq Co	Serv Co (less 1 Plat)	L Maint & C Bn	Truck Bn	Bn Hq	Truck Co	Total
										AMBULANCE									
2							60			(60)									66
										CARS, PASSENGER AND TRUCKS, ¼-TON									
3			1	(1)			2	(2)				10	(1)		(7)	(1)	(1)		20
4	(2)	(4)	11	(5)	(3)	(1)	17	(2)	(4)	(4)	(7)	18	(4)		(10)	(2)		(1)	176
5																			135
6																			6
7			16	(4)	(6)	(2)	11	(2)	(3)	(3)	(3)	18	(2)	(1)	(3)	(6)		(3)	76
8		(1)																	32
9																			490
10			1	(1)								1	(1)						19
11																			51
12	(2)	(5)	29	(11)	(9)	(3)	30	(6)	(7)	(7)	(10)	47	(8)	(1)	(20)	(9)	(1)	(4)	1005
										TRUCKS, 1½-TON									
13			7	(1)	(3)	(1)	7	(1)	(3)	(3)									80
14							6		(3)	(3)									28
15			16	(4)	(6)	(2)													36
16			4	(4)															25
17			42		(21)	(7)													42
18																			15
19																			6
20																			24
21			1	(1)															53
22			8	(8)			7	(1)	(6)										15
23			3	(1)	(1)														12
24			81	(19)	(31)	(10)	20	(2)	(12)	(6)									336
										TRUCKS, 2½-TON									
25	(1)	(1)					3				(3)	8	(1)	(1)	(2)	(2)		(1)	48
26	(1)	(1)	2	(2)			5	(2)			(3)	20	(1)	(1)	(10)	(4)		(2)	80
27	(1)	(1)					18				(18)	8		(2)	(2)	(2)		(1)	66
28							5	(5)				21	(18)		(3)				38
29												192				(96)		(48)	192
30																			6
31												1	(1)						2
32	(1)																		39
33	(2)																		66
34	(2)	(2)																	112
35		(8)																	76
36												1	(1)						10
37	(8)	(13)	2	(2)			31	(7)			(24)	251	(22)	(4)	(17)	(104)		(52)	735
										TRUCKS, 4-TON									
38	(4)		7	(1)	(3)	(1)													31
39	(1)																		6
40												2			(2)				4
41	(5)		7	(1)	(3)	(1)						2			(2)				41
										MOTORCYCLES									
42			14	(2)	(6)	(2)	7	(1)	(4)	(1)	(1)								21
43	(1)	(5)	8	(2)	(3)	(1)	12	(3)	(3)	(3)	(3)	44	(4)	(1)	(27)	(6)		(3)	281
44			1	(1)															6
45	(1)	(5)	23	(5)	(9)	(3)	19	(4)	(7)	(4)	(4)	44	(4)	(1)	(27)	(6)		(3)	308
										TRUCKS, MISCELLANEOUS, AND TRAILERS									
46			7	(1)	(3)	(1)													7
47			1	(1)															1
48			7	(1)	(3)	(1)													7
49			1	(1)															1
50			1	(1)															1
51	(3)	(3)	40	(22)	(9)	(3)	25	(1)	(3)	(3)	(18)	200	(18)	(4)	(10)	(84)		(42)	538
52							13	(1)	(3)	(3)	(6)								14
53																			17
54	(3)	(3)	57	(27)	(15)	(5)	38	(2)	(6)	(6)	(24)	200	(18)	(4)	(10)	(84)		(42)	586
55	(19)	(26)	199	(65)	(67)	(22)	198	(21)	(32)	(83)	(62)	544	(52)	(10)	(76)	(203)	(1)	(101)	3077

NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION, (SQUARE) (Continued):

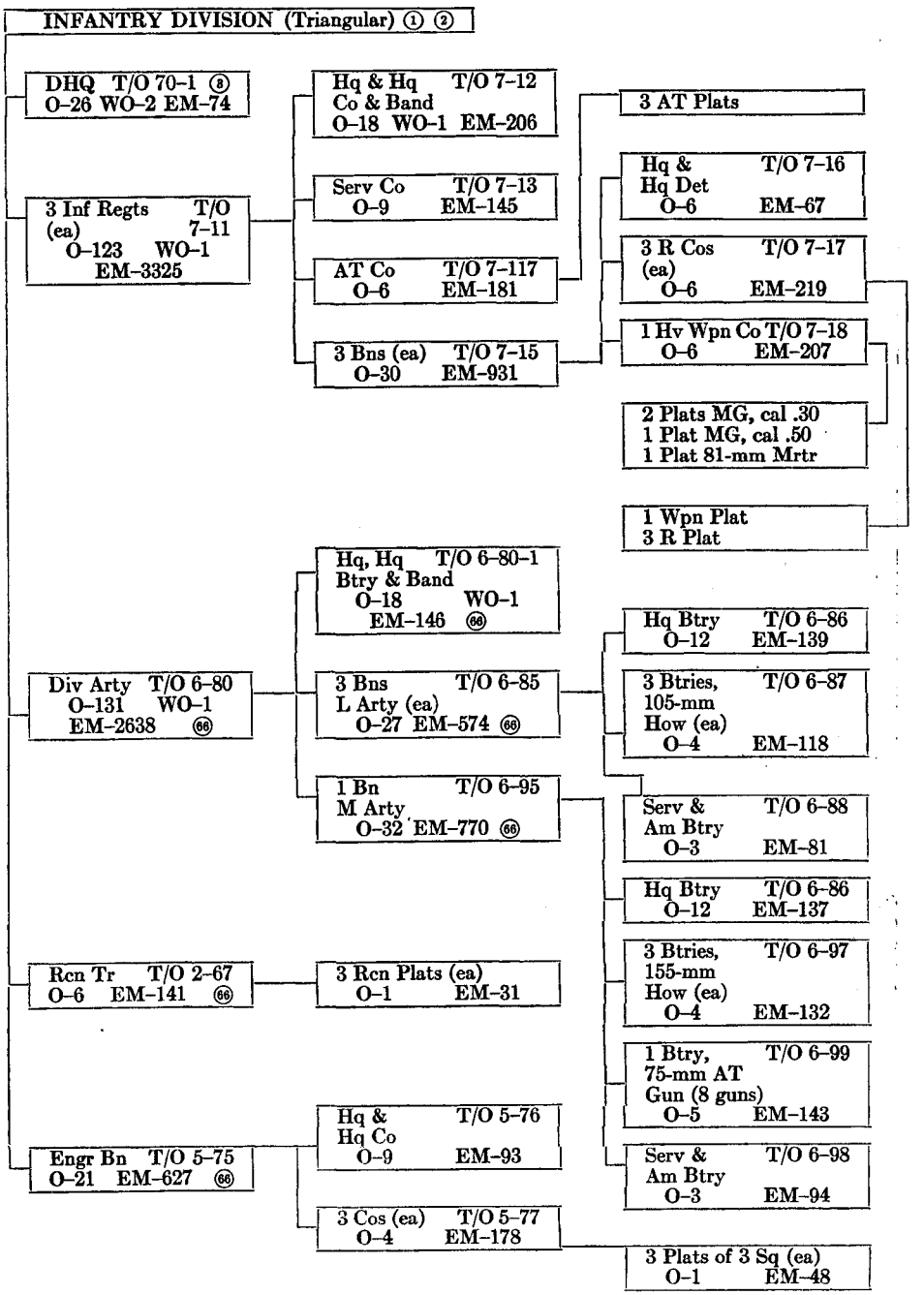
NOTES

Above tables are based on T/O November 1, 1940.
Car Company Quartermaster Regiment furnishes following transportation for movement of Division Headquarters:

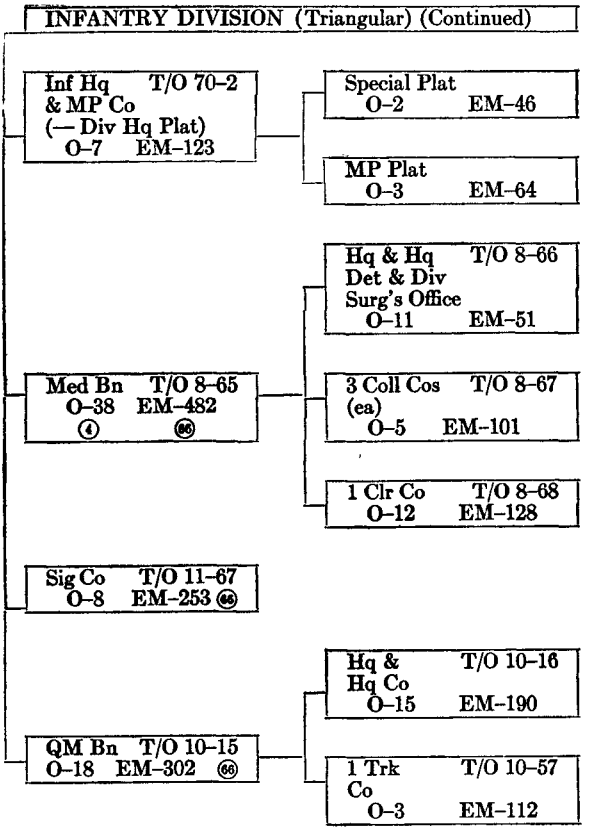
6 Cars, light, 5-passenger
20 Motorcycles w/s/c
1 Trailer, 1-ton
8 Trucks, ½-ton, command

For passenger capacity of vehicles, see Chapter 2, Section 1, paragraph 46, this manual.

8. INFANTRY DIVISION (TRIANGULAR) —Diagram:



INFANTRY DIVISION (TRIANGULAR) —Diagram (Continued):



NOTES

① Based on WD T/Os dated Oct. 1, 1940. (Consolidated T/O dated November 1, 1940.)
② Totals include attached medical personnel and chaplains.
③ Transportation furnished by Quartermaster Battalion.
④ Includes Division Surgeon's Office.
⑥⑥ Moves by organic transportation.

■ 9. TABLE OF ORGANIZATION No. 70 (*November 1, 1940*):

INFANTRY DIVISION (TRIANGULAR)

Designation: ①.....Division

1	*1* Unit	*2* Specialists' ratings (class)	*3* Div Hq (T/O 70-1)	*4* Div Hq & MP Co (T/O 70-2)	*5* Recon Tr (T/O 2-67)	*6* Div Sig Co (T/O 11-67)	*7* 3 Inf Regts (T/O 7-11)	*8* Div Arty (T/O 6-80)	*9* Engr Bn (T/O 5-75)	*10* Med Bn & Div Surg's Office (T/O 8-65)	*11* QM Bn (T/O 10-15)	*12* Total Div	*13* Atchd Ch	*14* Atchd Med	*15* Aggregate
2	Major general		1									1			
3	Brigadier general		1					1				2			2
4	Colonel		1				3	1	1			6			6
5	Lieutenant colonel		10			1	12	5		1	1	30			30
6	Major		3	1			15	9	1	4	1	34		4	38
7	Captain		5	1	1	1	57	36	6	14	4	125	4	23	152
8	First lieutenant		4	2	3	4	147	49	7	16	5	237	7	16	260
9	Second lieutenant		1	3	2	2	96	20	3	3	5	135			135
10	TOTAL COMMISSIONED		26	7	6	8	330	121	18	38	16	570	11	43	624
11	Warrant officer		2				3	1				6			6
12	Master sergeant		5			3	15	11	3	1	3	41			41
13	First sergeant			1	1	1	54	22	4	5	2	90			90
14	Technical sergeant		6			2	24	14	4	2	4	56		4	60
15	Staff sergeant		8	3	2	11	69	30	15	12	9	159		14	173
16	Sergeant		11	7	11	14	918	232	42	31	20	1,286		5	1,291
17	Corporal		1	9	16	18	963	270	48	17	17	1,359		14	1,373
18	Private, first class } including		35	34	37	68	2,607	664	166	155	80	3,846		111	3,957
19	Private }		8	69	74	136	5,037	1,320	334	259	161	7,398		232	7,630
20	Specialist	1st	(2)								(2)	(4)			(4)
21	Specialist	2d	(10)				(15)	(8)	(2)	(2)	(16)	(53)			(53)

TABLE OF ORGANIZATION No. 70 (*November 1, 1940*) (Continued):

1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*Unit*	*Specialists' ratings (class)*	*Div Hq (T/O 70–1)*	*Div Hq & MP Co (T/O 70–2)*	*Recon Tr (T/O 2–67)*	*Div Sig Co (T/O 11–67)*	*3 Inf Regts (T/O 7–11)*	*Div Arty (T/O 6–80)*	*Engr Bn (T/O 5–75)*	*Med Bn & Div Surg's Office (T/O 8–65)*	*QM Bn (T/O 10–15)*	*Total Div*	*Atchd Ch*	*Atchd Med*	*Aggregate*
22	Specialist	3d	(15)	(5)	(10)	(15)	(174)	(104)	(18)	(16)	(25)	(382)	.....	(4)	(386)
23	Specialist	4th	(6)	(5)	(25)	(28)	(216)	(100)	(18)	(30)	(19)	(447)	.....	(28)	(475)
24	Specialist	5th	(7)	(5)	(17)	(89)	(483)	(376)	(114)	(62)	(53)	(1,206)	.....	(100)	(1,306)
25	Specialist	6th	(3)	(16)	(25)	(40)	(831)	(434)	(87)	(144)	(47)	(1,627)	.....	(61)	(1,688)
26	Unrated	.....	.....	(60)	(21)	(9)	(5,079)	(723)	(205)	(118)	(51)	(6,266)	.....	(112)	(6,378)
27	Basic	.....	.....	(12)	(13)	(23)	(846)	(239)	(56)	(42)	(28)	(1,259)	.....	(38)	(1,297)
28	TOTAL ENLISTED	.....	74	123	141	253	9,687	2,563	616	482	296	14,235	.....	380	14,615
29	AGGREGATE	.....	102	130	147	261	10,020	2,685	634	520	312	14,811	11	423	15,245
30	Air compressor, motorized	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	3	.....	.....	3
31	Assault boat	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	10	.....	.....	10
32	Electric lighting set	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1
33	Power earth auger, motorized	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1
34	Water purification unit, portable	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	4	.....	.....	4
35	Car, scout	.....	.....	.....	16	.....	.....	.....	.....	.....	.....	16	.....	.....	16
36	Gun, machine, cal .50, flexible	.....	.....	.....	.....	.....	36	.....	.....	.....	.....	36	.....	.....	36
37	Gun, machine, heavy, cal .30	.....	.....	.....	32	.....	72	.....	18	.....	.....	122	.....	.....	122
38	Gun, machine (HB), cal .50	.....	.....	.....	17	.....	.....	60	.....	.....	.....	77	.....	.....	77
39	Gun, machine, light, cal .30	.....	.....	.....	3	.....	54	.....	.....	.....	.....	57	.....	.....	57
40	Gun, submachine, cal .45	.....	.....	.....	35	.....	.....	.....	.....	.....	.....	35	.....	.....	35
41	Gun, 37-mm, antitank	.....	.....	.....	.....	.....	36	24	.....	.....	.....	60	.....	.....	60
42	Gun, 75-mm	.....	.....	.....	.....	.....	.....	8	.....	.....	.....	8	.....	.....	8
43	Howitzer, 105-mm	.....	.....	.....	.....	.....	.....	36	.....	.....	.....	36	.....	.....	36
44	Howitzer, 155-mm	.....	.....	.....	.....	.....	.....	12	.....	.....	.....	12	.....	.....	12
45	Mortar, 60-mm	.....	.....	.....	.....	.....	81	.....	.....	.....	.....	81	.....	.....	81

TABLE OF ORGANIZATION No. 70 (*November 1, 1940*) (Continued):

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
46	Mortar, 81-mm						36					36			36
47	Pistol, automatic, cal .45		100	83	147	261	3,543	2,685	118		262	7,199			7,199
48	Rifle, automatic, cal .30						375					375			375
49	Rifle, US, cal .30			47	32		6,297		516		50	6,942			6,942
50	Tractor, medium, w/bulldozer and trailer								3			3			3
51	Ambulance, ½-ton, cross-country									36		36		4	40
52	Car, 5-passenger sedan						3	1		1	5	10			10
53	Motorcycle, solo				12				10	3		25			25
54	Motorcycle, with side car			8		2	78	43	4		5	140		3	143
55	Trailer, 1-ton, cargo			2		10	45	123	23	4	53	260			260
56	Trailer, tank, water, 250-gallon									7		7			7
57	Tricycle, motor				7							7			7
58	Truck, ½-ton, carry-all					6						6			6
59	Truck, ½-ton, command			2	1	3	99	69	5	8	13	200		12	212
60	Truck, ½-ton, pick-up				1	15			10	6	6	38			38
61	Truck, ½-ton, radio					6	6	10				22			22
62	Truck, ½-ton, weapon carrier			3			321	46				370		37	407
63	Truck, 1½-ton, cargo			6		30	129			21		186		8	194
64	Truck, 1½-ton, dump								53			53			53
65	Truck, 2½-ton, cargo				4	1		276	1	15	63	360		5	365
66	Truck, 2½-ton, cargo, winch equipped									3		3			3
67	Truck, 2½-ton, wrecker										2	2			2
68	Truck, 4-ton, cargo							16	3			19			19
69	Truck, 4-ton, heavy-duty wrecker										2	2			2

Remarks:
① Insert number of division.

[A. G. 320.2 (11-1-40).]

10. NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION (TRIANGULAR):

1	Load	2 Div Hq & Hq & MP Co	3 Rcn Tr	4 Sig Co	5 Engr Bn	6 Hq Co	7 Lt Fld Co	8 Med Bn	9 Coll Co	10 Clearing Co	11 QM Bn	12 Hq Co
	AMBULANCES											
2	Ambulance, field							36	(12)			
	CARS, 5-PASS AND TRUCKS, ¼-TON											
3	Cars, 5-passenger							1			5	(5)
4	Command and Reconnaissance	2	1	3							13	(12)
5	Command				5	(2)	(1)	8	(1)	(3)		
6	Pick-up		1		10	(1)	(3)	6	(1)	(1)	6	(3)
7	Radio			6								
8	Weapons carrier											
9	Cargo	3		15								
10	Atchd Med (command)				1	(1)						
11	Atchd Med (Pick-up)											
12	SUB-TOTAL	5	2	24	16	(4)	(4)	15	(2)	(4)	24	(20)
	TRUCKS, 1½-TON											
13	Kitchen	2			4	(1)	(1)	5	(1)	(1)		
14	Motor Maintenance							3	(1)			
15	Organization Equipment	1			9		(3)	1				
16	Supply							4				
17	Personnel	3			30	(3)	(9)					
18	Personnel & Baggage			11	3		(1)	8	(2)			
19	Command and Operations			3								
20	Signal Communications			22								
21	Ammunition											
22	Special Equipment				7	(7)						
23	Atchd Medical				1	(1)					1	(1)
24	SUB TOTAL	6		36	54	(12)	(14)	21	(4)	(1)	1	(1)
	TRUCKS, 2½-TON											
25	Kitchen		1	1							2	(1)
26	Motor Maintenance		1		1	(1)		5		(3)	4	(2)
27	Organization Equipment							1		(1)	3	(2)
28	Supplies		1								4	(4)
29	Surplus										48	
30	Personnel											
31	Command & Operations											
32	Signal Communications											
33	Ammunition											
34	Prime Movers											
35	Special Equipment							12		(12)	4	(4)
36	Combat		1									
37	Atchd Medical											
38	SUB-TOTAL		4	1	1	(1)		18		(16)	65	(13)
	TRUCKS, 4-TON											
39	Prime Movers				3		(1)					
40	Ammunition											
41	Motor Maint										2	(2)
42	SUB-TOTAL				3		(1)				2	(2)
	MOTORCYCLES AND TRICYCLES											
43	Motorcycle, solo		12		10	(1)	(3)	3				
44	Motorcycle, with side car	8		2	4	(1)	(1)				5	(2)
45	Tricycle		7									
46	Atchd Med (MC, w/s/c)											
47	SUB-TOTAL	8	19	2	14	(2)	(4)	3			5	(2)
	TRUCKS, MISCELLANEOUS AND TRAILERS											
48	Air Compressor, Motorized				3		(1)					
49	Cars, Scout		16									
50	Tractor, Mtzd, w/bulldozer				3		(1)					
51	Trailer, 1-Ton	2		10	23	(11)	(4)	4	(1)		53	(11)
52	Power, Earth, Auger				1	(1)						
53	Trailer, with tank, 250-gallon							7				
54	SUB-TOTAL	2	16	10	30	(12)	(6)	11	(1)		53	(11)
55	TOTALS	21	41	73	118	(31)	(29)	104	(19)	(21)	150	(49)

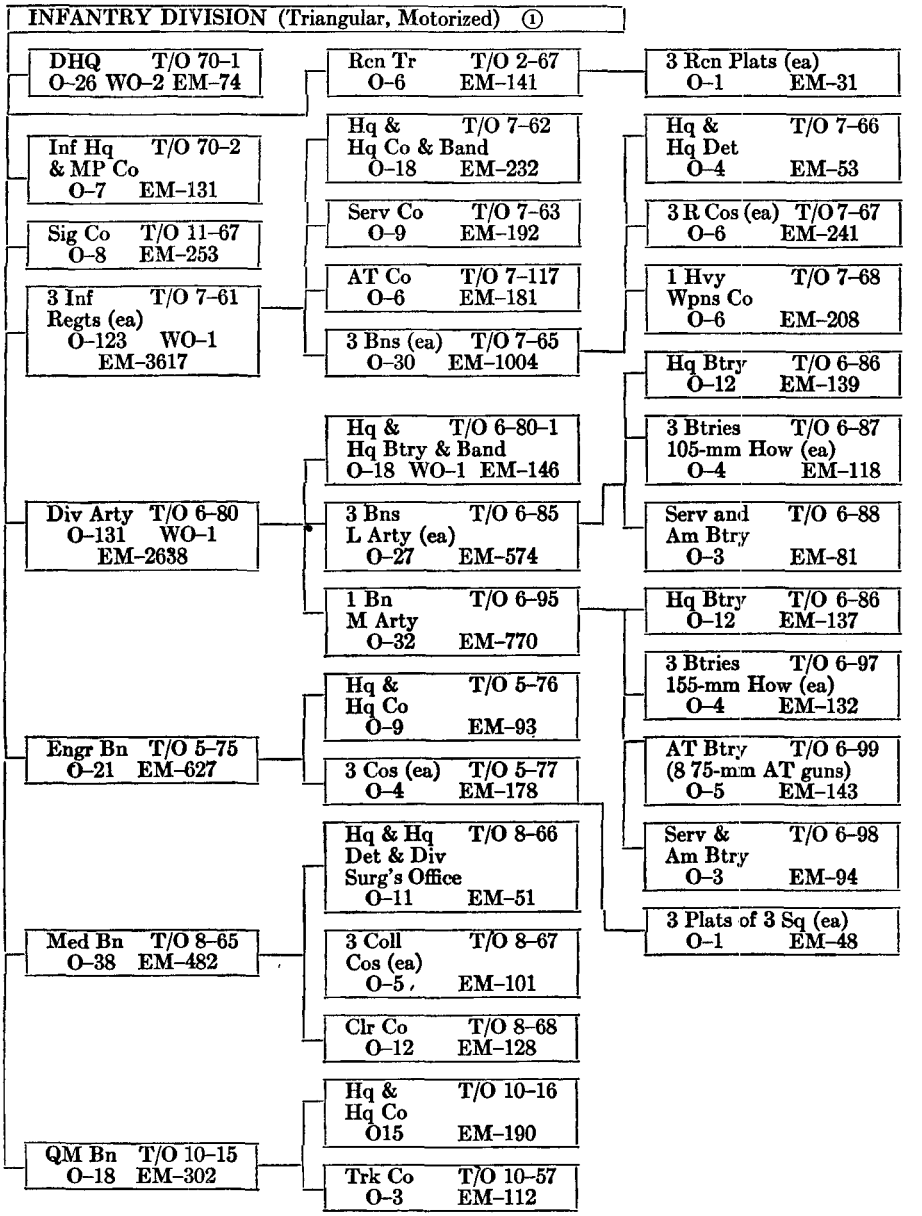
For passenger capacity of vehicles, see Chapter 2, Section I, paragraph 46, this manual.

NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION (TRIANGULAR) (Continued):

1	13 Trk Co	14 Inf Regt	15 Hq, Hq Co & Band	16 Serv Co	17 AT Co	18 Bn Hq	19 Hv Wpns Co	20 Rifle Co	21 Hq & Hq Btry & Band, Div Arty	22 FA Bn—105-mm	23 Hq Btry	24 Serv Btry	25 How Btry—105-mm	26 FA Bn—155-mm	27 Hq Btry	28 Serv Btry	29 How Btry—155-mm	30 AT Btry	31 Totals
									AMBULANCES										
2										1	(1)			1	(1)				40
									CARS, 5-PASS AND TRUCKS, ¼-TON										
3		1	(1)						1										10
4	(1)	33	(6)	(2)	(4)	(2)	(5)												118
5									5	15	(6)	(3)	(2)	19	(6)	(3)	(2)	(4)	82
6	(3)																		23
7		2	(1)		(1)				1	2	(2)			3	(2)			(1)	22
8		107	(10)	(4)	(21)	(2)	(16)	(2)		9	(9)			9	(9)				357
9									2	2	(2)			2	(2)				28
10		2	(2)						1	1	(1)			1	(1)				12
11		12				(4)			1										37
12	(4)	157	(20)	(6)	(26)	(8)	(21)	(2)	11	29	(20)	(3)	(2)	34	(20)	(3)	(2)	(5)	689
									TRUCKS, 1½-TON										
13		15	(1)	(1)	(1)		(1)	(1)											56
14		5		(5)															18
15		4		(4)															23
16																			4
17		3			(3)														42
18		2	(2)																28
19		1	(1)																6
20																			22
21		13			(1)	(4)													39
22																			7
23		2	(2)																8
24		45	(6)	(10)	(5)	(4)	(1)	(1)											253
									TRUCKS, 2½ TON										
25	(1)								1	5	(1)	(1)	(1)	6	(1)	(1)	(1)	(1)	26
26	(2)								1	8	(1)	(4)	(1)	8	(1)	(3)	(1)	(1)	44
27	(1)								1	5	(1)	(1)	(1)	6	(1)	(1)	(1)	(1)	26
28										2		(2)		2		(2)			13
29	(48)																		48
30									2										2
31									3	5	(2)		(1)	5	(2)		(1)		23
32									3	9	(3)		(2)	9	(3)		(2)		39
33										18		(12)	(2)	20		(12)	(2)	(2)	74
34										15			(5)	8				(8)	53
35																			16
36																			1
37									1	1	(1)			1	(1)				5
38	(52)								12	68	(9)	(20)	(13)	65	(9)	(19)	(8)	(13)	370
									TRUCKS, 4-TON										
39														12			(4)		15
40														3			(1)		3
41														1		(1)			3
42														16		(1)	(5)		21
									MOTORCYCLES AND TRICYCLES										
43																			25
44	(3)	26	(4)	(6)	(4)	(2)	(2)		2	9	(4)	(2)	(1)	14	(4)	(2)	(1)	(5)	140
45																			7
46		1	(1)																3
47	(3)	27	(5)	(6)	(4)	(2)	(2)		2	9	(4)	(2)	(1)	14	(4)	(2)	(1)	(5)	175
									TRUCKS, MISCELLANEOUS AND TRAILERS										
48																			3
49																			16
50																			3
51	(42)	15		(15)					4	29	(4)	(16)	(3)	32	(4)	(16)	(3)	(3)	260
52																			1
53																			7
54	(42)	15		(15)					4	29	(4)	(16)	(3)	32	(4)	(16)	(3)	(3)	290
55	(101)	244	(31)	(50)	(34)	(10)	(24)	(3)	(29)	136	(38)	(41)	(19)	162	(38)	(41)	(19)	(26)	1838

For passenger capacity of vehicles, see Chapter 2, Section I, paragraph 46, this manual.

■ 11. INFANTRY DIVISION (TRIANGULAR, MOTORIZED)—Diagram:



NOTE

① Includes attached medical personnel and chaplains.

■ 12. TABLE OF ORGANIZATION No. 77 (*November 1, 1940*):

INFANTRY DIVISION (TRIANGULAR, MOTORIZED)

Designation: ①..... Division

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*Unit*	*Specialists' rating (class)*	*Div Hq (T/O 70-1)*	*Div Hq & MP Co (T/O 70-2)*	*Recn Tr (T/O 2-67)*	*Div Sig Co (T/O 11-67)*	*3 Inf Regts (T/O 7-61)*	*Div Arty (T/O 6-80)*	*Engr Bn (T/O 5-75)*	*Med Bn & Div Surg's Off (T/O 8-65)*	*QM Bn (T/O 10-15)*	*Total Div*	*Atchd Ch*	*Atchd Med*	*Aggregate*
2	Major general		1									1			1
3	Brigadier general		1					1				2			2
4	Colonel		1				3	1	1			6			6
5	Lieutenant colonel		10			1	12	5		1	1	30			30
6	Major		3	1			15	9	1	4	1	34		4	38
7	Captain		5	1	1	1	57	36	6	14	4	125	4	23	152
8	First lieutenant		4	2	3	4	147	49	7	16	5	237	7	16	260
9	Second lieutenant		1	3	2	2	96	20	3	3	5	135			135
10	TOTAL COMMISSIONED		26	7	6	8	330	121	18	38	16	570	11	43	624
11	Warrant officer		2				3	1				6			6
12	Master sergeant		5			3	15	11	3	1	3	41			41
13	First sergeant			1	1	1	54	22	4	5	2	90			90
14	Technical sergeant		6			2	24	14	4	2	4	56		4	60
15	Staff sergeant		8	3	2	11	108	30	15	12	9	198		14	212
16	Sergeant		11	7	11	14	906	232	42	31	20	1,274		5	1,279
17	Corporal		1	9	16	18	1,053	270	48	17	17	1,449		14	1,463
18	Private, first class }		35	37	37	68	2,853	664	166	155	80	4,095		117	4,212
19	Private ..... } including		8	74	74	136	5,541	1,320	334	259	161	7,907		235	8,142
20	Specialist	1st	(2)								(2)	(4)			(4)
21	Specialist	2nd	(10)				(24)	(8)	(2)	(2)	(16)	(62)			(62)
22	Specialist	3d	(15)	(5)	(10)	(15)	(237)	(104)	(18)	(16)	(25)	(445)		(4)	(449)

TABLE OF ORGANIZATION No. 77 (*November 1, 1940*) (Continued):

1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*Unit*	*Specialists' rating (class)*	*Div Hq (T/O 70-1)*	*Div Hq & MP Co (T/O 70-2)*	*Rcn Tr (T/O 2-67)*	*Div Sig Co (T/O 11-67)*	*3 Inf Regts (T/O 7-61)*	*Div Arty (T/O 6-80)*	*Engr Bn (T/O 5-75)*	*Med Bn & Div Surg's Off (T/O 8-65)*	*QM Bn (T/O 10-15)*	*Total Div*	*Atchd Ch*	*Atchd Med*	*Aggregate*
23	Specialist	4th	(6)	(5)	(25)	(28)	(882)	(100)	(18)	(30)	(19)	(1,113)	.....	(28)	(1,141)
24	Specialist	5th	(7)	(9)	(17)	(89)	(549)	(376)	(114)	(62)	(53)	(1,276)	.....	(106)	(1,382)
25	Specialist	6th	(3)	(20)	(25)	(40)	(840)	(434)	(87)	(144)	(47)	(1,640)	.....	(64)	(1,704)
26	Unrated	.....	.....	(60)	(21)	(9)	(5,016)	(723)	(205)	(118)	(51)	(6,203)	.....	(112)	(6,315)
27	Basic	.....	.....	(12)	(13)	(23)	(846)	(239)	(56)	(42)	(28)	(1,259)	.....	(38)	(1,297)
28	TOTAL ENLISTED	.....	74	131	141	253	10,554	2,563	616	482	296	15,110	.....	389	15,499
29	AGGREGATE	.....	102	138	147	261	10,887	2,685	634	520	312	15,686	11	432	16,129
30	Air compressor, motorized	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	3	.....	.....	3
31	Assault boat	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	10	.....	.....	10
32	Electric lighting set	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1
33	Power earth auger, motorized	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1
34	Water purification unit, portable	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	4	.....	.....	4
35	Car, scout	.....	.....	.....	16	.....	.....	.....	.....	.....	.....	16	.....	.....	16
36	Carrier, pers, half-track, w/armament	.....	.....	.....	.....	.....	603	.....	.....	.....	.....	603	.....	.....	603
37	Gun, machine, cal .50	.....	.....	.....	17	.....	.....	60	.....	.....	.....	77	.....	.....	77
38	Gun, machine, cal .50, flexible	.....	.....	.....	.....	.....	36	.....	.....	.....	.....	36	.....	.....	36
39	Gun, machine, heavy, cal .30	.....	.....	.....	32	.....	72	.....	18	.....	.....	122	.....	.....	122
40	Gun, machine, light, cal .30	.....	.....	.....	3	.....	54	.....	.....	.....	.....	57	.....	.....	57
41	Gun, submachine, cal .45	.....	.....	.....	35	.....	180	.....	.....	.....	.....	215	.....	.....	215
42	Gun, 37-mm, antitank	.....	.....	.....	.....	.....	36	24	.....	.....	.....	60	.....	.....	60
43	Gun, 75-mm, antitank	.....	.....	.....	.....	.....	.....	8	.....	.....	.....	8	.....	.....	8
44	Howitzer, 105-mm	.....	.....	.....	.....	.....	.....	36	.....	.....	.....	36	.....	.....	36
45	Howitzer, 155-mm	.....	.....	.....	.....	.....	.....	12	.....	.....	.....	12	.....	.....	12
46	Mortar, 60-mm	.....	.....	.....	.....	.....	81	.....	.....	.....	.....	81	.....	.....	81

TABLE OF ORGANIZATION No. 77 (*November 1, 1940*) (Continued):

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
47	Mortar, 81-mm						36					36			36
48	Pistol, automatic, cal .45		100	91	147	261	3,588	2,685	118		262	7,252			7,252
49	Rifle, automatic, cal .30						258					258			258
50	Rifle, cal .30			47	32		6,939		516		50	7,584			7,584
51	Tractor, medium, w/bulldozer and trailer								3			3			3
52	Ambulance, ½-ton, cross-country									36		36		4	40
53	Car, 5-passenger sedan						3	1		1	5	10			10
54	Motorcycle, solo				12		108		10	3		133			133
55	Motorcycle, with side car			8		2	42	43	4		5	104		3	107
56	Trailer, 1-ton, cargo			10		10	45	123	23	4	53	268			268
57	Trailer, tank, water, 250-gallon									7		7			7
58	Tricycle, motor				7		72					79			79
59	Truck, ½-ton, carry-all					6						6			6
60	Truck, ½-ton, command			2	1	3	243	69	5	8	13	344		21	365
61	Truck, ½-ton, pick-up				1	15	39		10	6	6	77			77
62	Truck, ½-ton, radio					6	18	10				34			34
63	Truck, ½-ton, weapons carrier			3			150	46				199		28	227
64	Truck, 1½-ton, cargo			14		30	129			21		194		17	211
65	Truck, 1½-ton, dump								53			53			53
66	Truck, 2½-ton, cargo				4	1	75	276	1	15	63	435		5	440
67	Truck, 2½-ton, cargo, winch-equipped									3		3			3
68	Truck, 2½-ton, wrecker										2	2			2
69	Truck, 4-ton, cargo							16	3			19			19
70	Truck, 4-ton, heavy-duty wrecker										2	2			2

Remarks:
① Insert number of division.

(A. G. 320.2 (12-9-40).)

13. Normal Use, Organic Transportation, Infantry Division (Triangular, Motorized):

1	Load	2 Div Hq & Hq & MP Co	3 Recn Tr	4 Sig Co	5 Engr Bn	6 Hq Co	7 Lettered Co	8 Med Bn	9 Coll Co	10 Clearing Co	11 QM Bn	12 Hq Co
	AMBULANCE											
2	Ambulance, field								36	(12)		
	CARS, 5-PASSENGER AND TRUCKS, ¼-TON											
3	Cars, 5-passenger							1			5	(5)
4	Command & Reconnaissance	2	1	3							13	(12)
5	Command				5	(2)	(1)	8	(1)	(3)		
6	Pick-up		1		10	(1)	(3)	6	(1)	(1)	6	(3)
7	Radio			6								
8	Weapons carrier											
9	Cargo	3		15								
10	Atchd Medical (Command)				1	(1)						
11	Atchd Medical (Weapons carrier)											
12	Sub-Total	5	2	24	16	(4)	(4)	15	(2)	(4)	24	(20)
	TRUCKS, 1½-TON											
13	Kitchen	2			4	(1)	(1)	5	(1)	(1)		
14	Motor Maintenance							3	(1)			
15	Organization Equipment	1			9		(3)	1				
16	Supply							4				
17	Personnel	11			30	(3)	(9)					
18	Personnel & baggage			11	3		(1)	8	(2)			
19	Command & Operations			3								
20	Signal Communications			22								
21	Ammunition											
22	Special Equipment				7	(7)						
23	Atchd Medical				1	(1)					1	
24	Sub-Total	14		36	54	(12)	(14)	21	(4)	(1)	1	(1)
	TRUCKS, 2½-TON											
25	Kitchen		1	1							2	(1)
26	Motor Maintenance		1		1	(1)		5		(3)	4	(2)
27	Organization Equipment							1		(1)	3	(2)
28	Supplies		1								4	(4)
29	Surplus										48	
30	Personnel											
31	Command & Operations											
32	Signal Communications											
33	Ammunition											
34	Prime movers											
35	Special Equipment							12		(12)	4	(4)
36	Combat		1									
37	Gas and oil											
38	Atchd Medical											
39	Sub-Total		4	1	1	(1)		18		(16)	65	(13)
	TRUCKS, 4-TON											
40	Prime movers				3		(1)					
41	Ammunition											
42	Motor Maint										2	(2)
43	Sub-Total				3		(1)				2	(2)
	MOTORCYCLES AND TRICYCLES											
44	Motorcycle, solo		12		10	(1)	(3)	3				
45	Motorcycle, with side car	8		2	4	(1)	(1)				5	(2)
46	Tricycle		7									
47	Atchd Med (MC, w/s/c)											
48	Sub-Total	8	19	2	14	(2)	(4)	3			5	(2)
	TRUCKS, MISCELLANEOUS AND TRAILERS											
49	Carrier, pers, half-track, w/armament											
50	Air compressor, Mtzd				3		(1)					
51	Cars, scout		16									
52	Tractor, Mtzd, w/bulldozer				3		(1)					
53	Trailer, 1-ton	2		10	23	(11)	(4)	4	(1)		53	(11)
54	Power, earth, auger				1	(1)						
55	Trailer, with tank, 250-gallon							7				
56	Sub-Total	2	16	10	30	(12)	(6)	11	(1)		53	(11)
57	Totals	29	41	73	118	(31)	(29)	104	(19)	(21)	150	(49)

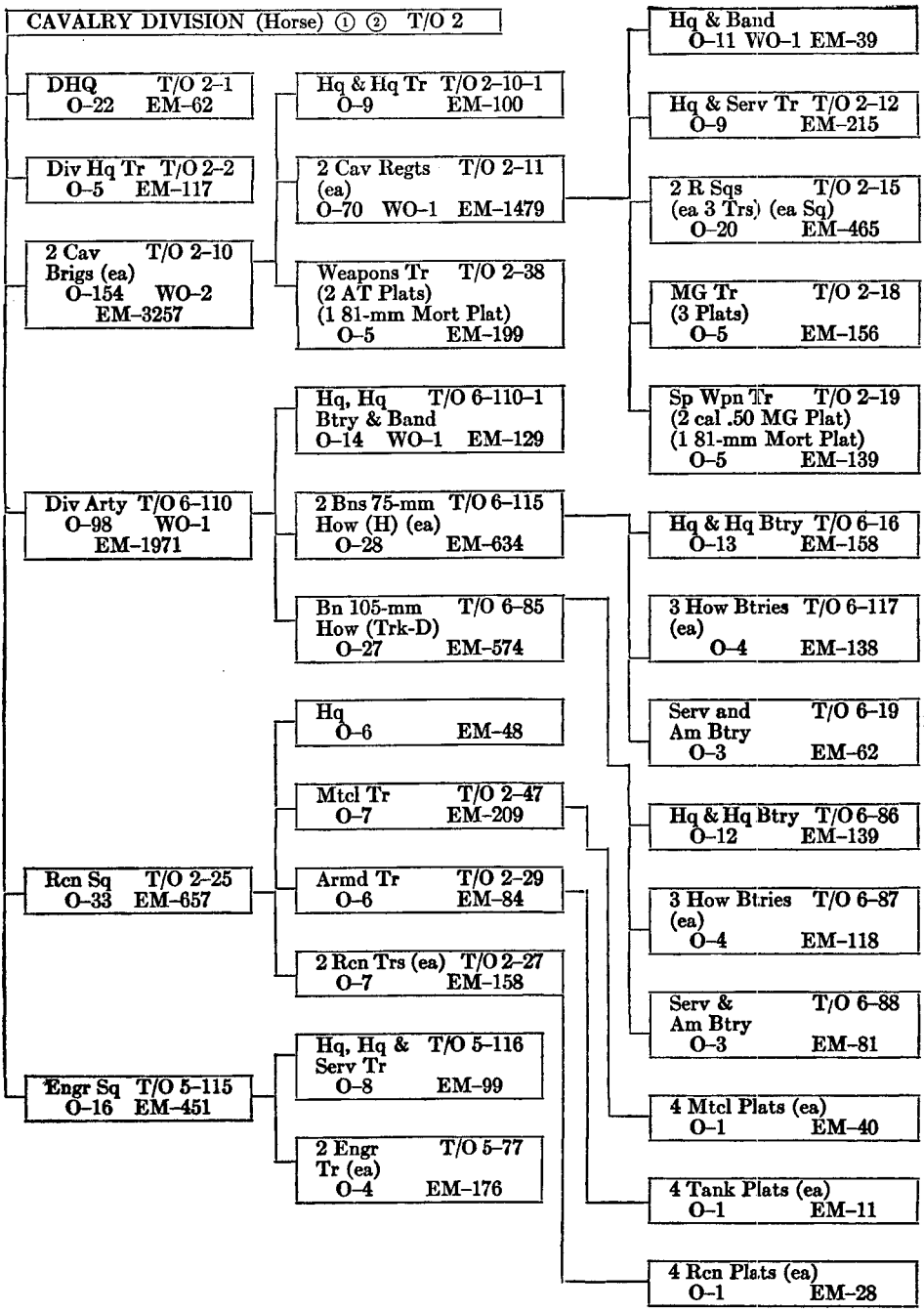
For passenger capacity of vehicles, see Chapter 2, Section I, paragraph 46, this manual.

NORMAL USE, ORGANIC TRANSPORTATION, INFANTRY DIVISION (TRIANGULAR, MOTORIZED) (Continued):

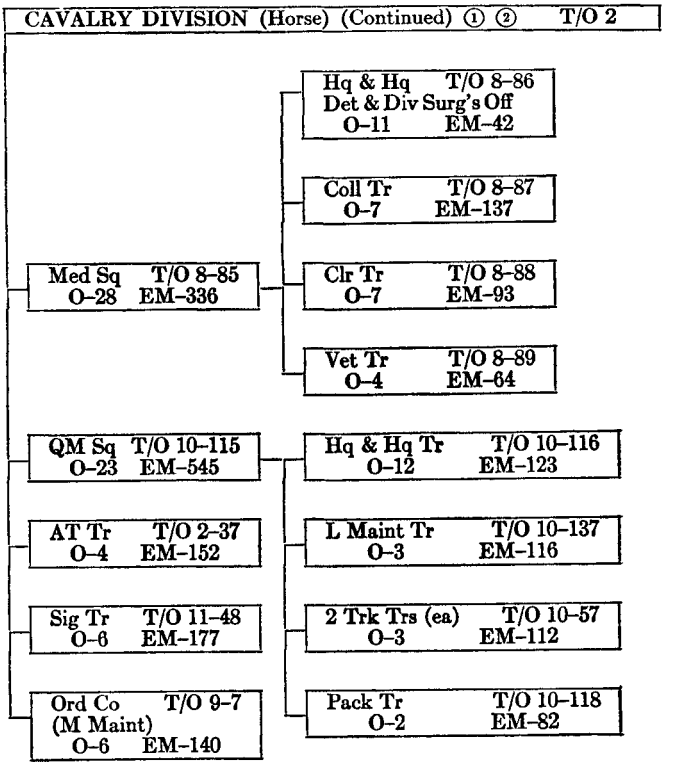
1	13 Hq Co	14 Inf Regt	15 Hq, Hq Co & Band	16 Serv Co	17 AT Co	18 Bn Hq	19 Hv Wpns Co	20 Rifle Co	21 Hq & Hq Btry & Band Div Arty	22 FA Bn—105-mm	23 Hq Btry	24 Serv Btry	25 How Btry—105 mm	26 FA Bn—155-mm	27 Hq Btry	28 Serv Btry	29 How Btry—155 mm	30 AT Btry	31 Totals
									AMBULANCES										
2										1	(1)			1	(1)				40
									CARS, 5-PASSENGER AND TRUCKS, ¼-TON										
3		1	(1)						1										10
4	(1)																		19
5		81	(6)	(2)	(4)	(2)	(6)	(5)	5	15	(6)	(3)	(2)	19	(6)	(3)	(2)	(4)	325
6	(3)	13	(1)				(1)	(1)											62
7		6	(5)		(1)				1	2	(2)			3	(2)			(1)	34
8		50	(10)	(19)	(21)					9	(9)			9	(9)				186
9									2	2	(2)			2	(2)				28
10		5	(2)			(1)			1	1				1					21
11		9				(3)			1										28
									TRUCKS, 1½-TON										
12	(4)	165	(25)	(21)	(26)	(6)	(7)	(6)	11	29	(20)	(3)	(2)	34	(20)	(3)	(2)	(5)	713
13		15	(1)	(1)	(1)		(1)	(1)											56
14		5		(5)															18
15		4		(4)															23
16																			4
17		6		(3)	(3)														65
18																			16
19																			3
20																			22
21		13			(1)	(4)													39
22																			7
23		5	(2)			(1)													17
									TRUCKS, 2½-TON										
24		48	(3)	(13)	(5)	(5)	(1)	(1)											270
25	(1)								1	5	(1)	(1)	(1)	6	(1)	(1)	(1)	(1)	26
26	(2)								1	8	(1)	(4)	(1)	8	(1)	(3)	(1)	(1)	44
27	(1)								1	5	(1)	(1)	(1)	6	(1)	(1)	(1)	(1)	26
28										2		(2)		2		(2)			13
29	(48)																		48
30									2										2
31									3	5	(2)		(1)	5	(2)		(1)		23
32		10	(10)						3	9	(3)		(2)	9	(3)		(2)		69
33										18		(12)	(2)	20		(12)	(2)	(2)	74
34										15			(5)	8				(8)	53
35																			16
36																			1
37		15	(1)	(1)	(1)		(1)	(1)											45
38									1	1				1					5
									TRUCKS, 4-TON										
39	(52)	25	(11)	(1)	(1)		(1)	(1)	12	68	(9)	20	(13)	65	(9)	(19)	(8)	(13)	445
40														12			(4)		15
41														3			(1)		3
42														1		(1)			3
									MOTORCYCLES AND TRICYCLES										
43														16		(1)	(5)		21
44		36				(4)	(2)	(2)											133
45	(3)	14	(4)	(6)	(4)				2	9	(4)	(2)	(1)	14	(4)	(2)	(1)	(5)	104
46		24				(4)	(1)	(1)											79
47		1	(1)																3
									TRUCKS, MISCELLANEOUS AND TRAILERS										
48	(3)	75	(5)	(6)	(4)	(8)	(3)	(3)	2	9	(4)	(2)	(1)	14	(4)	(2)	(1)	(5)	319
49		201				(3)	(16)	(16)											603
50																			3
51																			16
52																			3
53	(42)	15		(15)					4	29	(4)	(16)	(3)	32	(4)	(16)	(3)	(3)	260
54																			1
55																			7
56	(42)	216		(15)		(3)	(16)	(16)	4	29	(4)	(16)	(3)	32	(4)	(16)	(3)	(3)	893
57	(101)	529	(44)	(56)	(36)	(22)	(28)	(27)	29	136	(38)	(41)	(19)	162	(38)	(41)	(19)	(26)	2701

For passenger capacity of vehicles, see Chapter 2, Section I, paragraph 46, this manual.

■ 14. CAVALRY DIVISION (Horse) —DIAGRAM:



CAVALRY DIVISION (Horse) —DIAGRAM (Continued):



NOTES

① Based on T/O dated 1 Nov 40.
② Includes attached medical personnel and chaplains.

■ 15. TABLE OF ORGANIZATION NO. 2 (*November 1, 1940*):

CAVALRY DIVISION, HORSE

Designation: ①.....Cavalry Division

1	Unit	Specialists' ratings (class)	Div Hq (T/O 2-1)	Hq Tr (T/O 2-2)	AT Tr (T/O 2-37)	Recon Sq (T/O 2-25)	2 Cav Brigs (T/O 2-10)	Div Arty (T/O 6-110)	Sig Tr (T/O 11-48)	Ord Co (T/O 9-7)	Engr Sq (T/O 5-115)	Med Sq & Div Surg's Off (T/O 8-85)	QM Sq & Div QM (T/O 10-115)	Total	Atchd Med	Atchd Ch	Aggregate
2	Major general		1											1			1
3	Brigadier general						2							2			2
4	Colonel		1				4	1						6			6
5	Lieutenant colonel		11			1	6	4	1		1	1	1	26			26
6	Major		3				16	5			1	4	2	31	5		36
7	Captain		4	1	1	5	62	23	1	1	5	6	6	115	28	5	148
8	First lieutenant		2	3	2	14	116	36	1	3	5	17	6	205	19		224
9	Second lieutenant			1	1	11	62	19	3	2	2		5	106			106
10	TOTAL COMMISSIONED		22	5	4	31	268	88	6	6	14	28	20	492	52	5	549
11	Warrant officer						4	1						5			5
12	Master sergeant		7			1	18	6	2	1	2	2	3	42			42
13	First sergeant			1	1	4	40	16	1	1	3	4	5	76			76
14	Technical sergeant		6			2	14	10	1	3	4	2	4	46	5		51
15	Staff sergeant		8	3	4	5	84	29	5	4	11	10	14	177	18		195
16	Sergeant		7	8	11	58	502	151	9	7	29	30	27	839	15		854
17	Corporal			3	15	76	558	178	13	5	33	17	32	930	15		945
18	Private, first class, including		34	34	40	164	1,764	510	49	40	119	92	148	2,994	94		3,088
19	Private			68	81	327	3,318	999	97	79	240	199	298	5,686	185		5,871
20	Specialist	1st	(2)							(9)			(2)	(13)			(13)
21	Specialist	2d	(11)				(8)	(4)		(11)	(2)	(1)	(20)	(57)			(57)
22	Specialist	3d	(13)	(7)	(6)	(51)	(218)	(89)	(11)	(15)	(13)	(20)	(34)	(477)	(5)		(482)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
23	Specialist	4th	(7)	(9)	(23)	(88)	(350)	(75)	(20)	(20)	(17)	(28)	(40)	(677)	(38)		(715)
24	Specialist	5th	(1)	(11)	(7)	(80)	(190)	(244)	(56)	(19)	(85)	(71)	(95)	(859)	(87)		(946)
25	Specialist	6th		(20)	(28)	(111)	(940)	(282)	(33)	(15)	(65)	(59)	(114)	(1,667)	(46)		(1,713)
26	Unrated			(43)	(43)	(105)	(2,830)	(638)	(10)	(18)	(137)	(68)	(89)	(3,981)	(77)		(4,058)
27	Basic			(12)	(14)	(56)	(546)	(177)	(16)	(12)	(40)	(24)	(52)	(949)	(26)		(975)
28	TOTAL ENLISTED		62	117	152	637	6,298	1,899	177	140	441	336	531	10,790	332		11,122
29	AGGREGATE		84	122	156	668	6,570	1,988	183	146	455	364	551	11,287	384	5	11,676
30	Air compressor, motorized										3			3			3
31	Assault boat										10			10			10
32	Electric lighting set										1			1			1
33	Power earth auger, Mtzd										1			1			1
34	Water purification unit, port										3			3			3
35	Caisson, 75-mm field how							36						36			36
36	Car, scout, w/armament			3	17	49	76							145			145
37	Car, scout, half-tr, w/arm					3								3			3
38	Carriage, Mort, M, w/arm						12							12			12
39	Cart, artillery							10						10			10
40	Gun, machine, cal .50			2	1	4	60	38						105			105
41	Gun, machine, heavy, cal .30						48							48			48
42	Gun, machine, light, cal .30			10	3	11	226				12			262			262
43	Gun, submachine, cal .45			8	13	132	164							317			317
44	Gun, 37-mm, antitank				12		24	18						54			54
45	Howitzer, 75-mm, field							24						24			24
46	Howitzer, 105-mm, field							12						12			12
47	Limber, 75-mm, field how							60						60			60
48	Mortar, 81-mm						28							28			28
49	Pistol, automatic, cal .45			204	156	668	6,570	1,988	183	37	87		451	10,344			10,344
50	Reel, artillery, 6-horse							10						10			10
51	Rifle, cal .30			10	26	140	3,948				368		100	4,592			4,592
52	Rifle, automatic, cal .30									6			9	15			15
53	Tank, light, with armament					13								13			13
54	Tractor, w/bulldozer & trailer										3			3			3
55	Truck, artillery repair									1				1			1
56	Truck, automotive repair									1				1			1
57	Truck, emergency repair									4				4			4
58	Truck, instrument repair									1				1			1

TABLE OF ORGANIZATION No. 2 (*November 1, 1940*) (Continued):

1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Unit	*Specialists' ratings (class)*	*Div Hq (T/O 2-1)*	*Hq Tr (T/O 2-2)*	*AT Tr (T/O 2-37)*	*Recon Sq (T/O 2-25)*	*2 Cav Brigs (T/O 2-10)*	*Div Arty (T/O 6-110)*	*Sig Tr (T/O 11-48)*	*Ord Co (T/O 9-7)*	*Engr Sq (T/O 5-115)*	*Med Sq & Div Surg's Off (T/O 8-85)*	*QM Sq & Div QM (T/O 10-115)*	*Total*	*Atchd Med*	*Atchd Ch*	*Aggregate*
59	Truck, machine shop									1				1			1
60	Truck, small arms repair									2				2			2
61	Truck, spare parts									5				5			5
62	Truck, tank maintenance									1				1			1
63	Truck, tool and bench									1				1			1
64	Truck, welding									1				1			1
65	Truck, wrecking									1				1			1
66	Ambulance											24		24	8		32
67	Car, light, 5-pass sedan			5			2	1			1	1		10	1		11
68	Horse, bell												4	4			4
69	Horse, draft							500				4		504			504
70	Horse, pack						764							764	18		782
71	Horse, riding			26			5,442	656				12	5	6,141	268		6,409
72	Machete, 18-inch blade, with saddle sheath												80	80			80
73	Motorcycle, solo			3	11	90	82				7	3	6	202			202
74	Motorcycle, with side car							21		1	3	3	9	37			37
75	Mule, pack												217	217	1		218
76	Mule, riding												77	77			77
77	Semitrailer, 4-ton												48	48			48
78	Trailer, 1-ton, cargo							63	10	1	20	4	62	160			160
79	Trailer, 2-horse van											2		2			2
80	Trailer, water tank, 250-gal.									1		6		7			7
81	Tricycle, motor			5	2	42	82							131	4		135

① Insert number of division.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
82	Truck, ½-ton, command			5	2	4	14	27	2	1	5	10	4	74	5		79
83	Truck, ½-ton, pick-up			1	1	4	6		15	4	8	6	15	60	12		72
84	Truck, ½-ton, radio							12	8					20			20
85	Truck, ½-ton, weapons carrier							31						31			31
86	Truck, 1½-ton, cargo								19			25		44	1		45
87	Truck, 1½-ton, dump										40			40			40
88	Truck, 1½ to 3-ton, light repair								1					1			1
89	Truck, 2½-ton, cargo			8	4	15	110		2	11	1		20	171	2		173
90	Truck, 2½-ton, gasoline												10	10			10
91	Truck, 2½-ton, PM							114						114	4		118
92	Truck, 2½-ton, tractor												48	48			48
93	Truck, 2½-ton, with stock rack											4	48	52			52
94	Truck, 2½-ton, wrecker												4	4			4
95	Truck, 4-ton, cargo										3			3			3
96	Truck, 4-ton, wrecker												2	2			2
97	Truck-tractor, with semitrailer			4										4			4
98	Wagon, mountain, 4-horse							10						10			10

NOTES

1. Armament of Vehicles:
   Each Mortar Carriage:
   1 MG, hv, cal .30
   1 MG, cal .50
   1 Sub MG, cal .45
   Each Car, Scout, and Car, half-track:
   2 MG, hv, cal .30
   1 MG, cal .50
   1 Sub MG, cal .45
   Each Light Tank:
   1 37-mm gun
   5 MG, l, cal .30
   1 Sub MG, cal .45

2. Summary of armament, including weapons mounted on vehicles.

MG, l, cal .30	327	Pistol, cal .45	10344
MG, hv, cal .30	356	Rifle, cal .30	4592
Sub MG, cal .45	490	Rifle, automatic, cal .30	15
MG, cal .50	265		
37-mm gun	67		
75-mm howitzer	24		
105-mm howitzer	12		
81-mm mortar	28		

16. NORMAL USE, ORGANIC TRANSPORTATION, CAVALRY DIVISION:

	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Load	Div Hq Troop	AT Troop	Sig Troop	Recn Sq	Mtd Tr	Armd Tr	Recn Tr	Engr Sq	Hq & Serv Tr	Lettered Tr	Brig Hq & Hq Tr	Brig Wpns Tr
	AMBULANCES												
2	Ambulance, field				1								
	CARS, 5-PASS AND TRUCKS, ¼-TON												
3	Cars, light, 5-passenger	5							2①			1	
4	Command & Reconnaissance	5	2	2	4	(1)		(1)	5	(3)	(1)	1	2
5	Weapons carriers												
6	Pick-up	1	1	15	4	(1)	(1)	(1)	8	(2)	(3)		1
7	Radio			8									
8	Atchd Medical, (Tr, ½-ton)				2								
9	SUB-TOTAL	11	3	25	10	(2)	(1)	(2)	15	(5)	(4)	2	3
	TRUCKS, 1¼-TON												
10	Organ Equip								6	(2)	(2)		
11	Kitchen								3	(1)	(1)		
12	Motor Maint												
13	Personnel			2					21	(3)	(9)		
14	Special Equip			17					10	(8)	(1)		
15	Supply												
16	Atchd Medical								1				
17	SUB-TOTAL			19					41	(14)	(13)		
	TRUCKS, 2½-TON												
18	Organ Equip												
19	Kitchen	2	1	1	4	(1)	(1)	(1)				1	1
20	Motor Maint	1	1	1	4	(1)	(1)	(1)	1	(1)		1	1
21	Personnel	4											
22	Special Equip												
23	Supply												
24	Combat	1	1		5	(2)	(1)	(1)				1	1
25	Gas & oil		1		2			(1)					1
26	Cmd & Opns												
27	Sig Com												
28	Ammunition												
29	Prime movers												
30	Stock rack body												
31	Tractor												
32	Wrecker												
33	Atchd Medical				1								
34	SUB-TOTAL	8	4	2	16	(4)	(3)	(4)	1	(1)		3	4
	TRUCKS, MISCELLANEOUS AND TRAILERS												
35	Trucks, 4-ton, (prime movers)								3	(1)	(1)		
36	Trucks, 4-ton (wreckers)												
37	Cars, scout w/armament	3	17		49	(6)		(20)				6	18
38	Cars, S, half-truck w/armament				3		(3)						
39	Carriage, Mort, Mtzd w/armament												6
40	Tank, light, w/armament				13		(13)						
41	Semi-trailer, 4-ton	4											
42	Truck, Misc			1									
43	Trailer, 1-ton			10					20	(12)	(4)		
44	Trailer, water tank, 250-gallon												
45	Trailer, Van, 2-horse												
46	Air compressor, Mtzd								3	(1)	(1)		
47	Power, earth auger, Mtzd								1	(1)			
48	Tractor, w/bulldozer								3	(1)	(1)		
49	SUB-TOTAL	7	17	11	65	(6)	(19)	(20)	30	(16)	(7)	6	24
	MOTORCYCLES AND TRICYCLES												
50	Motorcycle, solo	3	11		90	(38)	(4)	(22)	7	(1)	(3)	5	14
51	Motorcycle, with side car								3	(1)	(1)		
52	Tricycle	5	2		42	(36)	(2)	(1)				2	3
53	Atchd Medical												
54	SUB-TOTAL	8	13		132	(74)	(6)	(23)	10	(2)	(4)	7	17
55	TOTAL	34	37	57	224	(86)	(29)	(49)	97	(38)	(28)	18	48

a 1 for Atchd Med. *b* 1 Trk Tr is provided with 48 trks, tract, w/semi-trlr; other Trk Tr has 48 trks, 2½-ton, w/stock rack body, and 42 Trailers, 1-Ton.

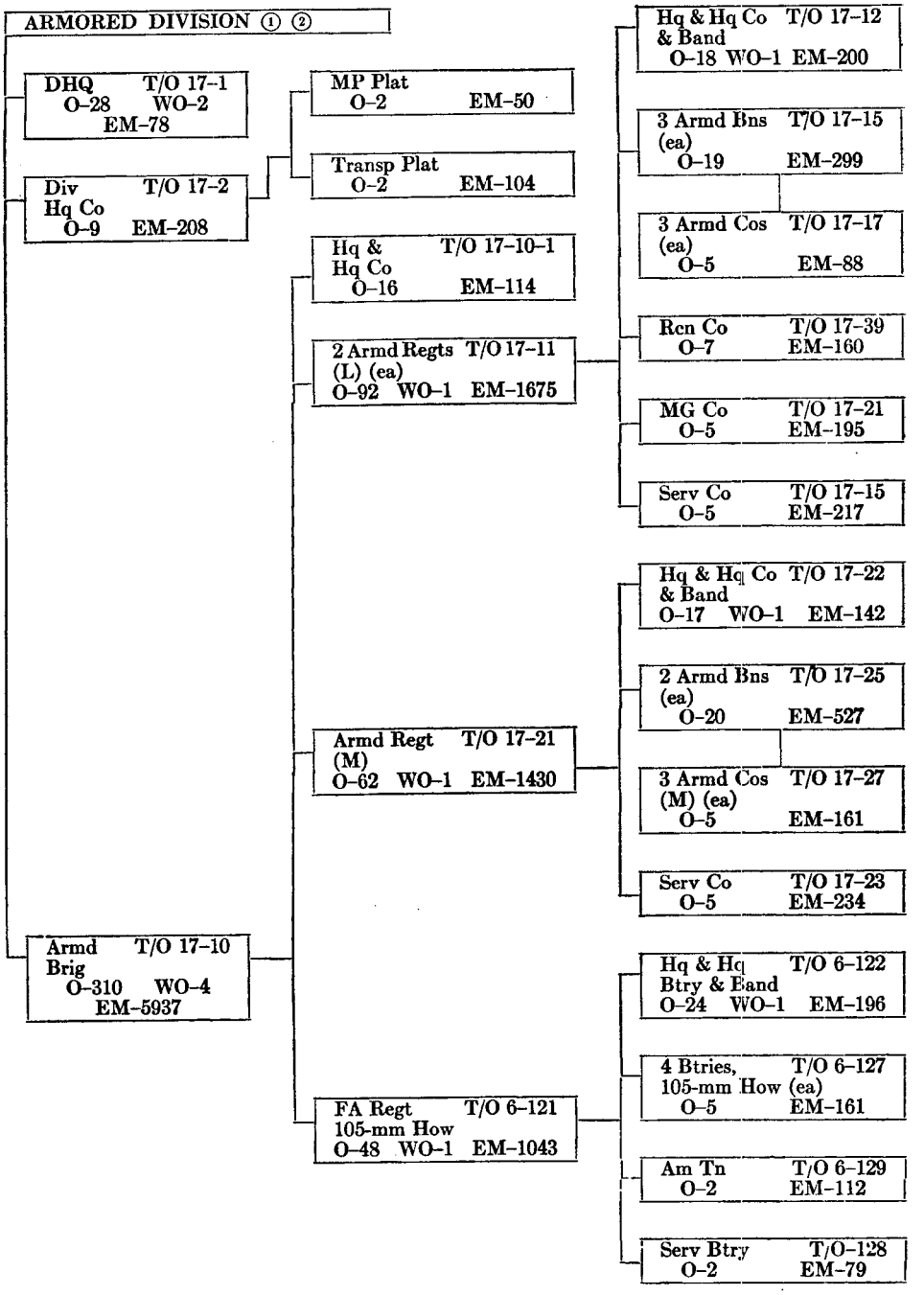
NORMAL USE, ORGANIC TRANSPORTATION, CAVALRY DIVISION (Continued):

1	14 Cav Regt	15 Hq & Serv Tr	16 Div Arty Hq & Hq Bty	17 FA Bn 75-mm	18 Hq & Hq Bty	19 Serv Bty	20 How Bty 75-mm	21 FA Bn 105-mm	22 Hq & Hq Bty	23 Serv Bty	24 How Bty 105-mm	25 Med Hq	26 Coll Tr	27 Clr Tr	28 Vet Tr	29 QM Sq	30 Maint Tr	31 Truck Tr	32 Ord Co (M Maint)	33 Total
								AMBULANCES												
2	1			1				1				24	(24)							32
								CARS, 5-PASS AND TRUCKS, ¼-TON												
3			1									1								11
4	2	(2)	4	4	(1)	(3)		15	(6)	(3)	(2)	10	(3)	(3)	(1)	4	(1)	(1)	1	74
5			2	9	(9)			11	(11)											31
6	1	(1)										6	(1)	(3)	(1)	15	(3)	(3)	4	60
7			2	4	(4)			2	(2)											20
8	3		1					1								1				17
9	6	(3)	10	17	(14)	(3)		29	(19)	(3)	(2)	17	(4)	(6)	(2)	20	(4)	(4)	5	213
								TRUCKS, 1½-TON												
10												3	(1)	(1)	(1)					9
11												4	(1)	(1)	(1)					7
12												5	(1)	(3)						5
13																				23
14												10	(2)	(6)	(2)					37
15												3								3
16																				1
17												25	(5)	(11)	(4)					85
								TRUCKS, 2½-TON												
18			1	5	(1)	(1)	(1)	5	(1)	(1)	(1)					2		(1)		18
19	10	(10)	1	5	(1)	(1)	(1)	5	(1)	(1)	(1)					4	(1)	(1)	1	73
20	1	(1)	1	1		(1)		8	(1)	(4)	(1)					14	(12)	(1)		41
21	2	(2)																		12
22																			10	10
23				2		(2)		2		(2)										6
24	11	(11)																		55
25																10				15
26			1					5	(2)		(1)									6
27			3	1	(1)			9	(3)		(2)									14
28				6		(6)		18		(12)	(2)									30
29								15			(5)									15
30												4			(4)	48		(48) b		52
31																48		(48) b		48
32																4	(2)	(1)		4
33			1	1				1								1				6
34	24	(24)	8	21	(3)	(11)	(2)	68	(8)	(20)	(13)	4			(4)	131	(15)	(52)	11	405
								TRUCKS, MISCELLANEOUS AND TRAILERS												
35																				3
36																2	(2)			2
37	7	(7)																		145
38																				3
39																				12
40																				13
41																48		(48) b		52
42																			19	20
43			2	16	(1)	(9)	(2)	29	(4)	(16)	(3)	4	(1)	(1)	(1)	62	(9)	(42) b	1	160
44												6	(1)	(3)	(1)				1	7
45												2			(2)					2
46																				3
47																				1
48																				3
49	7	(7)	2	16	(1)	(9)	(2)	29	(4)	(16)	(3)	12	(2)	(4)	(4)	112	(11)	(69)	21	426
								MOTORCYCLES AND TRICYCLES												
50	11	(11)										3	(1)	(1)		6				202
51				6	(4)	(2)		9	(4)	(2)	(1)	3			(2)	9	(3)	(3)	1	37
52	18	(18)																		131
53	1																			4
54	30	(29)		6	(4)	(2)		9	(4)	(2)	(1)	6	(1)	(1)	(2)	15	(3)	(3)	1	374
55	68	(63)	20	61	(22)	(25)	(4)	136	(35)	(41)	(19)	88	(36)	(22)	(16)	278	(33)	(176)	38	1535

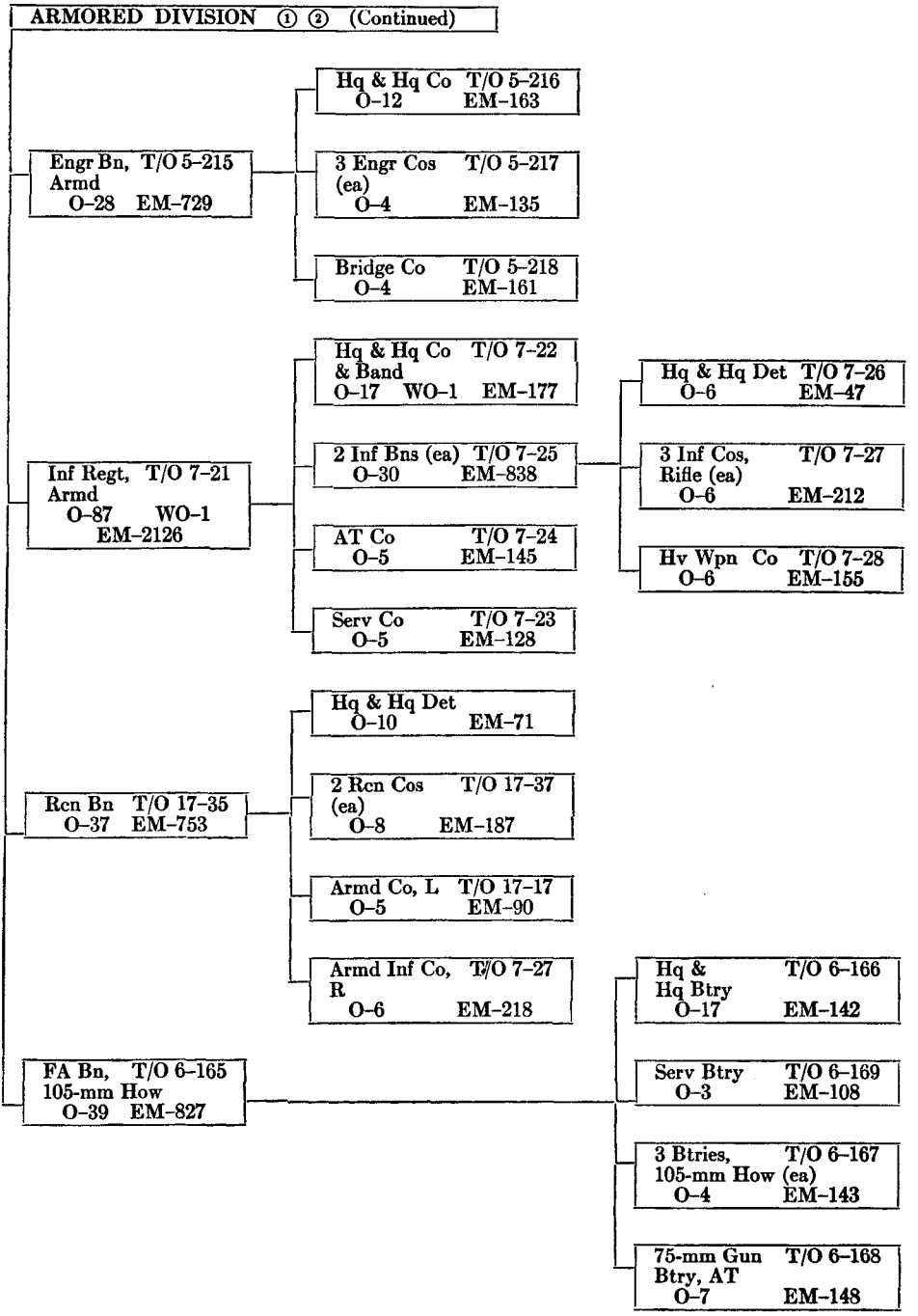
a 1 for Atchd Med.

b 1 Trk Tr is provided with 48 trks, tract, w/semi-trlr; other Trk Tr has 48 trks, 2½-ton, w/stock rack body, and 42 Trailers, 1-Ton.

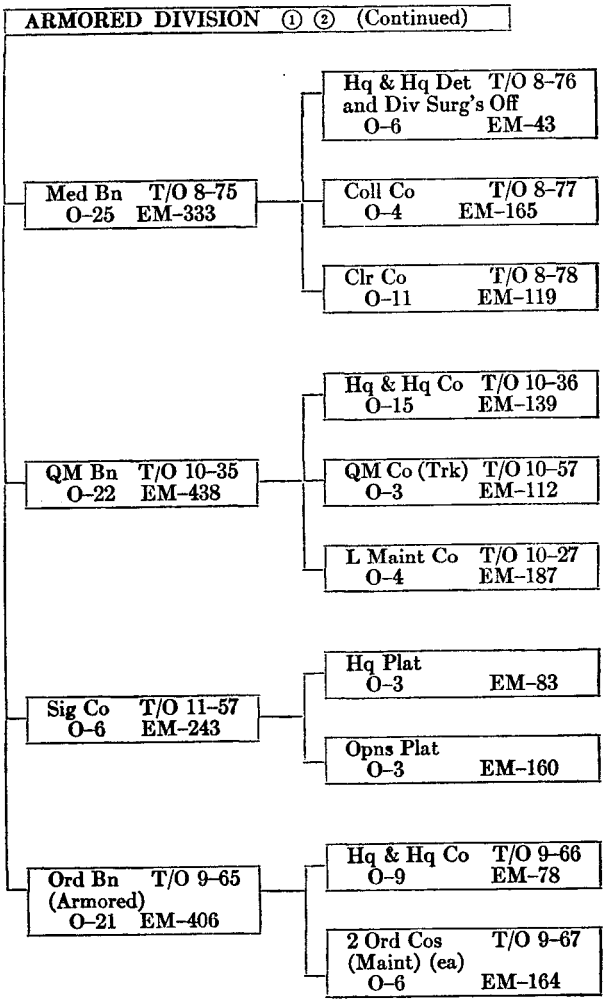
17. ARMORED DIVISION—DIAGRAM:



ARMORED DIVISION—DIAGRAM (Continued):



ARMORED DIVISION—DIAGRAM (Continued):



NOTES

① Data based on T/O dated 15 November 1940.
② Strength shown includes attached medical and chaplains.

■ 18. TABLE OF ORGANIZATION No. 17 (*November 15, 1940*):

ARMORED DIVISION

Designation: ①..... Armored Division

1	1 Unit	2 Div Hq (T/O 17-1)	3 Div Hq Co (T/O 17-2)	4 Sig Co (T/O 11-57)	5 Recon Bn (T/O 17-35)	6 Armd Brig (T/O 17-10)	7 Inf Regt (T/O 7-21)	8 FA Bn, 105-mm How (T/O 6-165)	9 QM Bn (T/O 10-35)	10 Ord Bn (T/O 9-65)	11 Med Bn & Div Surg's Off (T/O 8-75)	12 Engr Bn (T/O 5-215)	13 Total	14 Atchd Med	15 Atchd Ch	16 Aggregate
2	Major general	1											1			1
3	Brigadier general					1							1			1
4	Colonel	3				4	1						8			8
5	Lieutenant colonel	10			1	13	3	1	1	1	1	1	32			32
6	Major	4	1		1	22	4	1	1	1	4	1	40	5	1	46
7	Captain	9	1	1	7	66	16	9	6	4	7	8	134	27	4	165
8	First lieutenant	1	4	2	12	74	22	12	7	8	12	9	163	15	1	179
9	Second lieutenant		3	3	13	100	31	13	4	6	1	6	180			180
10	TOTAL COMMISSIONED	28	9	6	34	280	77	36	19	20	25	25	559	47	6	612
11	Warrant officer	2				4	1						7			7
12	Master sergeant	6		2	2	24	5	2	7	5	2	3	58			58
13	First sergeant		1	1	4	42	11	6	3	3	3	5	79			79
14	Technical sergeant	9	1	5	3	21	10	4	3	6	2	3	67	6		73
15	Staff sergeant	9	3	5	8	165	27	8	12	21	6	19	283	16		299
16	Sergeant	9	9	19	65	615	184	66	20	26	33	48	1,094	6		1,100
17	Corporal	1	15	15	71	371	183	70	20	27	21	48	842	16		858
18	Private, first class } including	37	60	70	193	1,562	565	218	120	104	95	194	3,218	97		3,315
19	Private }	7	119	126	383	2,961	1,072	429	243	206	171	384	6,101	195		6,296
20	Specialist (1st class)	(2)		(2)					(6)	(27)			(37)			(37)
21	Specialist (2d class)	(11)		(2)	(1)	(34)	(3)	(2)	(27)	(39)		(2)	(121)			(121)
22	Specialist (3d class)	(17)	(11)	(23)	(61)	(789)	(61)	(46)	(41)	(53)	(15)	(30)	(1,147)	(6)		(1,153)

TABLE OF ORGANIZATION No. 17 (*November 15, 1940*) (Continued):

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Unit	*Div Hq (T/O 17-1)*	*Div Hq Co (T/O 17-2)*	*Sig Co (T/O 11-57)*	*Recon Bn (T/O 17-35)*	*Armd Brig (T/O 17-10)*	*Inf Regt (T/O 7-21)*	*FA Bn, 105-mm How (T/O 6-165)*	*QM Bn (T/O 10-35)*	*Ord Bn (T/O 9-65)*	*Med Bn & Div Surg's Off (T/O 8-75)*	*Engr Bn (T/O 5-215)*	*Total*	*Atchd Med*	*Atchd Ch*	*Aggregate*
23	Specialist (4th class)	(9)	(32)	(30)	(134)	(1,065)	(311)	(122)	(52)	(54)	(21)	(137)	(1,967)	(38)	.....	(2,005)
24	Specialist (5th class)	(3)	(36)	(58)	(58)	(906)	(87)	(99)	(68)	(32)	(71)	(148)	(1,566)	(106)	.....	(1,672)
25	Specialist (6th class)	.....	(29)	(52)	(58)	(674)	(121)	(98)	(68)	(48)	(66)	(114)	(1,328)	(37)	.....	(1,365)
26	Unrated	.....	(60)	(12)	(211)	(571)	(924)	(208)	(62)	(25)	(69)	(92)	(2,234)	(76)	.....	(2,310)
27	Basic	(2)	(11)	(17)	(53)	(484)	(130)	(72)	(39)	(32)	(24)	(55)	(919)	(29)	.....	(948)
28	TOTAL ENLISTED	78	208	243	729	5,761	2,057	803	428	398	333	704	11,742	336	.....	12,078
29	AGGREGATE	108	217	249	763	6,045	2,135	839	447	418	358	729	12,308	383	6	12,697
30	Boat, assault	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	20	.....	.....	20
31	Boat, power, utility	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	2
32	Bridge, ponton, heavy (250-feet)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1
33	Bridge, portable (H-20)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1
34	Bridge, portable, steel (H-10)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1
35	Bridge, port, steel, trestle (300 feet)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1
36	Compresor, air, motorized, 2½-ton	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	.....	.....	4
37	Crane, portable	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	.....	.....	4
38	Earth, auger, power, motorized	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1
39	Electric lighting set, 2-3 KVA	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	.....	.....	4
40	Ferry, portable, 30-ton, unit	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	2
41	Motor, outboard, 8 hp	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	2
42	Motor, outboard, 33 hp	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6	.....	.....	6
43	Semi-trailer	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41	41	.....	.....	41
44	Trailer, boat	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	2
45	Truck, crane	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	.....	.....	4
46	Water purification unit, portable	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	.....	.....	4
47	Car, half-track, with armament	.....	.....	.....	9	296	94	89	.....	.....	.....	9	497	.....	.....	497
48	Car, scout, with armament	.....	12	3	48	19	3	3	.....	6	.....	3	97	.....	.....	97

TABLE OF ORGANIZATION No. 17 (*November 15, 1940*) (Continued):

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
49	Carrier, 81-mm mortar, half-track					12	8						20			20
50	Carrier, pers, half-track, w/armament				14		93					38	145			145
51	Gun, machine, cal .30, light		14	12	21	279	67	26	9	38		31	497			497
52	Gun, machine, cal .50 (HB)		7	5	7	142	17	15	3	20		17	233			233
53	Gun, submachine, cal .45		38	28	77	444	91	52		18		21	769			769
54	Gun, 37-mm					8	16	6					30			30
55	Gun, 75-mm							8					8			8
56	Howitzer, 105-mm					24		12					36			36
57	Mortar, 60-mm				3		18						21			21
58	Mortar, 81-mm					12	8						20			20
59	Pistol, cal .45	104	193	249	611	6,045	1,047	839	366	138		310	9,902			9,902
60	Rifle, automatic, Browning						12						12			12
61	Rifle, cal .30		24		232	148	1,076		81			419	1,980			1,980
62	Tank, light, with armament				13	260							273			273
63	Tank, medium, with armament					108							108			108
64	Tractor, M, w/angle dozer & trailer											3	3			3
65	Truck, artillery repair									3			3			3
66	Truck, automotive repair									3			3			3
67	Truck, emergency repair									32			32			32
68	Truck, instrument repair									2			2			2
69	Truck, machine shop									3			3			3
70	Truck, small arms repair									5			5			5
71	Truck, spare parts									20			20			20
72	Truck, tank maintenance									3			3			3
73	Truck, tool and bench									3			3			3
74	Truck, welding									5			5			5
75	Truck, 10-ton, wrecker					8		1		9			18			18
76	Ambulance, cross-country										30		30	15		45
77	Car, light, 5-passenger sedan		8		1	6	1	1	1	2	1	1	22			22
78	Motorcycle, solo		33	18	51	284	55	27	6	12	20	14	520			520
79	Trailer, 1-ton					12		16	56				84			84
80	Trailer, mobile public address system		1										1			1
81	Trailer, water, 250-gallon									3	3		6			6
82	Tricycle, motor		5	10	26	160	36	25	12	6	3	7	290			290
83	Truck, gasoline and oil, 600 gallons									3			3			3
84	Truck, ½-ton, command		21	5	1	35	4	2	6	3	12	17	106	21		127

TABLE OF ORGANIZATION No. 17 (*November 15, 1940*) (Continued):

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Unit	*Div Hq (T/O 17–1)*	*Div Hq Co (T/O 17–2)*	*Sig Co (T/O 11–57)*	*Recon Bn (T/O 17–35)*	*Armd Brig (T/O 17–10)*	*Inf Regt (T/O 7–21)*	*FA Bn, 105-mm How (T/O 6–165)*	*QM Bn (T/O 10–35)*	*Ord Bn (T/O 9–65)*	*Med Bn & Div Surg's Off (T/O 8–75)*	*Engr Bn (T/O 5–215)*	*Total*	*Atchd Med*	*Atchd Ch*	*Aggregate*
85 Truck, ½-ton, pick-up			6	3	65	5	6	13		2		100	10		110
86 Truck, ½-ton, radio			13									13			13
87 Truck, ½-ton, weapons carrier											9	9			9
88 Truck, 1½-ton, cargo													15		15
89 Truck, 1½-ton, panel delivery		1										1			1
90 Truck, 2½-ton, cargo		21	17	24	416	58	40	84	49	27	48	784	6		790
91 Truck, 2½-ton, wrecker								3				3			3
92 Truck, 4-ton, cargo											3	3			3
93 Truck, 4-ton, tractor											41	41			41
94 Truck, 4-ton, wrecker						2		4			1	7			7
95 Truck, 1½-ton, radio repair			2									2			2

① Insert number of division.

NOTES

1. ARMAMENT OF VEHICLES:

Each Scout Car & Car, half-track:
- 2 MG, hv, cal .30
- 1 MG, cal .50
- 1 Sub MG, cal .45

Each Carrier, personnel, half-track:
- 1 MG, hv, cal .30
- 1 Sub MG, cal .45

Each Carrier, 81-mm Mortar, half-track:
- 1 MG, hv, cal .30
- 1 MG, cal .50
- 1 Sub MG, cal .45

Each Light Tank:
- 5 MG, l, cal .30
- 1 37-mm gun
- 1 Sub MG, cal .45

Each Medium Tank:
- 1 75-mm gun
- 1 37-mm gun
- 4 MG, l, cal .30
- 2 Sub MG, cal .45

2. SUMMARY OF ARMAMENT, INCLUDING WEAPONS MOUNTED ON VEHICLES:

MG, l, cal .30	2294
MG, hv, cal .30	1353
MG, cal .50	847
Sub MG, cal .45	2017
37-mm gun	411
75-mm gun	116
105-mm howitzer	36
60-mm mortar	21
81-mm mortar	20
Pistol, cal .45	9902
Rifle, auto, cal .30	12
Rifle, cal .30	1980

19. NORMAL USE, ORGANIC TRANSPORTATION, ARMORED DIVISION:

	1	2	3	4	5	6	7	8	9	10	11
1	Load	Div Hq Co	Brig Hq Co	Armd Regt (L)	Hq Co	Serv Co	Ren Co	MG Co	Bn	Co	Armd Regt (M)
	AMBULANCES										
2	Ambulance, field			3					(1)		2
	CARS, 5-PASS AND TRUCKS, ¼-TON										
3	Cars, 5-passenger	8	2	1		(1)					1
4	Command	21	4	10	(1)	(9)					7
5	Pick-up		1	21	(2)	(8)	(1)	(1)	(3)	(1)	15
6	Weapons carrier										
7	Radio										
8	Attached medical			4	(1)				(1)		3
9	SUB-TOTAL	29	7	36	(4)	(18)	(1)	(1)	(4)	(1)	26
	TRUCKS, 1½-TON										
10	Chaplain	1									
11	Signal communication										
12	Attached medical			3					(1)		2
13	SUB-TOTAL	1		3					(1)		2
	TRUCKS, 2½-TON										
14	Personnel			2	(2)						2
15	Combat	15	5	17	(3)	(2)	(1)	(2)	(3)	(1)	10
16	Kitchen	2	1	17	(2)	(2)	(2)	(2)	(3)	(1)	9
17	Motor maintenance	1	1	21	(1)	(9)	(1)	(1)	(3)	(1)	14
18	Gas and oil	3		52		(52)					86
19	Signal communication			1	(1)						1
20	Baggage										
21	Ammunition										
22	Personnel and baggage										
23	Dump										
24	Supply										
25	Surplus										
26	Wrecker										
27	Attached medical			1	(1)						
28	SUB-TOTAL	21	7	111	(10)	(65)	(4)	(5)	(9)	(3)	123
	TRUCKS, 4-TON										
29	Prime movers										
30	Wrecker										
31	Tractor, w/semi-trailer										
32	SUB-TOTAL										
	TRUCKS, 10-TON										
33	Wrecker			2		(2)					3
	COMBAT VEHICLES										
34	Car, scout, with armament	12	7	2	(1)	(1)					2
35	Tank, light, with armament		2	129	(3)				(42)	(13)	
36	Tank, medium, with armament										108
37	Car, half-track, with armament			73	(6)	(1)	(18)	(18)	(10)	(3)	48
38	Carrier, 81-mm, half-track, w/armament			6	(6)						
39	Carrier, personnel, half-track, w/armament										
40	SUB-TOTAL	12	9	210	(16)	(2)	(18)	(18)	(52)	(16)	158
	MOTORCYCLES AND TRICYCLES										
41	Motorcycle, solo	33	14	98	(15)	(10)	(17)	(8)	(16)	(4)	49
42	Tricycles	5	6	51	(7)	(9)	(11)	(3)	(7)	(2)	26
43	SUB-TOTAL	38	20	149	(22)	(19)	(28)	(11)	(23)	(6)	75
	TRUCKS, MISCELLANEOUS AND TRAILERS										
44	Ordnance										
45	Air compressor										
46	Earth augur, power										
47	Crane										
48	Tractor, medium, w/angle dozer, trailer										
49	Trailer, 1-ton										
50	Trailer, with tank, 250-gallon										
51	Trailer, boat										
52	Trailer, mobile, PA system	1									
53	Truck, 600-gallon, gas and oil										
54	SUB-TOTAL	1									
55	TOTAL	102	43	514	(52)	(106)	(51)	(35)	(90)	(26)	389

NORMAL USE, ORGANIC TRANSPORTATION, ARMORED DIVISION (Continued):

1	12 Hq Co	13 Serv Co	14 Bn	15 Co	16 FA Regt 105-mm How	17 Hq Bty	18 Serv Bty	19 Am Tn	20 How Bty 105-mm	21 Engr Bn	22 Hq Co	23 Lettered Co	24 Bridge Co	25 Inf Regt (Armd)	26 Hq Co	27 Serv Co	28 AT Co	29 Hv Wpns Co	30 Rifle Co
									AMBULANCES										
2			(1)		2	(2)				1	(1)								
									CARS, ¼-PASS AND TRUCKS, ¼-TON										
3		(1)			1		(1)			1	(1)			1	(1)				
4	(1)	(6)			4		(4)			17	(4)	(3)	(4)	4		(4)			
5	(2)	(7)	(3)	(1)	7	(1)	(1)	(1)	(1)					5		(2)	(1)	(1)	
6										9	(3)	(1)	(3)						
7																			
8	(1)		(1)		3	(3)				2	(2)			10	(2)			(1)	(1)
9	(4)	(14)	(4)	(1)	15	(4)	(6)	(1)	(1)	29	(10)	(4)	(7)	20	(3)	(6)	(1)	(2)	(1)
									TRUCKS, 1¼-TON										
10																			
11																			
12			(1)		2	(2)				1	(1)			2	(2)				
13			(1)		2	(2)				1	(1)			2	(2)				
									TRUCKS, 2½-TON										
14	(2)				2									2	(2)				
15	(2)	(2)	(3)	(1)	19		(15)		(1)	33	(16)	(4)	(5)	15	(1)	(5)	(1)	(1)	(1)
16	(1)	(2)	(3)	(1)	7	(2)	(1)		(1)	5	(1)	(1)	(1)	17	(1)	(1)	(1)	(1)	(2)
17	(1)	(7)	(3)	(1)	8		(3)	(5)		3	(1)		(2)	15	(1)	(5)	(1)	(1)	(1)
18		(86)												9		(9)			
19	(1)																		
20					1	(1)													
21					30			(30)											
22																			
23										7			(7)						
24																			
25																			
26																			
27	(1)				1	(1)													
28	(8)	(97)	(9)	(3)	68	(4)	(19)	(35)	(2)	48	(18)	(5)	(15)	58	(5)	(20)	(3)	(3)	(4)
									TRUCKS, 4-TON										
29										3		(1)							
30										1			(1)	2		(2)			
31										41			(41)						
32										45		(1)	(42)	2		(2)			
									TRUCKS, 10-TON										
33		(3)			1		(1)												
									COMBAT VEHICLES										
34	(1)	(1)			6	(3)	(1)	(2)		3	(3)			3	(2)	(1)			
35																			
36	(2)		(53)	(17)															
37	(5)	(1)	(21)	(6)	102	(18)	(4)		(20)	9	(3)	(2)		94	(11)	(2)	(17)	(15)	(5)
38														8				(4)	
39										38	(5)	(11)		93	(5)				(14)
40	(8)	(2)	(74)	(23)	108	(21)	(5)	(2)	(20)	50	(11)	(13)		198	(18)	(3)	(17)	(19)	(19)
									MOTORCYCLES AND TRICYCLES										
41	(13)	(10)	(13)	(3)	25	(10)	(3)		(3)	14	(4)	(2)	(4)	55	(10)	(7)	(4)	(4)	(3)
42	(3)	(9)	(7)	(2)	26	(3)	(4)	(7)	(3)	7		(1)	(4)	36	(8)	(11)	(1)	(1)	(1)
43	(16)	(19)	(20)	(5)	51	(13)	(7)	(7)	(6)	21	(4)	(3)	(8)	91	(18)	(18)	(5)	(5)	(4)
									TRUCKS, MISCELLANEOUS AND TRAILERS										
44																			
45										4	(1)	(1)							
46										1	(1)								
47										4			(4)						
48										3		(1)							
49					12				(3)										
50																			
51										2			(2)						
52																			
53																			
54					12				(3)	14	(2)	(2)	(6)						
55	(36)	(135)	(109)	(32)	259	(46)	(38)	(45)	(32)	209	(47)	(28)	(78)	371	(46)	(49)	(26)	(29)	(28)

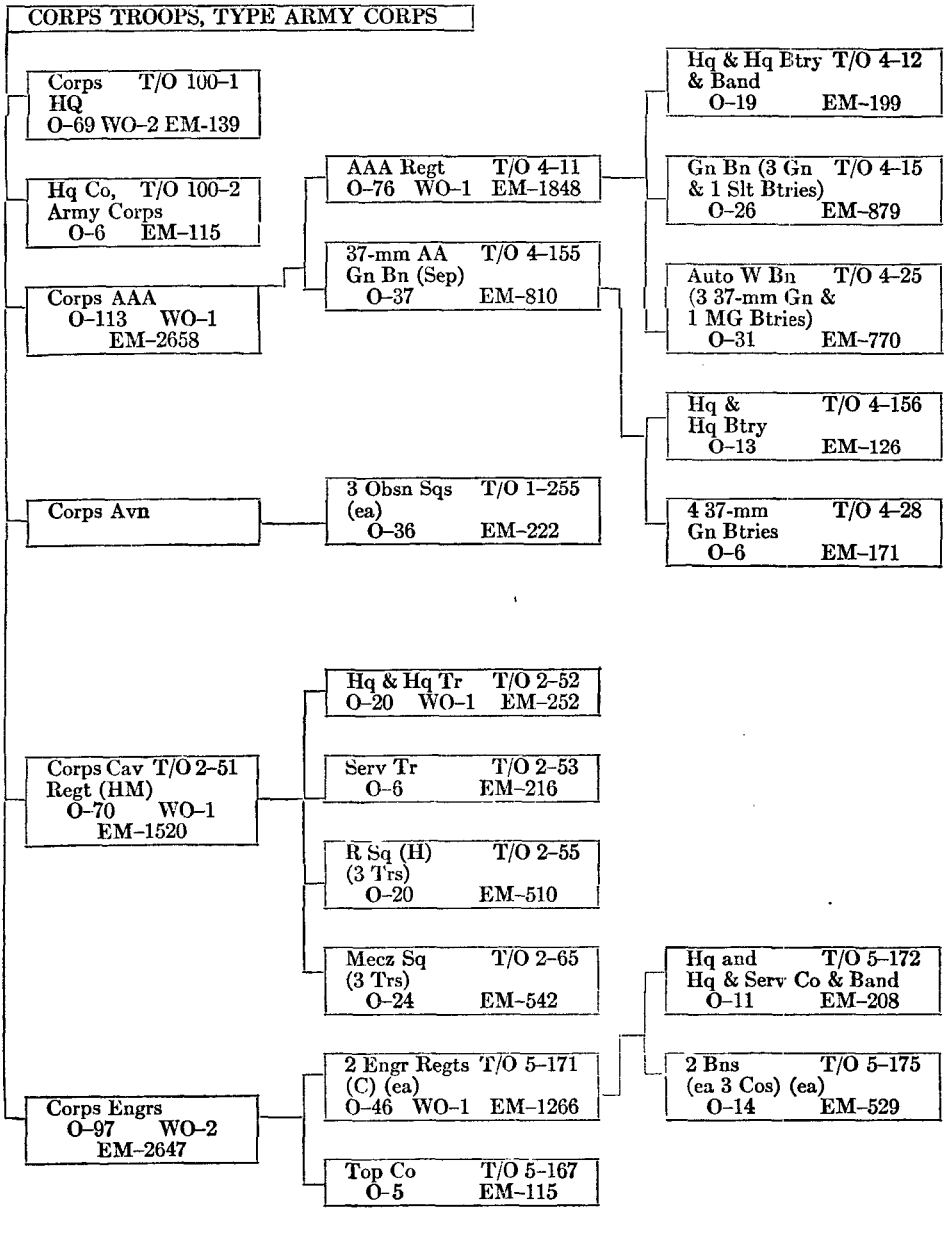
NORMAL USE, ORGANIC TRANSPORTATION, ARMORED DIVISION (Continued):

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
1	Recn Bn	Hq Co	Recn Co	Armd Co	Rifle Co	FA Bn 105-mm How	Hq Btry	Serv Btry	How Btry 105-mm	AT Btry	Med Bn	Coll Co	Clr Co	QM Bn	Trk Co	L Maint Co	Sig Co	Ord Bn (Armd)	Totals
									AMBULANCES										
2	3					1	(1)				30	(30)							45
									CARS, 5-PASS AND TRUCKS, ¼-TON										
3	1	(1)				1		(1)			1			1				2	22
4	1	(1)				2		(2)			12	(4)	(5)	6	(1)	(1)	5	3	106
5	3		(1)	(1)		6	(1)	(1)	(1)	(1)	2	(1)		13	(3)	(5)	6		100
6																			9
7																	13		13
8	1	(1)				2	(2)							1				1	31
9	(6)	(3)	(1)	(1)		11	(3)	(4)	(1)	(1)	15	(5)	(5)	21	(4)	(6)	24	6	281
									TRUCKS, 1½-TON										
10																			1
11																	2		2
12														1				1	15
13														1			2	1	18
									TRUCKS, 2½-TON										
14											16	(1)	(14)	2		(2)			28
15	12	(8)	(1)	(1)	(1)	9	(1)	(4)	(1)	(1)	1			2	(1)		11		166
16	7		(2)	(1)	(2)	7	(2)	(1)	(1)	(1)	4	(1)	(2)	3	(1)	(1)	2	3	101
17	5	(1)	(1)	(1)	(1)	4		(4)			3	(1)	(1)	10	(1)	(8)	1		107
18						8		(8)											210
19																	3		6
20																			1
21						12		(12)											42
22														10		(1)			10
23																			7
24											3	(1)	(1)	9		(9)		46	58
25														48	(48)				48
26														3	(1)	(2)			3
27	1	(1)				1	(1)												6
28	25	(10)	(4)	(3)	(4)	41	(4)	(29)	(2)	(2)	27	(4)	(18)	87	(52)	(23)	17	49	793
									TRUCKS, 4-TON										
29																			3
30														4		(4)			7
31														4					41
32																(4)			51
									TRUCKS, 10-TON										
33						1		(1)										9	18
									COMBAT VEHICLES										
34	48	(4)	(22)			3	(3)										3	6	97
35	13			(13)															273
36																			108
37	9	(1)		(3)	(5)	89	(14)	(5)	(17)	(19)									497
38																			20
39	14			(14)															145
40	84	(5)	(22)	(30)	(5)	92	(17)	(5)	(17)	(19)							3	6	1140
									MOTORCYCLES AND TRICYCLES										
41	51	(6)	(19)	(4)	(3)	27	(10)	(3)	(3)	(5)	20	(14)	(4)	6			18	12	520
42	26	(1)	(11)	(2)	(1)	25	(4)	(5)	(3)	(7)	3			12	(3)	(4)	10	6	290
43	77	(7)	(30)	(6)	(4)	52	(14)	(8)	(6)	(12)	23	(14)	(4)	18	(3)	(4)	28	18	810
									TRUCKS, MISCELLANEOUS AND TRAILERS										
44																		79	79
45																			4
46																			1
47																			4
48																			3
49						16			(4)	(4)				56	(42)	(14)			84
50											3	(1)	(2)					3	6
51																			2
52																			1
53																		3	3
54						16			(4)	(4)	3	(1)	(2)	56	(42)	(14)		85	187
55	195	(25)	(57)	(40)	(13)	214	(39)	(46)	(30)	(38)	98	(54)	(29)	187	(101)	(51)	74	174	3343

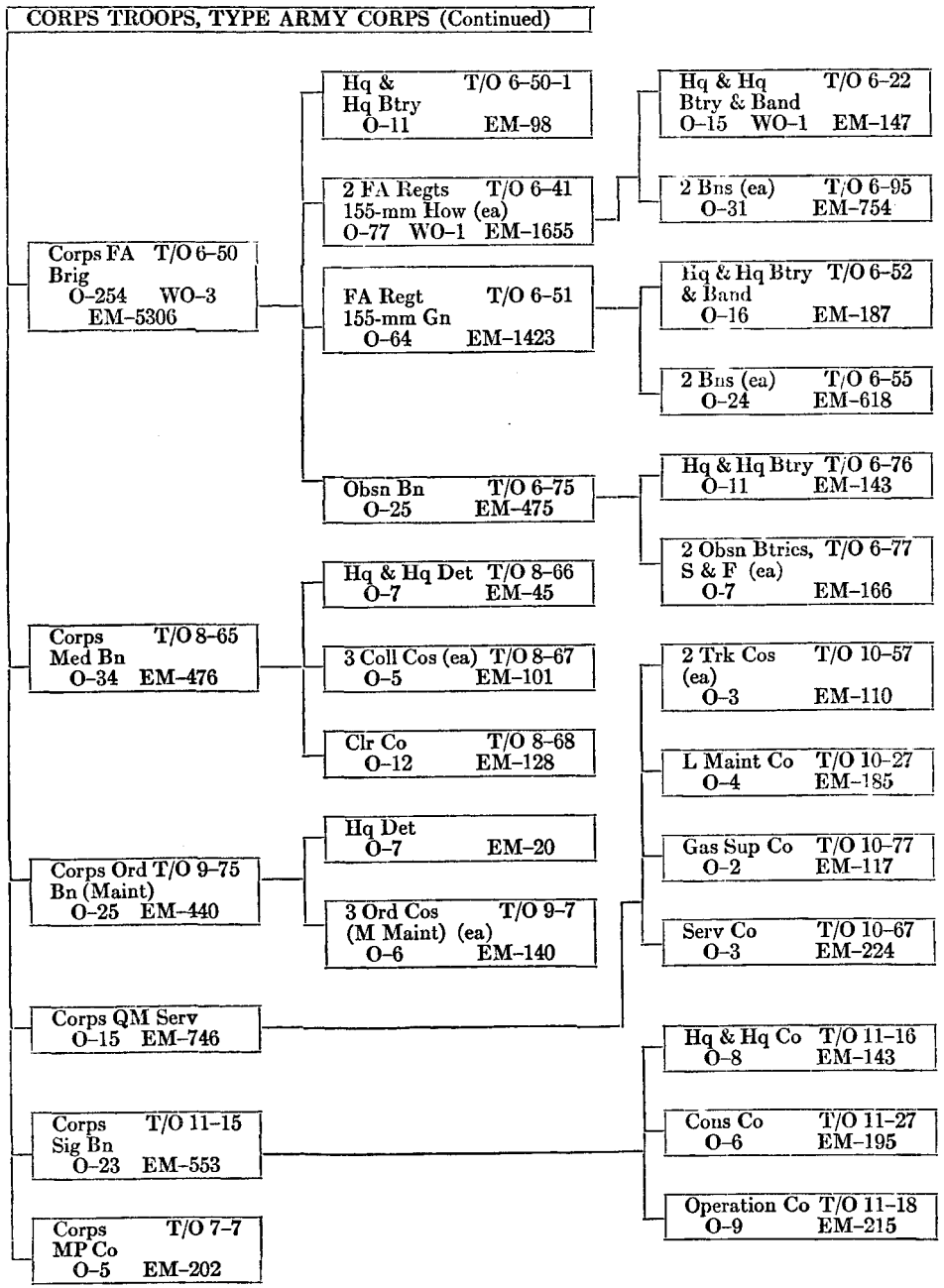
SECTION III

ARMY CORPS, ARMORED CORPS, AND FIELD ARMY

■ **20. CORPS TROOPS, TYPE ARMY CORPS—DIAGRAM:**



CORPS TROOPS, TYPE ARMY CORPS—DIAGRAM (Continued):



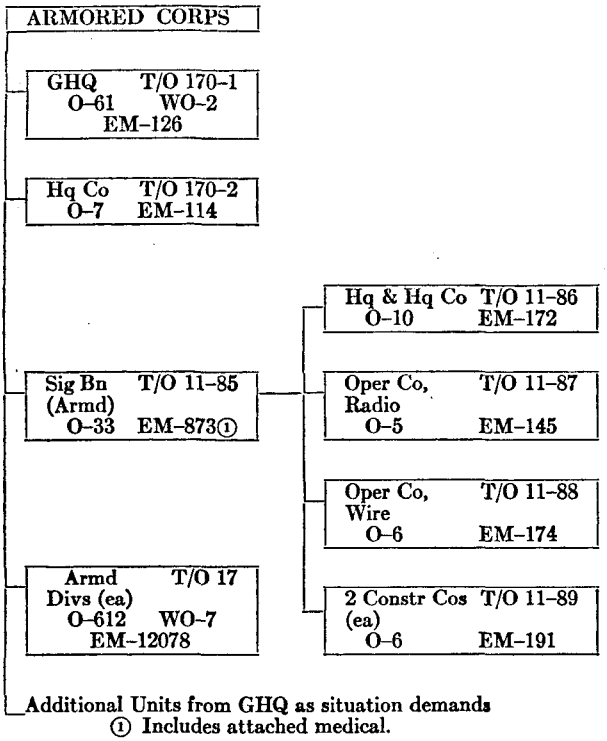
21. CORPS TROOPS, TYPE CORPS—CONSOLIDATED TABLE:

1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*Unit*	*Hq (T/O 100-1)*	*Hq Co (T/O 100-2)*	*MP Co (T/O 7-7)*	*Cav Regt (T/O 2-51)*	*Sig Bn (T/O 11-15)*	*Med Bn (T/O 8-65)*	*FA Brig (T/O 6-50)*	*AA Arty (T/O 4-11, 4-155)*	*Avn (T/O 1-255)*	*Engr (T/O 5-171, 5-167)*	*Ord Bn (T/O 9-75)*	*QM (T/O 10-27, 57, 67, 77)*	*Atchd Med & Ch incld in totals*	*Aggregate*
2	Officers	69	6	5	70	23	34	254	113	108	97	25	15	(57)	819
3	Warrant officers	2			1			3	1		2				9
4	Enlisted men	139	115	202	1,520	553	476	5,306	2,658	666	2,647	440	746	(333)	15,468
5	AGGREGATE	210	121	207	1,591	576	510	5,563	2,772	774	2,746	465	761	(390)	16,296
6	Animals				574										574
7	Gun, 75-mm, AT							32							32
8	Gun, 155-mm							24							24
9	Gun, AA, mobile								12						12
10	Gun, AA, 37-mm								56						56
11	Gun, AT, 37-mm				6			30							36
12	How, 155-mm							48							48
13	MG, cal .50				31			102							133
14	MG, AA, cal .50								24						24
15	MG, Hv, cal .30										72				72
16	MG, L, cal .30				110						36				146
17	MG, AA, cal .50									90					90
18	MG, Aircraft, cal .30									90					90
19	MG, Sub, cal .45				175										175
20	Pistol	192	31	159	1,530	562		5,403	280	396	638	122	551		9,946
21	Rifle, auto								162			18			180
22	Rifle		101	48	532				2,261		2,016		145		5,073
23	Airplane, Observation									39					39
24	Ambulance, medium				2		36	7	3	3					51
25	Car, 5-passenger		5					1	2	3	2	1			14
26	Car, scout, with armament				68										68
27	Motorcycle, solo				114		3		20		40				177

CORPS TROOPS, TYPE CORPS—CONSOLIDATED TABLE (Continued):

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
28	Motorcycle, with side car		8	29				88	7	3	19	5	16		169
29	Searchlight, mobile								15						15
30	Tractor, medium, with bulldozer										16				16
31	Tractor, heavy							30							30
32	Trailer, 1-ton		6	2		8	4	246	17		89	3	167		506
33	Trailer, water tank, 250-gallon						7					3			10
34	Tricycle, motorized				63										63
35	Truck, tractor, semi-trailer				77										77
36	Truck, ½-ton, carry-all					6				6	2				14
37	Truck, ½-ton, command		1	4	15	3	7	153	40	3	25	3	6		270
38	Truck, ½-ton, radio					4		15							19
39	Truck, ½-ton, pick-up		2		15	20	6	3	63	3	46	13	16		188
40	Truck, 1½-ton, cargo		6	12		20	20		133	3	18	1			559
41	Truck, 1½-ton, dump										202				202
42	Truck, 1½-ton, Ordnance, misc											55			55
43	Truck, 1½-ton, Telephone Const					24									24
44	Truck, 1½-ton, tractor										3				3
45	Truck, 2½-ton, cargo				45	12	18	475	149	18	4	19	154		894
46	Truck, 2½-ton, wrecker												4		4
47	Truck, 4-ton							64	6		18				88
48	Truck, 4-ton, wrecker				1								4		5
49	Truck, 7½-ton								15		2				17
50	Compressor, air, motorized				1						16				17
51	Grader and shovel										6				6
52	Truck, ½-ton, weapon carrier							55							55
53	Water purification unit										5				5
54	Trailer, water, 250-gallon									3					3
55	Truck, field servicing, 500-gallon									3					3
56	Truck, field servicing, 2,000 gallon									3					3
57	Truck, 1½-ton, panel delivery								4	3					7
58	Truck, 1½-ton, special body								6						6
59	Truck, 2½-ton, sound and flash							8							8
60	Assault parts										60				60
61	Electric light set										2				2
62	Power earth auger, motorized										2				2
63	Trailer, 1-ton									6					6
64	Trailer, miscellaneous										3				3

■ 22. ARMORED CORPS.—Diagram:



① Includes attached medical.

■ 23. TYPE FIELD ARMY.—A field army consists of an army headquarters, two or more army corps (normally 3) temporarily assigned, and certain organic army troops.

Other troops temporarily attached to an army may be retained as army troops, or be reallotted to its corps in accordance with their needs.

The Army Headquarters includes Headquarters of army Artillery, Antiaircraft Artillery, Aviation, Chemical Warfare Troops, Engineers, Medical Service, Ordnance, and Quartermaster Service.

One or more cavalry or armored divisions may be allotted to each army from GHQ reserve.

■ 24. ARMY TROOPS, TYPE FIELD ARMY:

ARMY TROOPS, TYPE FIELD ARMY		T/O No.	Total Strength	Motor Vehicles
	Headquarters, Field Army	200-1	764	.....
	Hq Co, Field Army	200-2	296	39
	Special Troops, Field Army	200-3	790	45
Army AA	1 AA Brig (3 Regts)	4-10	5860	944
Army AT Force	3 AT Bns (ea 3 Cos)	7-115	2130	429
Army Aviation	1 Army Rcn Sq	1-217	315	15
Cml Warfare Units	3 Decontamination Cos	3-217	612	57
	1 Depot Co	3-67	182	10
	1 Laboratory	3-97	86	7
	1 Impregnating Co	3-77	159	8
	1 Maintenance Co	3-47	116	11
Army Engineers	3 Gen Serv Regts	5-21	3918	351
	1 Camouflage Bn	5-95	443	56
	2 Heavy Ponton Bns	5-275	964	248
	6 Separate Bns	5-35	7464	390
	1 Topographic Bn	5-55	1045	135
	1 Water Sup Bn	5-65	440	132
	1 Depot Co	5-47	178	7
	2 Dump Truck Cos	5-88	250	98
	4 L Ponton Cos	5-87	884	236
	1 Shop Co (mobile)	5-157	175	29
Army Medical Serv	3 Medical Regts	8-21	3177	474
	1 Conv Hosp	8-233	217	19
	10 Evac Hosps	8-232	4170	80
	4 Surgical Hosps	8-231	1540	106
	1 Medical Lab	8-234	56	8
	1 Supply Depot	8-235	214	12
	1 Vet Co, Sep	8-99	191	28
Army MP	1 Military Police Bn (4 Cos)	7-55	729	158
Army Ord Serv	2 Ammunition Bns (ea 6 Cos)	9-115	2330	122
	1 Ord Bn (Maint & Supply)	9-115	738	155
	2 Ord Cos (MM)	9-7	292	58
	1 Ord Co (MM)	9-9	3223	81
	1 Ord Co (Depot)	9-18	186	9
Army QM Serv	6 Service Bns	10-65	5652	102
	1 Truck Regt	10-51	1506	749
	1 Gas Supply Bn	10-75	490	128
	3 Light Maint Bns	10-25	2364	462
	1 Sterilization & Bath Bn	10-175	694	37
	1 Car Co	10-87	137	93
	1 Depot Co (Supply)	10-227	152	5
	1 Depot Co Motor Transport	10-48	304	18
Army Sig Serv	2 Signal Bns (Constr)	11-25	1128	186
	1 Depot Co	11-107	132	6
	1 Photo Co	11-37	163	27
	1 Pigeon Co	11-39	142	21
	1 Radio Int Co	11-77	222	26

SECTION IV

GHQ RESERVE AND ARMY AIR FORCE UNITS

■ 25. GHQ RESERVE.—The GHQ Reserve comprises a pool of combat and service units held available by GHQ for temporary assignment to armies, groups of armies, or the communications zone, according to their needs. It may include units of the types organically assigned to field armies, army corps, and divisions, and also may include units of the following types:

Infantry:

Units trained for special purposes, such as mountain and arctic warfare, and parachute troops.

Tank battalions and groups.

Field Artillery:

Pack artillery regiments (75-mm How).
Horse-drawn artillery regiments (75-mm Gun).
8-inch, 155-mm, and 240-mm howitzer regiments.
155-mm gun regiments.
Antitank Battalions.

Coast Artillery:

Railway artillery units.
AA Regiments, semi-mobile.
Mobile AA gun battalions, separate.

Army Air Force units.

Armored corps and divisions.

Motorized divisions.

Cavalry divisions.

Medical Department units.

Engineer units.

Ordnance units.

Quartermaster units.

Signal Corps units.

Chemical Regiments.

■ 26. TABLE OF ORGANIZATION No. 7-35 (*March 29, 1941*):

INFANTRY BATTALION, PARACHUTE

Designation: ①.....Infantry Battalion

1	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
1	*Unit*	*Specialists' ratings (class)*	*Hq (T O 7-36)*	*Hq Co (T/O 7-36)*	*3 Parachute Cos (T/O 7-37)*	*Total Bn*	*Atchd Med (for details see page 2)*	*Aggregate*	*Enlisted cadre*
2	Lieutenant colonel		1			1		1	
3	Major		1			1		1	
4	Captain		3	1	3	7	2	9	
5	First lieutenant		1	3	12	16		16	
6	Second lieutenant				9	9		9	
7	TOTAL COMMISSIONED		6	4	24	34	2	36	
8	Master sergeant			(*a* 1) 2		2		2	2
9	First sergeant			1	*a* 3	4		4	4
10	Technical sergeant			(*a* 3) 4		4		4	4
11	Staff sergeant			4	*a* 9	13	*a* 1	14	13
12	Sergeant			(*a* 3) 10	*a* 33	43		43	35
13	Corporal			(*a* 12) 19	*a* 27	46	*a* 1	47	19
14	Private, first class } including		3	43	285	331	13	344	15
15	Private }			24		24		24	
16	Specialist	1st	(*a* 3)	(*a* 5)	(*a*285)	(293)	(*a*13)	(306)	
17	Specialist	2d		(1)		(1)		(1)	
18	Specialist	3d		(9)		(9)		(9)	
19	Specialist	4th		(9)		(9)		(9)	
20	Specialist	5th		(11)		(11)		(11)	
21	Specialist	6th		(8)		(8)		(8)	
22	Unrated			(13)		(13)		(13)	
23	Basic			(11)		(11)		(11)	
24	TOTAL ENLISTED		3	107	357	467	15	482	92
25	AGGREGATE		9	111	381	501	17	518	92
26	Parachute		9	28	381	*b* 460	17	477	
27	Gun, machine, cal .30, M1919A4				36	36		36	
28	Pistol, automatic, cal .45		9	46	381	436		436	
29	Rifle, cal .30 *c*		3	87	300	390		390	
30	Mortar, 60-mm				9	9		9	
31	Submachine gun, cal .45			2	39	41		41	
32	Car, 5-passenger			4		4		4	
33	Truck, ¼-ton, reconnaissance			3		3		3	
34	Truck, 1½-ton, cargo			7		7		7	

① Insert number of battalion.

a Parachutists, specialists, first class.

b Total includes 10 percent additional for entire battalion.

c Rifle, carbine, to be substituted when standardized.

TABLE OF ORGANIZATION No. 7-35 (*March 29, 1941*) (Continued):

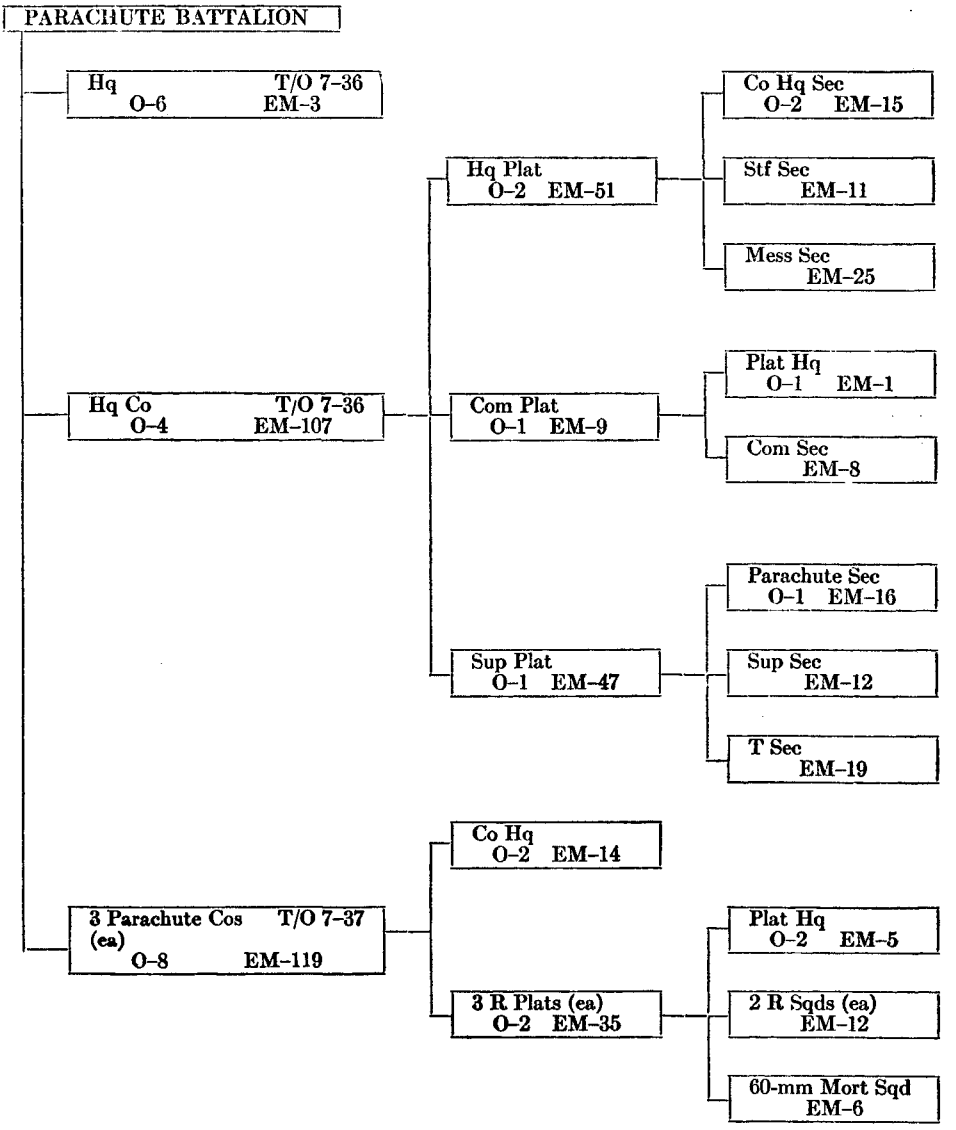
MEDICAL DETACHMENT, INFANTRY BATTALION, PARACHUTE

Designation: Medical Detachment, ①.....Infantry Battalion

	1	2	3	4
1	*Unit*	*Specialist's ratings (class)*	*Battalion section*	*Remarks*
2	Captain		2	① Insert number of battalion.
3	TOTAL COMMISSIONED		2	*a* Includes 3 company aid men per jumping company.
4	Staff sergeant	1st	1	*b* Litter bearers.
5	Corporal	1st	1	*c* Each individual equipped with a parachute.
6	Private, first class, including		13	All members of detachment are jumpers.
7	Medical (123)	1st	(1)	SUMMARY OF SPECIALISTS' RATINGS:
8	Surgical (225)	1st	(*a* 10)	1st class.....15
9	Basic	1st	(*b* 2)	The serial number symbol shown in parenthesis is an inseparable part of the specialist designation. A number below 500 refers to an occupational specialist whose qualification analysis is found in section I, AR 615-26. A number above 500 refers to a military occupational specialist listed in section II, AR 615-26.
10	TOTAL ENLISTED		15	
11	AGGREGATE		17	
12	A Parachute *c*		17	

(A. G. 320.2 (3-22-41.)

■ 27. PARACHUTE BATTALIONS.—Diagram *(Tentative organization):*



■ 28. ORGANIZATION OF AIR CORPS UNITS.—The Air Force Combat Command contains four air forces, organized geographically. All air force units above squadron are highly flexible, and may be modified at any time, both as to number and type of lower units contained. The organizations indicated for air force, command, wing and group, therefore, are type organizations only, and are included to indicate general relationships, and not fixed composition. ①②③

Unit	*T/O*	*O*	*EM*	*AP*④⑤	*Remarks*
Air Force					A type air force consists of a mobile echelon and a fixed echelon. The fixed echelon includes air bases and an air warning service. The mobile echelon contains a Hq and Hq Sqdn and one or more Bomber Commands and one or more Interceptor Commands.
Hq & Hq Sqdn, Air Force	1-800-1	78	605	6 SE 7 TE	Contains a Gen. Staff, Sp. Staff, Hq Sqdn. Has attached a Signal Co., Aviation.
Bomber Command					Contains a Hq & Hq Sqdn and one or more Bombardment Wings, Heavy, Medium or Light, or any combination of these.
Hq & Hq Sqdn, Bomber Command	1-100-1	28	154	1 SE 2 TE	⑥
Wing					Contains a Hq & Hq Sqdn and one or more Groups, Bombardment, (Hv, M, or L) (Pursuit Fighter or Interceptor Fighter).
Hq & Hq Sqdn, Wing, (Bombardment) (Interceptor) (Fighter)	1-10-1	14	130	1 SE 2 TE	⑥
Bombardment Group, Heavy (Medium) (Light)					Contains a Hq & Hq Sqdn and three bombardment sqdns and, as needed, one reconnaissance sqdn, (heavy, medium or light).
Hq & Hq Sqdn, Group, Bombardment, Heavy	1-112	24	267	3 FE	⑥⑦
Bombardment Sqdn, Heavy	1-117	38	237	8 FE	⑧ Operates in 2 flights—A & B. Carries up to 4,800 lbs. of bombs (largest bomb 2,000 lbs.) and has range of operation up to 3,400 miles.
Hq & Hq Sqdn, Group, Bombardment, Medium	1-122	26	273	5 TE	⑥⑦

ORGANIZATION OF AIR CORPS UNITS (Continued):

Unit	*T/O*	*O*	*EM*	*AP*④⑤	*Remarks*
Bombardment Squadron, Medium	1-127	52	254	13 TE	Operates in 3 flights— Flight A—5 airplanes; Flights B and C—4 airplanes each. Combat crew of each airplane is: 1 officer, pilot 1 enlisted man, bombardier—gunner 1 enlisted man, armorer—gunner. Carries bomb load up to 4,500 lbs, and has range of up to 3,000 miles.
Hq & Hq Sqdn, Group, Bombardment, Light	1-132	21	261	5 TE	⑥
Bombardment Sqdn, Light	1-137	26	219	13 TE	Operates in 3 Flights—A, B & C Flight A — 5 airplanes Flight B — 4 airplanes Flight C — 4 airplanes Combat crew each airplane 1 officer—pilot 1 officer—bombardier—gunner (a) 1 enlisted man—armorer—gunner. (a) Officer replaced by enlisted man in all except Squadron and Flight commander's planes. Carries bombs up to *2,400* lbs, and has range of operation up to 1,000 miles.
Reconnaissance Sqdn, Heavy	1-217	44	271	8 FE	Operates in 2 flights—A and B; 4 airplanes each. Combat crew for each airplane: 1 officer—pilot 1 officer—co-pilot—observer 1 officer—navigator—observer 1 officer—observer—bombardier—gunner 2 enlisted men—aerial engineer—gunner 2 enlisted men—radio operator—gunner 1 enlisted man—photographer—gunner Suitable for reconnaissance up to 3,400 miles
Reconnaissance Squadron, Medium	1-227	61	276	13 TE	Operates in 3 Flights—A, B and C Flight A—5 airplanes Flight B—4 airplanes Flight C—4 airplanes Combat crew for each airplane 1 officer, pilot 1 officer, co-pilot—observer 1 officer, navigator—observer 1 officer, observer—bombardier—gunner 1 enlisted man, radio operator—gunner 1 enlisted man, photographer—gunner 1 enlisted man, aerial engineer—gunner Suitable for reconnaissance up to 3,000 miles.

ORGANIZATION OF AIR CORPS UNITS (Continued):

Unit	*T/O*	*O*	*EM*	*AP*④⑤	*Remarks*
Reconnaissance Squadron, Light	1-237	33	241	13 TE	Operates in 3 Flights, A, B & C Flight A—5 airplanes Flight B—4 airplanes Flight C—4 airplanes Combat crew for each airplane 1 officer, pilot 1 officer, observer—bombardier—gunner 1 enlisted man, gunner Suitable for reconnaissance up to 1,000 miles.
Interceptor Command					Contains a Hq & Hq Sqdn and one or more Interceptor Wings.
Hq & Hq Sqdn, Interceptor Command	1-200-1	32	169	1 SE 2 TE	⑥
Pursuit Group					Contains a Hq & Hq Sqdn and 3 Pursuit, Fighter (Interceptor) Squadrons.
Hq & Hq Sqdn, Group, Pursuit	1-12	47	259	5 SE	⑥
Fighter Pursuit Squadron	1-37	34	287	25 TE	Operates in 3 Flights, A, B and C Flight A—9 airplanes Flight B—8 airplanes Flight C—8 airplanes Combat crew for each airplane 1 officer, pilot 1 enlisted man, gunner Long range airplanes, suitable for protecting bombardment or reconnaissance planes on relatively distant missions.
Interceptor Pursuit Squadron	1-27	42	218	25 SE	Operates in 3 Flights, A, B & C Flight A—9 airplanes Flight B—8 airplanes Flight C—8 airplanes Combat Crew 1 officer, pilot Short range airplanes, with high rate of climb. Suitable for protection of local areas or installation against hostile aircraft.
Observation Squadron	1-255	38	159	13 SE	3 per type Army Corps. Operates in 3 Flights, A, B & C Flight A—5 airplanes Flight B—4 airplanes Flight C—4 airplanes Suitable for observation missions of 2 hours, and to operate up to 500 miles.

①Type airplanes are designated by a letter. The number following the letter is the model of that type. Example:

B—23=Bomber—twenty third model
P—40=Pursuit—fortieth model
C—50=Cargo—fiftieth model
O—52=Observation, etc.

ORGANIZATION OF AIR CORPS UNITS (Continued):

(2)Wings or Groups usually contain one type of aircraft. If necessary *composite* Wings or Groups may contain more than one type of aircraft.

(3)Ranges and bomb loads are approximate—they vary with each type of aircraft. Where maximum ranges are desired, the minimum bomb load is carried and engines are operated at economical speeds.

(4)SE=Single Engine
TE=Two Engine
FE=Four Engine

(5)All combat units normally operate at approximately 75% airplane strength, i. e.

Pursuit Squadron operates 18 out of 25
Observation Squadron operates 9 out of 13
Bomb (Heavy) Squadron operates 6 out of 8
Bomb (Med) Squadron operates 9 out of 13
Bomb (Light) Squadron operates 9 out of 13
Reconnaissance (Hv) Squadron operates 6 out of 8
Reconnaissance (Med) Squadron operates 9 out of 13
Reconnaissance (L) Squadron operates 9 out of 13

(6)Hq and Hdqrs Squadrons of Commands, Wings or Groups contain command, communications, minimum administrative and transportation elements. Liaison Officers might be drawn from these units.

(7)Transportation, except ambulances, and all chauffeurs and other transportation personnel for the entire Group are included in the Hq and Hqs Squadron of the group.
Independent Squadrons have own transportation.

(8)Combat crew for Sq Commander and Flight Commanders consist of:

1 officer, pilot
1 officer, co-pilot
1 officer, navigator
1 officer, bombardier
1 enlisted man, aerial engineer—gunner
1 enlisted man, asst aerial engineer—gunner
2 enlisted men, radio operators—gunner

For all other airplanes:

1 officer, pilot
1 officer, co-pilot
1 officer, navigator
1 enlisted man, bombardier—gunner
1 enlisted man, asst aerial engineer—gunner
2 enlisted men, radio operator—gunner
1 enlisted man, aerial engineer—gunner

SECTION V

DATA PERTAINING TO SUPPLY AND EVACUATION UNITS

■ 29. ENGINEER UNITS: ①

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Engr Regt (C) (Corps) ②	5–171	46	1,266	2 per type corps. Hq & Hq & Serv Co, 2 Bns with 3 Cos of 3 Plats each: Engr service for corps. 2 sets infantry intrenching tools in regiment.
Engr Regt (C) Div ②	5–11	46	946	1 per infantry division (square). 6 sets of infantry intrenching tools in division. Regt consists of Div Hq & Serv Co, and 2 Bns with 3 Cos of 2 Plats each.
Engr Bn (C) ②	5–75	21	627	1 per infantry division (triangular or triangular motorized). Hq & Hq Co, 3 Engr Cos (C), of 3 Plats each. Transportation sufficient for organic personnel and material. 3 sets intrenching tools for infantry.
Engr Bn (Armd) ②	5–215	28	729	1 per armored division. Hq Co, 3 Engr Cos of 2 Plats ea, 1 Bridge Co. Transportation sufficient for organic personnel and equipment.
Engr Sq	5–115	16	451	1 per cavalry division. Hq & Hq & Serv Tr, 2 Engr Trs of 3 Plats ea. Engr service for cavalry division: 4 sets of intrenching equipment, cavalry. Transportation sufficient for organic personnel and equipment.
Engr Regt (Gen Serv)	5–21	46	1,259	3 per type army. Hq & Hq & Serv Co, 2 Bns with 3 Engr Cos (Gen Serv) each; 18 operating units. General engineer service and construction of all classes.
Engr Bn (Sep)	5–35	26	1,218	6 per type army. Hq & Hq & Serv Co, 4 Engr Cos (Sep) (ea of 2 Plats of 9 squads). Essentially a labor unit. Not trained for general construction work.
Engr Co (Dep)	5–47	4	174	1 per type army. 1 per type Air Force. Hq Plat, 3 Dep Plats. Operates engineer depot for general supplies. Depot stockages vary greatly. Maintenance requirements per type army per day: one depot co can furnish personnel to handle a depot of about 300,000 sq ft of storage area.
Engr Co (Dp Trk)	5–88	4	121	2 per type army. Hq Plat, 2 Transp Plats. Furnishes 45 1½-ton dump trucks for engineer hauling.
Engr Co (mobile shop)	5–157	5	170	1 per type army. Hq Plat, 3 mobile shop Plat. Executes 3d echelon maintenance for all equipment for which engineers have maintenance responsibility.

NOTES

① Includes attached medical and chaplains.

② For bridge and ferrying equipment, see Chapter 7, this manual.

ENGINEER UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Engr Bn (W Sup)	5-65	22	418	1 per type army. Hq & Hq & Serv Co, 3 Engr Cos (W Sup). Receives, purifies and transports water. Transport capacity: 67,500 gallons per trip. Purification capacity: 37,800 gallons per hour. Under normal conditions the battalion can supply 1 type army, but in highly congested areas or where but little water is available locally, only 1 corps can be served adequately. Equipped with storage facilities. Not equipped for well drilling or construction of reservoirs. 90 trks, 2½-ton, tank, 750 gal, for water; 9 trks, water purification.
Engr Bn (Cam, Army)	5-95	30	413	1 per type army. Hq & Hq & Serv Co, 4 Engr Cos (Cam, army). Primary mission is camouflage inspection, discipline and training. Supplies camouflage materials. Prepares plans for general or special camouflage installations.
Engr Bn (Cam, GHQ)	5-135	24	414	1 per GHQ. Primarily a manufacturing unit. It also has same functions as the army battalion.
Engr Hq(Ry)	5-302	24	216	The manager MRS and 4 staff departments supervise the operation and maintenance of all military railways in the Theatre of Operations.
Engr Hq (Ry, Div)	5-602	24	74	The general superintendent and 6 staff sections supervise and coordinate the operations of several railway divisions with attached shop and other troops to form a grand division.
Engr Bn (Ry, Operating)	5-125	21	820	Com Z and GHQ units. Hq & Hq & Serv Co, 1 Engr Co (Maint of Equip), 1 Engr Co (Maint of Way); 1 Engr Co (Transportation). Operates and maintains a railway division up to 120 miles in length, without increase of personnel. The battalion can furnish crews for 20 to 24 trains each way per day, or a total of 40 trains per day.
Engr Bn (Ry, Shop)	5-145	23	658	Com Z and GHQ units. Hq & Hq & Serv Co, 1 Engr Co (Erecting & Machine Shop), 1 Eng Co (Boiler & Smith Shop), 1 Engr Co (Car Repair). Operates heavy shops and executes assembly and major repairs of railway equipment. The bn can serve 2 or more engr ry operating bns.
Engr Bn (Top, Army)	5-55	40	1,005	1 per type army. Hq & Hq & Serv Co, 1 Engr Co (Reproduction), 1 Engr Co (Photomapping), 2 Engr Cos (Surv). Map making, reproduction, and procurement.
Engr Bn (Top, GHQ)	5-185	32	778	Hq & Hq & Serv Co, 1 Engr Co (Reproduction), 1 Engr (Photomapping), 1 Engr Co (Surv). Map making and reproductions.
Engr Co (Top, Corps)	5-167	5	115	1 per type corps. Co Hq and 3 Plats (survery, photomapping and reproduction). Map making and reproduction.
Engr Bn (Hv Pon) ①	5-275	14	468	2 per type army. Hq & Hq & Serv Co, 2 Engr Cos (Hv Pon), with 2 Plats each. A ponton bridge transport and maintenance unit. Four 250-ft bridges of 25-tons capacity, combined length up to 1,000 ft. Bridges will carry all loads of the field army. Construction is done by the battalion reinforced by general engineer units.

ENGINEER UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Engr Co (L Pon) ①	5-87	6	215	4 per type army. 1 Hq Plat, 3 Bdg Plats. Equipment for 3 bridges with combined length of up to 750 feet. Construction is done by general engineer units.
Engr Regt (Avn)	5-411	70	1,777	2 per type Air Force. Hq & Hq & Serv Co, 3 Bns with 3 Engr Cos (Avn) each. Provides for maintenance and construction of airdromes and routes thereto; assists in defense.
Engr Co, Avn (Sep)	5-427	5	176	Co Hq, Serv Plat and 2 Operating Plats. Organized for independent operations at a distance from other units. Additional hand labor attached when needed.

① For bridge and ferrying equipment, see Chapter 7, this manual.

■ 30. MEDICAL UNITS:

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Med Regt	8-21	66	980	3 per type army. 1 per infantry division (square). Hq & Hq & Serv Co, 1 Coll Bn, 1 Amb Bn, 1 Clr Bn. Division: collection, evacuation, temporary care, sanitation, and medical supply in division area. Army: same service for army troops. In addition the regiments perform all evacuation from division, corps, and army clearing stations to evacuation hospitals and reinforce divisions and evacuation hospitals. Temporary care for 750 patients, normally, 1,200 for not to exceed 24 hours. Equipment not suitable for definitive treatment hospitalization. One ambulance company can move 80 patients lying, or 200 patients sitting, per trip. Minimum space requirments: Under tents, 125 x 80 yards In buildings, 60,000 sq ft. ② Bivouac area, 170 x 240 yds. Movement by rail requires 5 trains. Clearing station requires 1 hour to establish. Can be dismantled in 2 hours, but 1 to 3 additional hours are required to evacuate patients, if filled. The 60 motor ambulances available can move all personnel plus 100 patients.
Med Bn	8-65	34	476	1 per infantry division (triangular or triangular, motorized.) 1 per type corps. Hq & Hq Det, 3 Coll Cos, 1 Clr Co. 36 Amb; 15 trks, 2½-ton; 21 trks, 1½-ton. Can move organic personnel.

NOTE

② The floor space requirements given refer to buildings constructed for hospital purposes. For converted buildings, such as hotels, the floor space requirements are approximately four times that required in buildings constructed for use as hospitals.

MEDICAL UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Med Bn (Armd Div)	8-75	25	333	1 per armored division. Hq & Hq Det, 1 Coll Co, 1 Clr Co. 30 Amb; 27 trks, 2½-ton. Can move organic personnel.
Med Sq	8-85	28	336	1 per cavalry division. Hq & Hq & Serv Det, 1 Coll Tr; 1 Clr Tr, 1 Vet Tr. 24 ambs. Can move organic personnel.
Evac Hosp	8-232	47 52-N	318	10 per type army. Receives all classes of cases and prepares them for further evacuation by rail. May be used for definitive hospitalization in an emergency. Capacity: 750 patients, normally; 1,200 for not to exceed 3 days. Set up 12 to 30 miles from the front, on a road from the front and on a railroad to the rear. Sewage facilities are desirable. Minimum space requirements: Under tents: 200 x 200 yds. In buildings: 80,000 sq ft. ② Requires 4 to 6 hours to establish and 8 to 10 hours to dismantle, when empty. Has a small number of organic motor vehicles. Usually moves by rail. Movement requires 2/3 train, type A, or 184 truck tons for equipment only.
Surg Hosp	8-231	50 60-N	275	4 per type army. 1 per army in GHQ Res. Operates surgical hospital in front line div areas, but remains under army or corps control. Cares for nontransportable casualties only. Capacity 400 patients. Organized into a mobile self-contained surgical unit available for reinforcing any other medical unit within the army, and 2 hospitalization units (capacity 200 each), one or both of which or 1 hospitalization unit (less a ward section), can be established at one or more points as required.
Conv Hosp	8-233	28	189	1 per type army. Receives convalescents from evacuation hospitals. Capacity: 3,000 patients, normally; 5,000 for not to exceed one week. Set up in rear of army area on roads and a railroad, preferably near the army replacement pool. Sewage facilities are desirable. Minimum space requirements: Under tents: 540 x 300 yards. In buildings: 120,000 sq ft. ② Has small number of organic motor vehicles. Movement requires ½-train, type A, or 232 truck tons additional for equipment only.
Med Lab (Army or Com Z)	8-234	11	45	1 per type army. 1 per section of Com Z. When the Com Z is not organized in sections, laboratories are located as required by the health situation. Conducts epidemiological investigations, surveys, and studies, with necessary laboratory work, including water analysis. Has small number of organic motor vehicles. Movement requires 1/6 train, type A, or 5 truck tons additional for equipment only.
Med Sup Dep (Army or Com Z)	8-235	15	198	1 per type army. 1 per medical supply depot in the Com Z. Operates medical supply depots of the army and the Com Z. T/O provides personnel for necessary labor. Stockage of army depot is usually limited to items and quantities essential to maintain combat efficiency for not to exceed 3 days. Space requirements: under tents, 40 x 50 yards. The army depot is mobile; the Com Z depot is immobile. Movement (supplies not included) requires ½-train, type A, or 90 truck tons additional for equipment only.

MEDICAL UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Vet Evac Hosp	8-236	6	89	A GHQ unit. Capacity: 150 animals, normally; 300 in an emergency. Established within one days' march for animal casualites from division veterinary clearing or aid stations, preferably on or near a railroad to the rear. Minimum space requirements: under tents, 125 x 100 yards. Small number of organic motor vehicles. Usually moves by rail. Movement requires ¼-train, type A, or 9 truck tons for equipment only.
Vet Conv Hosp	8-237	10	253	A GHQ unit. Receives convalescents from veterinary evacuation hospitals. Capacity: 1,000 animals, normally; 2,000 in an emergency. Movement requires ½-train, type A, or 24 truck tons additional for equipment only.
Hosp Tn	8-506	4 6-N	35	Requirements based on length of haul and expected casualties. In general, 1 per division engaged will be required in the Theatre of Opns. Evacuates casualties from evacuation to general hospitals, between general hospitals, from general hospitals to the Z of I, and within the Z of I. Within the Theatre of Opns, the Medical Dept is charged with care and treatment of patients transported and general administration. Movement into combat zone and out of it controlled by Regulating Officer. Classification — (1) type train; 22 cars, 20-ton box type, superstructure altered to meet M D requirements, average capacity 300 patients; (2) Improvised: one hosp unit car, 1 baggage car and a variable number of pullman, tourist sleeper, or chair cars, depending on availability; average capacity 500 patients.
Gen Hosp	8-507	73 120-N	500	The number of general hospitals in the Com Z or the Z of I depends on the expected demand and the policy of evacuation from the Theatre of Opns to the Z of I. Receives patients from the combat zone or from other hospitals in the Com Z. Provides definitive hospitalization for all classes of cases. Capacity: 1,000 patients per general hospital. Always located on a railroad or water-way. In the Com Z or the Z of I, a number of general hospitals may be grouped to form a hospital center. The general hospital is not mobile. Minimum floor space requirements: 120,000 square feet. ② Has a small number of motor vehicles, including ambulances, to supply itself and to move a few patients. Weight of equipment: 142 tons. Cubage: 15,936 cubic feet.
Sta Hosp (Com Z)	8-503	20 30-N	150	Operates station hospital in the Com Z whenever the number of troops in the area justifies its establishments. Does not receive patients from combat zone. Capacity: 250 patients each. Can be doubled or tripled in strength and capacity. Minimum floor space requirements: 32,000 square feet. ② Not mobile. Has a small number of motor vehicles, including ambulances, to supply itself and move a few patients. Weight of equipment: 57 tons. Cubage: 7,051 cubic feet.
Vet Gen Hosp	8-509	11	269	Receives patients from the combat zone or from other veterinary hospitals. Capacity: 500 animals, normally; 1,000 in an emergency. Located in the Com Z or the Z of I only. Not mobile. Has a small number of motor vehicles for its own supply service. Weight of equipment: 8-tons. Cubage: 895 cubic feet.

MEDICAL UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Vet Sta Hosp (Com Z)	8-560	4	78	Establishes veterinary station hospital in the Com Z when justified by the number of animals in the area. Does not receive patients from the combat zone. Capacity: 150 animals, normally; 300 in an emergency. Not mobile. Has a small number of motor vehicles for its own supply service. Weight of equipment: 25-tons. Cubage: 1,461 cubic feet.
Hosp Center	8-551	46 1-WO 2-N	310	Furnishes the overhead for a hospital center of from 3 to 10 general hospitals. Includes a convalescent camp with a capacity of 1,000. Convalescent camps at hospital centers have normally a total bed capacity equal to 20% of that of the center. Not mobile. General hospitals in the center have no transport. The center has sufficient ambulances to move patients between hospitals. The center requires motor transport, bakery, military police, finance, signal, postal, and laundry personnel in numbers depending upon the size and location of the center.
Aux Surgl Gp	8-512	128 70-N	127	Held in Com Z and teams sent forward when required. Reinforces surgical, evacuation, and general hospitals in times of stress by additional operating teams. The group has a total of 250 operating teams. Not mobile. Has a small number of motor vehicles for its own supply service and to move a few teams.
Gen Dispensary	8-502	12	29	1 per GHQ. 1 per port of embarkation or debarkation. Others as required. Renders outpatient medical service at large headquarters. Must be attached for rations and quarters. Weight of equipment: 8-tons. Cubage 704 cubic feet. Not mobile. Has 1 amb; 2 car, passenger; 1 motorcycle.
Med Lab (Gen)	8-504	26	98	1 per Theater of Opns, if the size of the force in the theater justifies it. Conducts extensive epidemiological studies, researches, technical inspections and investigations. Manufactures biologics. Weight of equipment; 7-tons. Cubage: 345 cubic feet. Not mobile. Has sufficient transportation for its own supply service.
Hq Med Serv (Com Z)	8-500-1	26 2-N	92	1 per Theater of Opns, if the size of the force in the theater and the organization of the Com Z justifies it. Provides overhead for administration of all medical activities in the Com Z. Not mobile. Must be attached for rations and quarters.
Med Dept Concentration Center	8-505	5	24	1 per Theater of Opns, if the size of the force in the theater justifies it. Provides overhead for administration in the Com Z of medical units held as GHQ Res, those withdrawn from armies for rehabilitation, and those arriving from the Z of I. Weight of equipment: ½-ton. Cubage: 284 cubic feet. Not mobile. Has sufficient motor transportation for the supply of the units stationed at the center.
Vet Co (Sep)	8-99	7	184	1 per type army. Evacuates animal casualties to veterinary evacuation hospitals from division, corps, and army veterinary aid stations and veterianry clearing stations. 15 trks, 2½-ton with stock rack body; each has capacity for 6 horses.

MEDICAL UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Med Examining Unit (Avn)	8-141	6	14	GHQ Res. Examines flying personnel assigned to air bases as required. Not mobile. Has a small amount of motor transport for its own supply.

31. ORDNANCE UNITS:

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Ord Co (Am)	9-17	6	180	6 per army ord am bn. 1 per type air force. 2 required in Com Z for each 15 days of supply for each type army served. Co Hq; Depot office; 1 Magazine Plat; 1 Serv Plat. Operates ammunition depots and ammunition supply points. For data on labor requirements, see paragraph 32. (Army QM service.)
Ord Co (Dep)	9-18	6	180	1 per type army. 1 per type air force. 1 required in Com Z for each 15 days of supply for each type army. Co Hq, Depot Office, 1 Storehouse Plat, 1 Serv Plat, 1 Guard and Labor Plat. Operates ordnance depot for general supplies. The total daily maintenance for a type army is about 150 tons. The company requires 20 truck tons of additional transportation, but no additional labor, for daily maintenance. 3 days of supply for a type army requires about 20,000 square feet of storage space, of which about 15% should be covered.
Ord Co Air Base	9-167	4	60	1 per air base. Co Hq, Ord Sec, Maint & Gen Supply Sec, Am Sec, Airdrome Sec, 2 tractor cranes & trailers. 6 bomb trailers, 6 bomb service trucks, misc ord trks.
Ord Co (Avn) (Bomb or Pursuit)	9-157	6	181	1 Co per air group. Co Hq; 1 airdrome sec per Hq and Hq Sq; 1 Airdrome Plat per Air Corps Sq as prescribed for unit served. 20 trks, bomb service; 40 trailers, bomb, misc trks.
Ord Co (M Maint)	9-7	6	140	2 per army ordnance maint battalion. 3 per type corps. 1 per AA brig of 3 regts. 1 per inf div, square. 1 per cav div. 1 air district or type air force Operates ord repair section, air force depot. Hq & Sup Sec, Serv Sec, Arty & Automotive Sec, Armory Sec, Instrument Sec. In the Com Z, 4 or 5 companies are required normally for each type army; usually employed in shops. Maint & supply of unit to which assigned or attached. Equipment varied according to assignment. Completely mobile.

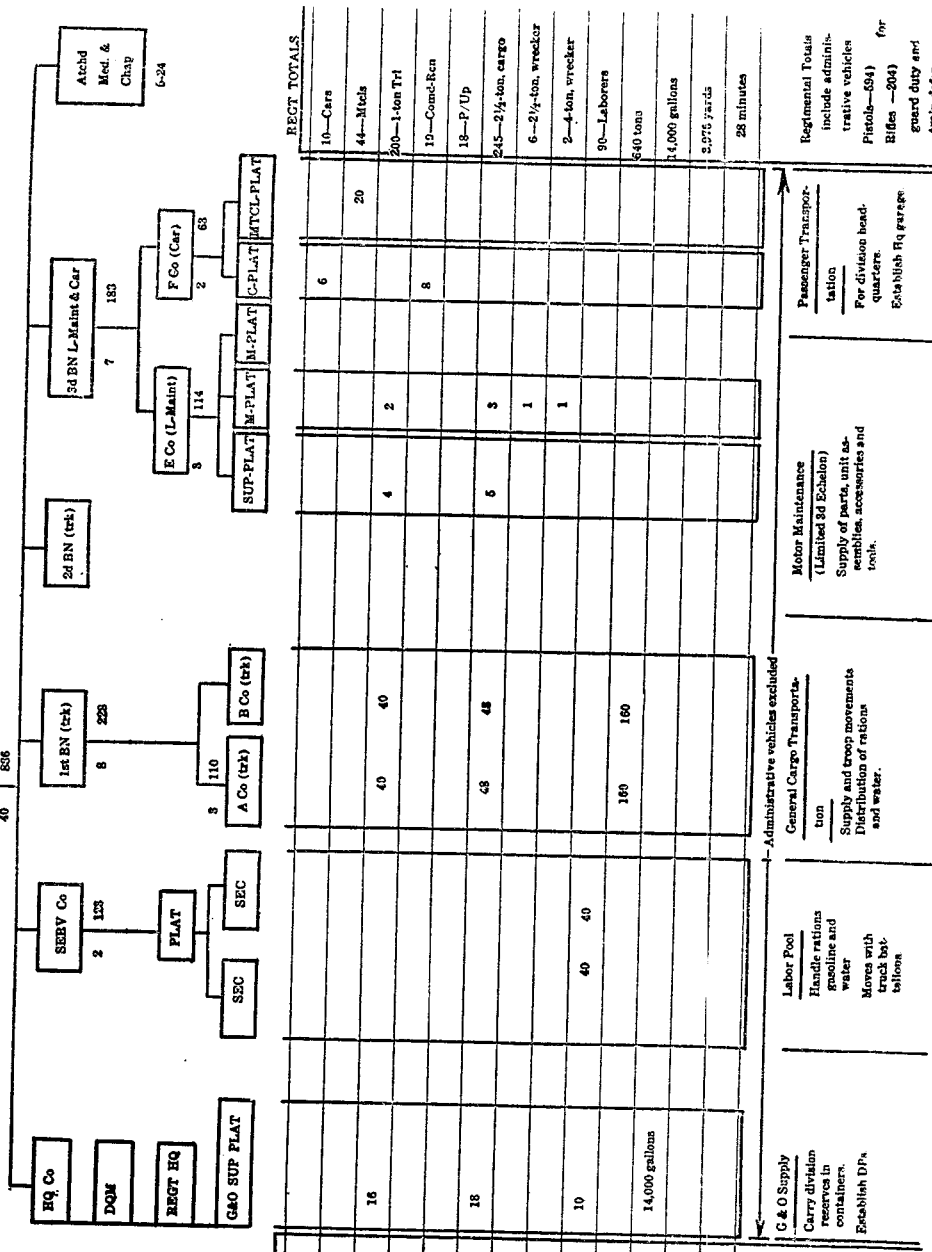
ORDNANCE UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Ord Co (Hv Maint)	9–9	8	215	1 per army ordnance maintenance battalion. Companies are allotted from GHQ Res to heavy artillery and tanks as required. 2 are required normally in the Com Z for each type army, to operate shops. Maintenance beyond the capabilities of medium maintenance companies. Operate artillery and automotive repair centers. Usually established in army area, near ordnance depot. The company can operate in the field, but buildings with machine tools and foundry equipment greatly facilitate its operation. Completely mobile.
Ord Co (Maint Ry Arty)	9–47	4	87	1 per ry arty regt. Co Hq, Serv Plat each Ry Bn. Maintenance, repair, inspections.
Ord Bn (Maint), Armd Div	9–65	21	406	1 per armored div. Bn Hq, 2 Ord Cos, each with Hq Section, Service Section, Arty & Automotive Section, and Armament Section.
Ord Bn (Am)	9–15	44	1,121	2 per type army. Each battalion includes 6 Ord Cos (Am).
Ord Bn (Maint & Supply)	9–115	33	705	1 per type army. 1 Ord Co (Hv Maint), 2 Ord Cos (M Maint), 1 Ord Co (Depot).
Ord Bn (Maint) (Corps)	9–75	25	440	1 per type corps. Hq Det, 3 Ord Cos (M Maint).

ORGANIZATION

32. QUARTERMASTER UNITS:

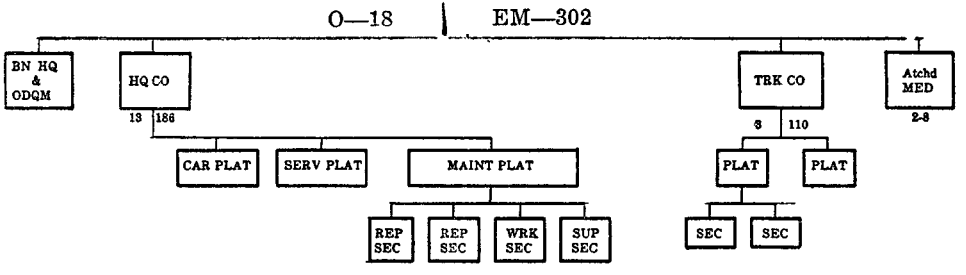
QUARTERMASTER REGIMENT
SQUARE DIVISION



QUARTERMASTER UNITS: (Continued)

QUARTERMASTER BATTALION

TRIANGULAR DIVISION & TRIANGULAR DIVISION (MOTORIZED)



DATA									BN TOTALS
Car	5								5—Cars
Mtcl									5—Mtcls
Trl. 1-ton cargo			2	2		4	10	20	53—Trl—1-ton
Trk Rcn	3								13—Trks Rcn
" ½-ton pick-up									6—Trk P/Up
" 1½-ton									1—Trk cargo, 1½-ton
" 2½-ton cargo			2	2		4	12	24	63—2½-ton, cargo
" 2½-ton wrecker					1				2—2½-ton, wrecker
4-ton wrecker					2				2—4-ton, wrecker
Men for labor		45							45—Laborers
Tonnage capacity							40	80	160—tons
Road space, (halted)									590 yards
Time length, (moving)									8 minutes

Administrative vehicles excluded

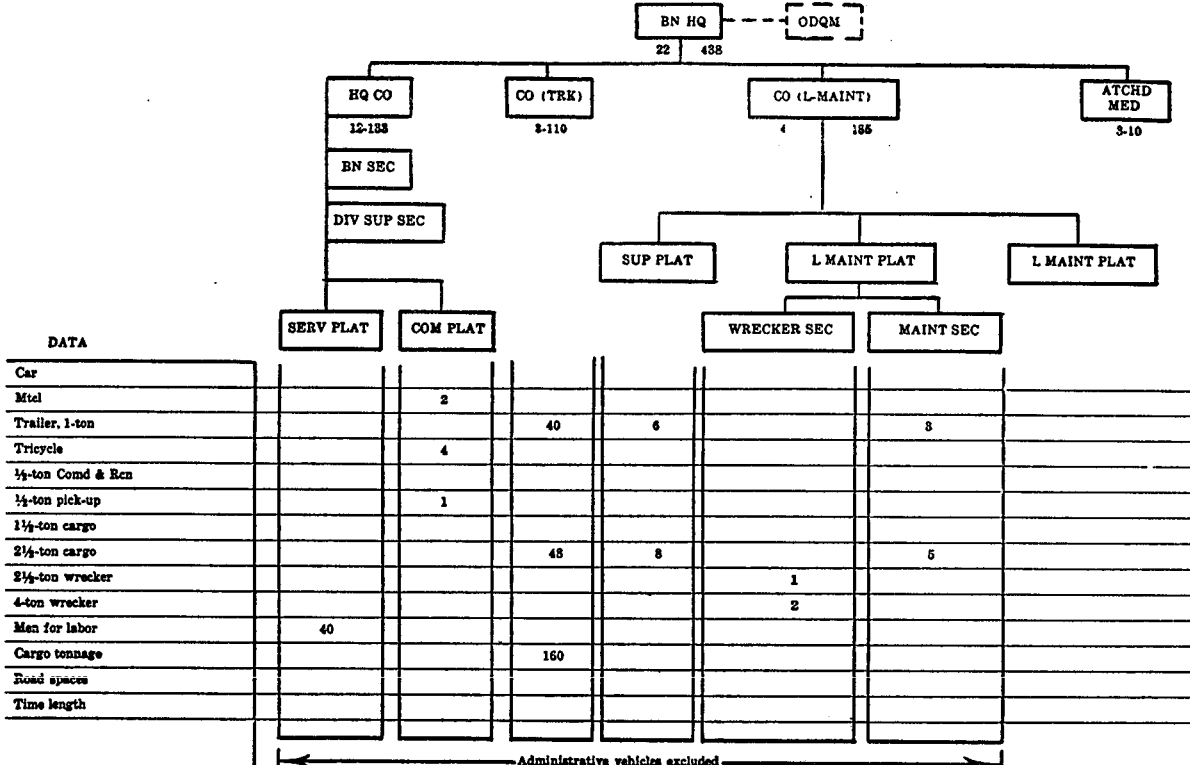
Major Functions

- **HQ Garage** — Passenger Service for Division Headquarters
- **Labor** — Handle rations, water and gasoline.
- **Motor Repair** — Limited 3d Echelon
- **Wrecker** — Service
- **Motor Supply** — Spare Parts, Unit Assemblies, Tools, Accessories
- **Cargo Transport** & Troop Movements. Distribution of rations, water and gasoline

Totals include administrative vehicles. Pistols 262, Rifles 50 for guard duty and train defense.

QUARTERMASTER UNITS: (Continued)

QUARTERMASTER BATTALION
ARMORED DIVISION



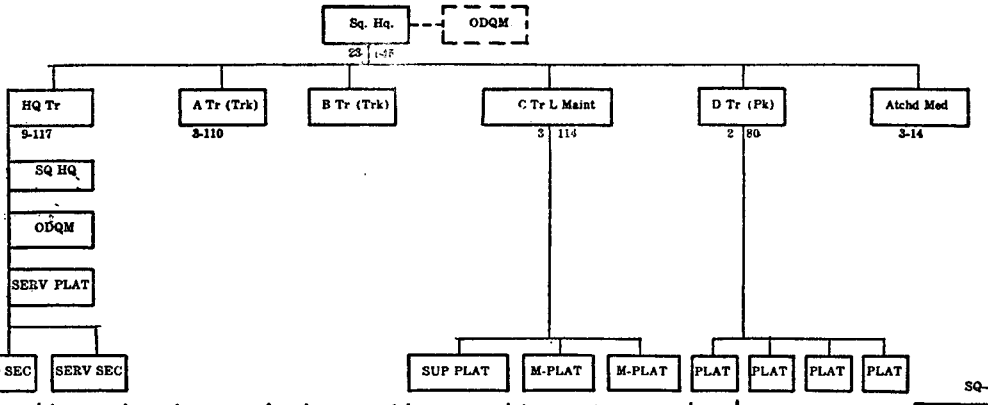
DATA	SERV PLAT	COM PLAT			WRECKER SEC	MAINT SEC	BN TOTALS
Car							1—Car
Mtcl		2					6—Mtcls
Trailer, 1-ton			40	6		3	56—Trailers, 1-ton
Tricycle		4					12—Tricycles
½-ton Comd & Recn							7—Comd & Recn
½-ton pick-up		1					13—Pick-up
1½-ton cargo							1 (atchd Med.)
2½-ton cargo			48	8		5	84—2½-ton trucks
2½-ton wrecker					1		3—2½-ton wreckers
4-ton wrecker					2		4—4-ton wreckers
Men for labor	40						40 men
Cargo tonnage			160				160 tons
Road spaces							1540 yards
Time length							11 minutes

Major Functions

Administrative vehicles included.

9-MG cal .30 light — For train do fense
3-MG cal .50
81-Rifles cal .30
36-Pistols cal .45

QUARTERMASTER SQUADRON
CAVALRY DIVISION (HORSE)



DATA	G&O SEC	SERV SEC	A Tr (Trk)	B Tr (Trk)	SUP PLAT	M-PLAT	M-PLAT	PLAT	PLAT	PLAT	PLAT	SQ—TOTALS
Mtcls												15—Mtcls
Semi-Trailers, 4-ton			48									48—Semi-Trailers, 4 ton
Tractor Truck, 2½-ton			48									48—Tractor Truck, 2½-ton
Trailer, 1-ton	10			40	4	2						62—Trailer cargo
½-ton Command												5—½-ton Comd
½-ton (pick-up)												15—Pick-up
2½-ton, cargo	10				4	2						31—2½-ton, cargo
2½-ton, stock rack bdy				48								48—2½-ton, stock rack
2½-ton, wrecker						1						4—2½-ton, wrecker
4-ton wrecker						1						2—4-ton, wrecker
Men for labor		40										40—Laborers
Pack mules								50				308—(horses & mules)
Tonnage, Pack								5				20 (4 platoons)
Truck, tonnage			192	160								352 Tons
G&O capacity	8000 gl.											8000 gallons
Road space,halted												2280 yds (less animals)
Time length												19 min (less animals)
Road Space, Tr (Pk)												100 yds (5 min @ 5 MPH)

Administrative vehicles excluded

Major Functions	G & O Supply	Labor	Troop	Supply	Spare Parts	Motor	Pack Transportation
	Carry Reserve Establish DPs	Rations Gasoline Water	Movement	Movements	Unit Assemblies Accessories Tools	Maintenance Limited 3 echelon	Small-arms ammunition Supply Cargo transportation

Administrative vehicles included in above totals
Pistols 451
Rifles 100
Automatic rifles 9 for guard duty and train defense.

QUARTERMASTER UNITS: (Continued)

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
QM Bn (Serv)	10–65	15	912	6 per type army. 1 per type air force. Each 15–O and 912–EM. 4 QM Cos (Serv) per Bn, each 3–O and 224–EM. Forms general labor pool for handling supplies. Average rate of work: ½-ton per man per hour for ten hours. 5 mtcls; 1 trk, ½-ton, comd; 5 trks, ½-ton, p/up; 20trks, 2½-ton, cargo; 21 trailer, 1-ton, cargo.
QM Regt (Trk)	10–51	57	1,449	1 per type army. 3 QM Bns (Trk) per regt, each 15–O and 461–EM, 4 QM Cos (Trk) per Bn. Constitutes the nucleus of the army strategic transport pool and operates trucks for general use in the army area or in the Com Z. Each battalion has 192 trucks with a total capacity of 480 tons (640 with trailers). Each truck company has 48 trucks available for general use. Gas and oil are available in the regiment for a movement of 300 miles. 56 mtcls; 18 trks, ½-ton, comd; 43 trks, ½-ton, p/up; 620 trks, 1½ to 2½-ton, cargo; 12 tks, 2½-ton wrecker.
QM Co (Trk)	10–57	3	110	8 per type air force. 2 per type corps. 4 per inf div (square) 1 per inf div (triangular or triangular, motorized). Co Hq; 2 Trk Plats. The company has 48 trucks available for general use.
QM Bn (L Maint)	10–25	21	767	3 per type army. Hq & Hq Det, 4 QM Cos (L Maint). Performs third echelon motor maintenance for all QM motor vehicles of the troop units of the army or Com Z. Supplies, parts and accessories for motor vehicles. The battalion can serve 4,000 vehicles. 18 motorcycles; 5 trucks, ½-ton, comd; 21 trks, ½-ton, pick-up; 8 trks, 2½-ton wrecker; 16 trks, 4-ton, wrecker, 86 trks, 2½-ton, cargo.
QM Co (L Maint)	10–27	4	185	1 per type corps. 3 per type air force. 4 per QM Bn (L Maint), 1 per QM regt, infantry division (square). Performs third echelon motor maintenance. 4 tricycles; 1 truck, ½-ton, comd; 5 trucks, ½-ton, pick-up; 2 trucks, 2½-ton, wrecker; 4 trucks, 4-ton, wrecker; and 21 trucks, 2½-ton, cargo.
QM Co (Car)	10–87	4	133	1 per type army. Furnishes passenger car transportation and motorcycle messengers for the headquarters served. 29 mtcls; 24 cars, pass; 29 trks, ½-ton, comd; 5 trks, ½-ton, pick-up; 6 Trks, 1½-ton.
QM Regt (Hv Maint)	10–41	61	3,141	Com Z units. Hq & Hq Det, 3 QM Bns (Hv Maint) with 3 QM Cos (Hv Maint) and 1 Depot Co, each. Operates unit repair, overhaul, reconstruction, and salvage shops for motor vehicles and motor transport supply depots. Each company and battalion is capable of operating alone. They can operate in the field without properly equipped shops but only at considerably reduced efficiency.
QM Co (Serv)	10–67	3	224	2 per type corps. Labor pool. Hq & 2 Plats. 160 men available for labor. Capacity 800 tons per day.

QUARTERMASTER UNITS: (Continued)

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
QM Co (Gas Sup)	10–77	2	117	1 per type corps. Co H & Trk Plat. Distributes gas & oil and operates corps, army, or GHQ filling station. Capacity: 15,700 gallons gas & 300 gallons oil in 10 gallon cans.
QM Bn (Gas Sup)	10–75	10	480	1 per type army. Hq & Hq Det, 4 QM Cos (Gas Supply). Capacity: 62,800 gallons of gasoline and 1,200 gallons of oil, transported in 10-gallon cans. 9 mtcls; 9 trks, ½-ton, comd; 5 trks, ½-ton, pick-up; 105 trks, 2½-ton, cargo.
QM Co (Dep-MT)	10–48	4	300	Assigned as needed. Storage and issue of motor transport supplies for first, second and third echelon maintenance of 3,000 vehicles. Tear-down and disposition of evacuated vehicles.
QM Sq (Rmt)	10–95	28	718	A GHQ unit. Hq & Hq Det, 4 QM Trs (Rmt). Operates remount depots with a combined capacity of 1,600 animals. Each troop is capable of operating separately up to a 400 animal capacity. 6 mtcls; 13 trks, 1½-ton; 32 wagons, escort.
QM Co (Dep)	10–227	4	148	1 per type army. 2 per type air force. Furnishes enlisted specialists for technical supply operations of QM depots. Labor and transportation must be furnished from QM service units. Normal requirements for labor and transportation: 1 QM company (truck) and 1 QM company (service). 1 mtcl; 1 trk, ½-ton, pick-up; 3 trks, 2½-ton.
QM Bn (Bkry)	10–145	25	654	Normally established in the Com Z, but may be attached to army or corps. Bn Hq; 4 QM Cos (Bkry), each with 5–O and 158-EM. Supplies fresh bread. Capacity up to 96,000 men. Each company is capable of operating alone. Can be set up for operation within 3 to 4 hours and can furnish bread within 12 hours after being supplied. Has no transportation for movement. 6 mtcls; 1 trk, ½-ton, comd; 13 trks, 1½-ton, cargo.
QM Bn (Sterilization and bath)	10–175	31	663	A GHQ unit. Hq & Hq Det; 4 QM Cos (Sterilization & Bath). Conducts delousing, bathing and the issue of clean underwear. Operating capacity: 10,000 men per 10-hour day. Transportation requirements for movement: Bn, 48 trucks, 2½-ton. Co: 12 trucks, 2½-ton. Capable of separate operation to include sections. (4 sections per Co). 5 mtcls; 7 trks, ½-ton; 25 trks, 1½-ton, with trailers; 48 trailers, supply and sterilization and bath, 3–5 ton.
QM Bn (Ldry)	10–165	23	1,196	Normally established in Com Z. Hq & Hq Det; 4 QM Cos (Ldry), with 4 Plats each. Operating capacity up to 160,000 men per week. Capable of decentralized operation by platoons. Transportation for movement must be provided. 9 mtlcs; 6 trks, ½-ton; 21 trks, 1½-ton; 192 trailers, 5–9-ton, laundry.

QUARTERMASTER UNITS: (Continued)

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
QM Co (Graves Reg)	10-297	5	125	A GHQ unit. Supervises and handles all mortuary matters but does not furnish required labor or transportation to cemeteries. Labor for grave digging is furnished by service units. Operating capacity; 1 platoon per combat division; 1 company per corps of three divisions. 5 mtcls; 1 trk, 1½-ton; 4 trks, ½-ton, pick-up.
QM Co (Sales Com)	10-157	4	201	A GHQ unit. Co Hq and 3 Plats of 4 Secs each. Approximate capacity: 10,000 sales per day per section. Provides and distributes sales articles. Transportation must be provided for sales articles.
QM Co (Salv Coll)	10-187	4	201	A GHQ unit. Co Hq, 3 Plats of 2 sec each. Sections capable of independent operations. Collection, classification, and disposition of abandoned or waste material. Does not operate a repair plant. Operating capacity up to 75,000 men. Additional transportation required during active operations. 4 mtcls; 4 trks, 1½-ton, cargo; 1 trk, ½-ton, p/up.
QM Co (Refrigeration)	10-217	6	232	A Com Z unit. Operates cold storage and ice-making plant. Capacity: Meat storage — 2,500 tons. Ice-making — 200 tons. Plant is not mobile. Must be constructed unless local facilities are available. 1 mtcl; 2 trks, 1½-ton, cargo; 2 trks, ½-ton, pick-up.
QM Co (Rhd)	10-197	3	100	A Com Z and Combat Z unit. Co Hq; 2 Plats. Operates all supply functions at a Class I railhead. The company commander commands the railhead served. Capacity to handle the requirements of 2 divisions.
Embarkation Center Command		88	557	Furnishes overhead for administration, technical and supply functions of all services in connection with the reception, holding, supply and preparation of organizations for overseas movements. Does not operate ports. Requires labor, transportation, and hospitalization facilities.
Port Hq	10-260-1	68 2-WO	383	Furnishes overhead for administration, technical, and supply functions of all supply services in connection with the operation of ports of embarkation or debarkation. Necessary labor by civilians, QM service units, or port battalions must be provided in proportion to the amount of supplies handled.
QM Bn (Port)	10-265	19	870	Bn Hq & Hq Det, 4 QM Cos (Port). Provides skilled labor for loading or unloading of vessels at ports. Unloading capacity: 6,000 ship-tons per day. Other labor is required to handle cargo to and from the pier or transit sheds.
QM Co (Mobile Shoe & Textile Rep)	10-237	3	199	A GHQ unit. Capacity: Daily repair expectancies from 48,000 men.
Hq, QM Salv Dep	10-250	13	193	Provides overhead for quartermaster salvage depot.
Hq, MT Serv	10-500-1	26 3—WO		A GHQ unit. Transports supplies, including ammunition; moves troops by motor transport; 3d and 4th echelon maintenance of vehicles.

QUARTERMASTER UNITS: (Continued)

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Hq Co, MT Serv	10-500-2	3	131	A GHQ unit. Provides, administers, and maintains enlisted personnel, including operation of officers' mess for headquarters, motor transport service.
Utilities				Utility units for the operation of shoe repair shops, salvage plants, paint shops, carpenter shops, fire protection stations, baggage collecting depots, and other utilities are improvised as required.

33. SIGNAL UNITS.

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Sig Bn (Construction)	11-25	17	533	2 per type army. Hq & Hq Co, 2 Sig Cos (Construction). 16 trks, ½-ton; 18 trks, 1½-ton, cargo; 9 trks, 2½-ton, cargo; 32 trks, 1½-ton, telephone construction.
Sig Co Dep	11-107	15	127	1 per GHQ. 1 per type army. Not mobile. 1 trk, ½-ton, cmd & rcn; 3 trks, ½-ton; 2 trks, 1½-ton.
Sig Serv, GHQ	11-300-1 11-18 11-25 11-77 11-107	64 9 17 7 5	163 215 533 215 127	1 Hq, GHQ Sig Serv. 2 or more Opn Co. 1 or more Sig Bn, Cons. 1 or more Rad Int Co. 1 Sig Co, Dep. 1 Sig Photo Lab, GHQ Res. The number of units in the service will depend upon the organization of the Theater of Operations and its requirements for signal communication.
Sig Bn	11-15	23	553	1 per type corps. H & Hq Co, 1 Construction Company, 1 Operation Company. Transportation for construction and operating cos furnished by Hq Co.
Sig Co, Photo	11-37	17	146	1 per type army. 1 Co Hq & Supply, 1 Laboratory Unit, 3 Corps Assignment Units, 9 Division Assignment Units, 2 Identification Units, 2 General Assignment Units (news type, sound).
Sig Co, Pigeon	11-39	8	134	1 per type army. Hq Platoon and 3 Corps Platoons. Pigeons will be distributed to mobile lofts as required. Number computed on basis of 60 per mobile loft, plus 25 percent reserve. 24 mobile lofts, 1800 pigeons.
Sig Co, Radio Int	11-77	7	215	1 per type army. Hq Platoon of administrative section, supply and transportation section, and intercept section and 3 operating platoons each of a control section, an intercept section, and a position finding section.
Sig Co, Repair	11-127	6	172	1 per air force; 1 GHQ Reserve.

SIGNAL UNITS (Continued):

1	2	3	4	5
Unit	*T/O No.*	*O*	*EM*	*Remarks*
Hq Co, Army Sig Serv	11-200-1	16	64	1 per type army. Transport furnished from transportation pool at army headquarters.
Sig Serv GHQ Avn	11-217	6	136	1 Signal Co, Aviation, per GHQ Aviation and 1 per Air Force.
	11-227	11	283	2 Signal Co, Maint, Aviation, per Air Force.
	11-247	3	79	1 Signal Co, Air Wing, per Wing Hq.
	11-237	1	36	1 Signal Platoon, Air Base, per Air Base.
	11-297	4	59	1 Signal Section, Air Corps Depot, per air corps group, air depot.
	11-147	8	281	1 Signal Co, Operation, Aircraft Warning, per interceptor command.
	11-157	12	357	1 Signal Co, Aircraft Warning, per interceptor command.

34. AIR CORPS UNITS:

Unit	*T/O*	*O*	*EM*	*AP*	*Remarks*
Air Base Group	1-411	42	658	6 SE	1 per field air base and air force depot. May be reinforced by one or more Materiel Squadrons. Depot may also be reinforced by additional Air Base Groups. Provide personnel and equipment to reinforce permanent Air Bases when serving an Air Force; establish and operate Field Air Bases and Air Force Depots. Perform 2d echelon Air Corps maintenance. Contains: Hq & Hq Sqdn, Air Base Gp, 1 Air Base Sqdn, 1 Materiel Sqdn. Air Base Squadron is non-mobile; is detached if Group is ordered into the field.
Hq & Hq Sqdn, Air Base Group	1-412	23	225	O	Operates all transportation in the Group, including vehicles assigned to Materiel Squadron. Has three ½-ton trucks for instrument landing.
Air Base Squadron	1-417	7	118	3 SE	Contains administrative overhead required to supplement the Corps Area Service Command troops at each permanent air base. Non-mobile unit.
Materiel Squadron	1-413	12	315	3 SE	Operates 5 DP sections based on 1 Hdqrs Sq 1 Reconn Sq 3 Combat Sqda Each DP section consists of 1 officer 18 enlisted men.

Chapter 2
TROOP MOVEMENTS

SECTION I.	General	35-53
II.	Infantry Division (Square)	54-58
III.	Infantry Division (Triangular)	59-64
IV.	Cavalry Division (Horse)	65-66
V.	Armored Division and GHQ Tanks	67

SECTION I
GENERAL

■ 35. TROOP MOVEMENTS; INTRODUCTION.—*a. Basic road spaces.*—Troop movement data shown in basic tables of road spaces, rates and lengths of marches, and time-lengths of motor columns are averages from field experience.

b. Examples.—The examples of tables of road spaces, troop movements by motor transport, and movements by rail for various types of divisions are based on Tables of Organization strength and are included as guides for the preparation of similar tables for units in the field. Tables for field use must conform to the variations of strength of units and the amount of transportation and equipment available. Regiments, separate battalions, and similar units should maintain tables showing road space requirements of their units based on actual strength and materiel on hand. Reports of subordinate units form the basis for tables of large units. However, a table based on actual strength of men and material may be worthless without proper evaluation of the weather, road conditions, hostile air or mechanized threats, or other variable factors affecting the troop movement. These basic figures are capable of great increase or decrease under extremes of the variable factors.

■ 36. BASIC ROAD SPACES.—The following values apply in computing road spaces except when greater dispersion is desired to reduce the effect of unfavorable factors mentioned in par. 35 *b* above:

a. Foot troops, (at halt or marching): a

	Yards
In column of twos, per man	1.2
In columns of threes, per man	.8
In columns of fours, per man	.6

b. Animal elements, (at halt or marching): a

Cavalry:	*Yards*
In column of fours, per anl	1.0
In column of twos, per anl	2.0
Single file, per anl	4.0
For large units, columns of fours	1.5
For large units, columns of twos	3.0

FA,HD:

Per animal 3

c. Motor elements, (at halt) b c

Bicycle	4
Car, motor	7
Mecz rcn vehicles	10
Motorcycle (solo or w/s/c)	5
Truck: ½ to 3-ton incl	10
½ to 3-ton incl, with cargo tlr, or weapon in tow	14
Over 3-ton	13
Over 3-ton, with cargo tlr or weapon in tow	20

Tractor:

L or M 5

Tank:

L or M 8

Other mechanized vehicles:

including personnel carrier, combat car, and mortar carrier 10

Average per vehicle for a mixed column of various types 10

NOTES

a For time length of foot and animal elements in column see par. 37.
b For road spaces for motor elements at various speeds see pars. 48 and 49.
c For time length of motor columns at various speeds see pars. 48 and 50.

d. Uses of tables:

(1) A battalion of infantry with 800 men marching in column of threes: 800 x .8 (see *a.* above) = 640 yards road space.

(2) A regiment of cavalry with 1,200 animals in column of fours: 1,200 x 1.5 (see *b.* above) = 1,800 yards road space.

(3) A battalion of field artillery, horse drawn, containing 400 animals: 400 x 3 (see *b.* above) = 1,200 yards road space.

(4) A mixed motor column consisting of:

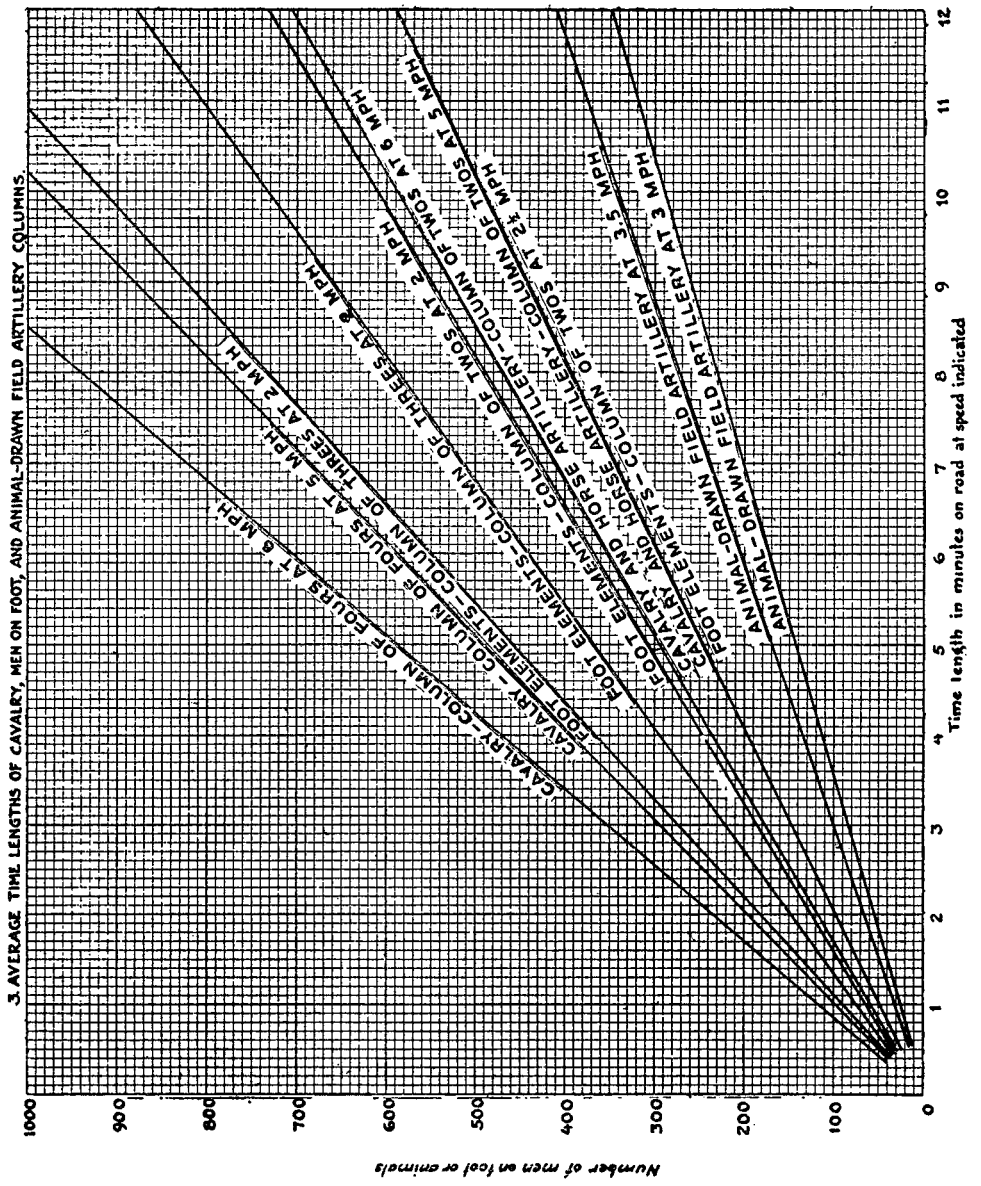
20 motorcycles @ 5 yards each (see *c* above)	100 yards
30 mecz rcn vehicles @ 10 yards each	300 yards
100 trucks (1½-ton) @ 10 yards each	1,000 yards
50 trucks (2½-ton) with trailers @ 14 yards each	700 yards
40 tanks (M) @ 8 yards each	320 yards
Total road space (at halt)	2,420 yards

Alternate solution: (see *c* above)

240 vehicles (mixed) @ 10 yards each	2,400 yards

■ 37. AVERAGE TIME LENGTHS OF CAVALRY, MEN ON FOOT, AND ANIMAL-DRAWN FIELD ARTILLERY COLUMNS.

Figure 4



NOTES

This chart applies to columns of foot and animal elements.
This chart gives average time-length. Actual time-length may vary considerably, depending on conditions.
To use chart:
Determine the number of men on foot or animals in the column.
Locate this figure in vertical scale on left of chart.
Follow horizontal line to right to intersection with diagonal line indicating the proper foot or animal column and rate of travel.
From this intersection follow vertical line down to horizontal scale.
Read on horizontal scale average time-length of the column.

■ 38. RATES AND LENGTHS OF MARCHES; FOOT, ANIMAL, AND MOTOR ELEMENTS.① —*a.* The following rates and lengths of marches are based upon modern vehicles, trained personnel, and favorable conditions of roads and weather:

	1	2	3	4	5	6 ②	7
		Average rates of march (mph) ④				*Lengths of March (average)*	
1	*Unit*	*On roads*		*Across country*		*On roads (miles per day)*	*Remarks*
		Day	*Night*	*Day*	*Night*		
	INFANTRY ⑤						
2	Foot trs	2½	2	1½	1	12–15 for a division 15–20 for smaller units	Length of march increased with well seasoned trs marching on good roads in favorable weather when required by the tactical situation. ②
	ARTILLERY ③						
3	Horse-drawn	3½	3	3	2	20	
4	Pack (less motor elements)	3½	3	3	2	20	
5	Trk-d, L & AA	25	25 (lights) 10 (no lights)	8	5	175	
6	Trk-d, M, how	20	20 (lights) 10 (no lights)	8	5	140	
7	Trk-d, Hv	15	15 (lights) 10 (no lights)	8	5	100	
8	Trac-d, Hv	5	5	3	2	40	
	CAVALRY						
9	Anl elements	6	5	5	4	35	Under conditions requiring maneuver, these rates may be increased.
10	Cars, armored or scout	35	35 (lights) 10 (no lights)	10	5	200	

			ARMORED				
11	Tks, L & M (units under own power)	25	25 (lights) 10 (no lights)	15	5	150	Convertible medium tanks move off hard-surfaced roads on tracks only.
			MISCELLANEOUS				
12	Anl-d tns	3½	3	1½	1	20	
13	Trks, ambs, mtz units (except M & Hv arty)	25	25 (lights) 10 (no lights)	8	5	175	
14	Cars, passenger	35	35 (lights) 10 (no lights)	8	5	250	

NOTES

① The rate of march of a column composed of elements with different rates of march is regulated by that of the slowest element.
② Greater distances than those given in column 6 may be covered under forced march conditions. (See paragraph 39.)
③ Horse artillery marches at the rates of horse cavalry (line 9).
④ Rates shown apply primarily to movement in close column, and may be increased for small commands under favorable conditions, or for movement in open column.
⑤ For movement over mountainous terrain, an additional allowance of 1 hour should be made for each 1,000 feet of climb.

b. Marches in snow and extreme cold.—(1) Foot troops marching in snow without snowshoes or skis will have their mobility decreased. The decrease of mobility will depend on several factors, among which are depth and nature of the snow. Normally, snow of a depth of 24 inches or more will prohibit marching unless skis or snowshoes are used.

For especially equipped and adequately trained troops, the following rates of march are practicable:

Snowshoes ---------- 1½ to 2½ miles per hours
Skis ---------- 1½ to 3½ miles per hour

Under favorable conditions the foregoing may be materially increased. Small bodies of well trained troops are capable of moving on skis 40 miles a day, under favorable conditions.

(2) *Dog teams.*—Average dog teams of 7 dogs and hauling a 500-pound load are capable of moving 5 to 7 miles per hour for 6 to 7 hours daily; an average day's march being approximately 30 miles.

(3) *Motor movement (wheel) in snow:*

Depth of snow (inches)	Measures required for movement
3	None
6	Rear chains
6-18	Chains all-around; and special tractor devices on leading vehicle (to break the trail)
18 and over	Snow plow required

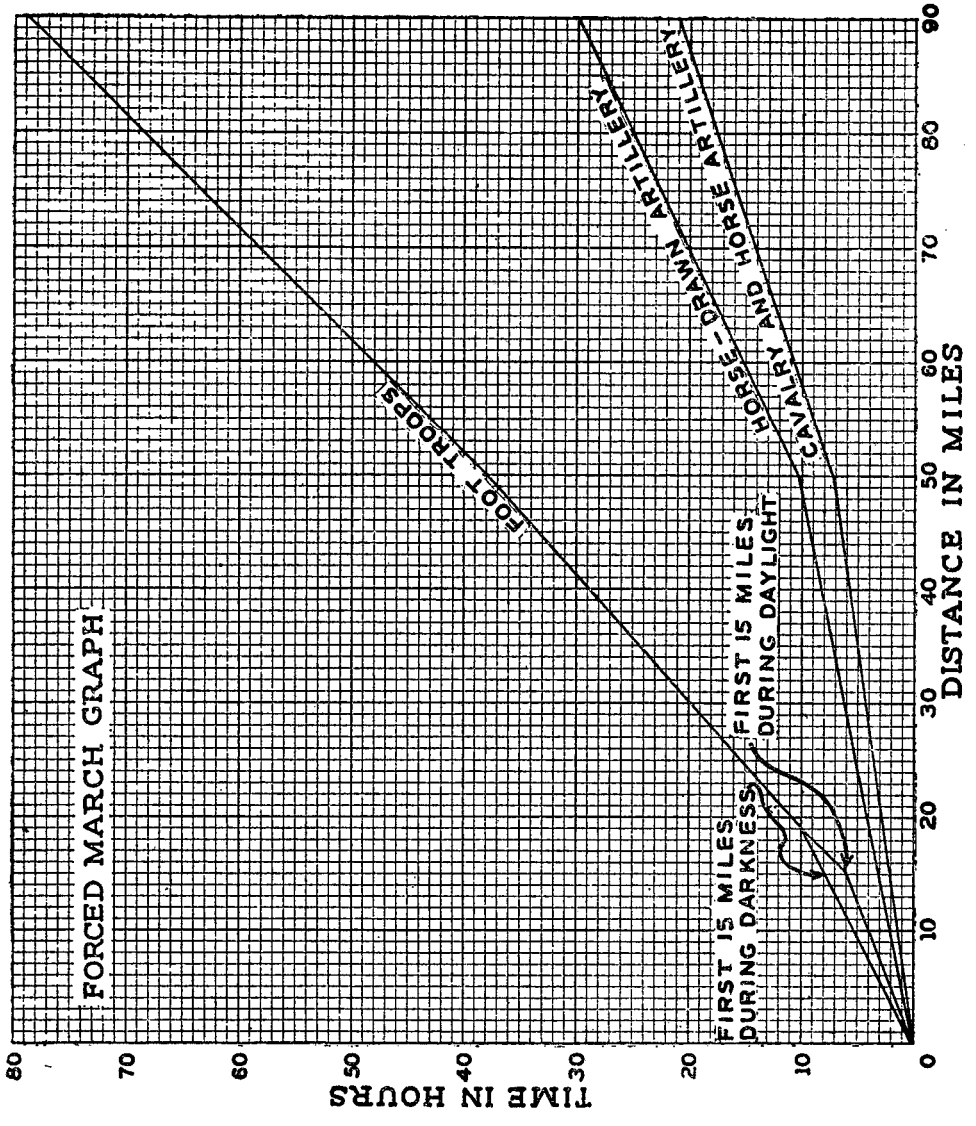
39. FORCED MARCHES; FOOT AND ANIMAL ELEMENTS.—*a.* Seasoned troops and animals when well rested at the beginning of the march, with good weather and good roads, are capable of reaching their destination physically fit to engage in combat after making forced marches as indicated on the following graph:

b. Examples of use of graph.—Assume it is desired to start a column of foot troops at daylight and accomplish a march of 33 miles. The graph shows that this distance will require a minimum elapsed time of 22½ hours. Such a march might be divided as follows:

First stage, 18 miles. (The time required for this stage is taken from the graph as 9 hours, this time being adjusted for somewhat increased short rest periods and for possible diminution in march rates during the latter part of the march.)	9 hours
A long rest halt of	6 hours
Second stage, 15 miles. (This is a normal stage and is calculated at normal march rates for the existing conditions of light or darkness. In this case it would be a night march.)	7½ hours
Total time required	22½ hours

If, for example, a long rest halt of 8 hours is to be taken, the time required for the march would have been 24½ hours.

Figure 5


FORCED MARCH GRAPH
TIME IN HOURS
DISTANCE IN MILES
FOOT TROOPS
HORSE-DRAWN ARTILLERY
HORSE AND HORSE ARTILLERY
CAVALRY
FIRST 15 MILES DURING DARKNESS
FIRST 15 MILES DURING DAYLIGHT
0
10
20
30
40
50
60
70
80
90

■ 40. MOVEMENT BY RAIL; BASIC DATA.—*a. Speed of railway trains.*—The average speed of military railway trains is approximately 20 miles per hour.

b. Time of loading and unloading.—Allow 3 hours for loading or unloading standard type troop trains and other trains carrying artillery, motorized units, and cavalry units. When only foot elements of a unit move by rail and other elements of the unit move overland, allow one-half hour for loading and one-half hour for unloading.

c. Train densities.—Train densities on single and multiple track railroads will vary greatly depending on the condition of track, number of passing sidings, terminal facilities, available rolling stock, and the like. At the average speed of 20 miles per hour, maximum train densities may be estimated as follows:

One track with two-way traffic __ 20 trains per 24 hours in each direction
One track with one-way traffic _____ 60 trains per 24 hours
Two tracks with two-way traffic ___ 60 trains per 24 hours in each direction
Two tracks with one-way traffic _____ 120 trains per 24 hours
Three tracks with two-way traffic __ 80 trains per 24 hours in each direction
Three tracks with one-way traffic _____ 180 trains per 24 hours
Four tracks with two-way traffic __120 trains per 24 hours in each direction
Four tracks with one-way traffic ___ _____ _____240 trains per 24 hours

d. Railroad officials should be consulted for accurate information as to train densities and speeds of trains possible for a rail movement.

■ 41. TYPES AND COMPOSITION OF RAILWAY TRAINS.—*a.* Composition of railway trains, *grouped for planning purposes*, used for troop movements in the combat zone is as follows:

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Type of Train	*Composition* ①						*Total Number of Cars*
	Pullman	*Coach*	*Box* ② ⑤	*Flat*	*Stock*	*Caboose* ③	
A	1	11	4	18		(1)	34
B	1	6	4	23		(1)	34
C	6	22	6			(1)	34
D④	1	5	2	26		(1)	34
E	1	5	3		25	(1)	34

NOTES

① The above table contemplates the use of standard railroad equipment. Standard trains of specially constructed light equipment may also be prescribed in the theater of operations.
② Includes one combination kitchen-supply car per company.
③ For train crew, not required when coaches are used.
④ For movement of armored units when wheel vehicles and certain personnel, march separately. Personnel with this type train includes 2 men per vehicle.
⑤ Baggage cars may be used.

b. In the zone of the interior, standard passenger coaches or sleepers will generally be used for transporting personnel (paragraph 42).

■ 42. *a.*—PASSENGER CAPACITY TABLE FOR STANDARD U. S. COACHES:

1	2	3	4
Item	*Day coach* ①	*Tourist sleeper*	*Standard sleeper* ②
Length in feet	65 to 75	65 to 75	65 to 80
Number of sections	None	13 to 16	12 to 16
Maximum seating, 2 men to each double seat ③	60 to 70	52 to 64	53 to 64
Maximum seating, 3 men to each 2 double seats ③	45 to 48	39 to 48	40 to 48
Maximum sleeping, 2 men per berth	None	52 to 64	53 to 64
Sleeping capacity, 3 men per section	None	39 to 48	40 to 48
Sleeping capacity, 1 man per berth	None	26 to 32	27 to 32

NOTES

① Limited number steel coaches, 70 feet long or over, available.
② Standard sleeper — 12 sections and drawing room or 16 sections and no drawing room.
③ Double seat — a seat having the capacity of 2 men.

b. DIMENSIONS AND CAPACITIES OF CARS:

1	2	3	4	5	6	7	8	9
Type of car	*Capacity*				*Weight empty in tons*	*Dimensions in feet (inside)*		
	Tons	*Men (8 sq ft per man & equip)*	*Animals L-draft at 22" average width*	*Cubic feet*		*Length*	*Width*	*Height*
Military:								
Box	20	40	13		12	24.2	8	8.8
Flat and gondola	20				10	24.4	8	3.3
Tank		5,000 g	allons		14	22.1	6.4 d	iameter
Caboose					13	20.6	8	7.0
Typical commercial: ①								
Box	30	38	20	2,750	13	36	8.5	9
	40	43	22	3,100	20	40.5	8.5	9
	50	43	22	3,100	24	40.5	8.5	9
Flat	40				18	40.0	9.0	
	50				20	45	9.0	
	70				25	50	9.0	
Stock	30		20	2,625	20	36	8.5	8.5
	40		20	2,625	22	36	8.5	8.5
Gondola	50			1,570	22	40	9.9	4
	70			1,920	25	48	10.0	4
Automobile	40	45	22	3,100	20	40.5	8.5	9
	50	53	27	3,850	25	50.5	8.5	9
Tank	40	8,000 g	allons		20	33	6.6 d	iameter
	50	10,000 g	allons		24	33	7.2 d	iameter
Refrigerator	30	②		2,570	28	40.5	8.2	7.2
	40	③		2,570	30	40.5	8.2	7.5
Baggage					45	60	9.1	8
Caboose					20	27.5	8.2	7
Diner					90	78.5	8.5	8.5

NOTES

① There are no standard dimensions of commercial cars. The figures given are for some types in common use. (The 40-ton stock car comes in 32 lengths varying from 35' 7" to 41' 10". All types have similar variations in capacity and all dimensions.)
② Ice capacity, 4 tons.
③ Ice capacity, 5 tons.

■ 43. MAXIMUM BULK LOADING FOR FREIGHT CARS; STANDARD GAUGE RAILWAY:

1	*2*	*3*	*4*	*1*	*2*	*3*	*4*
Rated capacity of cars in tons	*30*	*40*	*50*	*Rated capacity of cars in tons*	*30*	*40*	*50*
Items	*Actual capacity of cars in tons*			*Items*	*Actual capacity of cars in tons*		
Ammunition	30	40	50	Motor vehicle parts	24	28	40
Barbed wire	30	40	50	Oats	18	24	30
Blankets, baled	27	32	40	Rails	30	40	50
Bread	19	24	30	Rifles, in chests	30	40	50
Canned goods, boxes	30	36	45	Sand	30	40	50
Cement	30	40	50	Sandbags	21	24	30
Clothing, baled	27	32	40	Stone, any form	30	40	50
Flour	30	40	50	Sugar	30	40	50
Gravel	30	40	50	Telephone wire	30	40	50
Harness and saddlery	18	20	30	Tentage	15	20	30
Hay, baled	15	20	25	Ties, railroad	19	26	32
Iron, corrugated	30	40	50	Tools, engineer	30	40	50
Meat	15	24	35	Tools, truck	30	40	50

NOTES

A rated capacity of a car in tons does not mean that this rated tonnage of all articles can be carried. This table shows the tonnage of military freight which can be carried in freight cars of common rated capacities.

■ 44. RAILWAY CAR SPACE REQUIREMENTS:

The following space requirements are used as a basis for computing car requirements for movements by rail.

The figures shown give the car space requirements of items of equipment and transport. The length of flat cars is assumed to be 40 feet.

	Inches of car space required
⅛ FLAT CAR:	
Motorcycle with side car	94
Tricycle, motor	97
¼ FLAT CAR:	
Tractor, light	108
⅓ FLAT CAR:	
Caisson and limber, 75-mm gun or howitzer	160
Cart and reel, artillery, 6-horse	160
Gun, 37-mm, A.T.	160
Gun, 75-mm, with or without limber	160
Trailer, 2-wheel, 1-Ton Cargo	136
Tractor, medium	134
Trailer, water, 250-gallon	128
Wagon, mountain, 4-horse	146

	Inches of car space required
½ FLAT CAR:	
Ambulance, field, motor	225
Car, light, passenger	188
Car, medium, passenger	208
Car, scout	201
Carrier, 81-mm, half-track	192
Compressor, air, motorized, 1½-ton	225
Reel, battery, 4-horse	198
Gun, 37-mm, A.A.	183
Gun, 75-mm, A.T.	239
Howitzer, 105-mm	236
Locator, sound, trailer, mounted	210
Tank, light	175
Tank, medium	216
Tractor, heavy, 10-ton, artillery	191
Trailer, command post, 2-wheel	240
Trailer, cargo, 4-wheel	204
Truck, artillery repair	190
Truck, automotive repair	240
Truck, communications, 1½-ton	234
Truck, cargo, 1½-ton	234
Truck, dump, 1½-ton	234
Truck, ½-ton, command	190
Truck, emergency repair	190
Truck, kitchen, 1½-ton	234
Truck, machine shop	240
Truck, panel delivery	234
Truck, pick-up, ½-ton	191
Truck, pick-up, 1½-ton	234
Truck, reconnaissance, 8-passenger	195
Truck, reconnaissance, 12-passenger	224
Truck, small-arms repair	240
Truck, spare parts	240
Truck, tank, 500-gallon	240
Truck, tool and bench	240
Truck, welding	240
⅔ FLAT CAR:	
Grader, road, motorized, 7½-ton	302
Gun, 3-in, AA or 90-mm	258
Gun, 155-mm	417
Howitzer, 155-mm	257
Howitzer, 240-mm (for each of the four loads)	320
Searchlight, 60-inch, mobile	263
Shovel, gasoline, motorized 7½-ton	270
Shovel, gasoline, motorized, 15-ton	304
Truck, 1½-ton, 15-foot special body	260
Truck, cargo, 2½-ton	257
Truck, 4-ton, cargo	244
Truck, 5-ton, cargo-dump	275
Truck, 5-ton, wrecking	344
Truck, 7½-ton, prime mover	284
Truck, 10-ton, wrecker	290
Water purification unit	258

■ 45. THE FOLLOWING RULES GOVERN THE LOADING OF MECHANIZED AND MOTORIZED ARMY EQUIPMENT ON OPEN TOP CARS.—Conforms to requirements of the Association of American Railroads.

PREFACE

These rules have been formulated for the purpose of providing uniform and safe methods of loading equipment pertaining to the mechanized and

motorized units of the United States Armed Forces on open top cars, and the materials specified under the various figures are minimum requirements.

The loading of units for which no definite figure has been provided, should conform as nearly as possible to the best example that can be derived from the figures shown.

In the loading, the hazards connected with high speed, multiple track railroads, tunnels, electrical conductors and the necessity of protecting human life and property should be borne in mind, and every effort made to properly and safely secure all loading before offering it to the railroads for movement.

a. General Rules.—(1) *Selection and Preparation of Car.*—Cars must be inpected to see that they are suitable to carry loads safely to destination. Cars should have good sound floors, and all loose nails or other projections not an integral part of the car , should be removed. Nails, bolts, etc., necessary in car construction, when loose, should be made tight rather than removed.

(2) *Brake Wheel Clearance.*—See Figure 6. Note minimum clearances.

(3) *Maximum Load Weights.*—In determining the maximum weight of load, the following shall govern, except where load weight limit has been reduced by the car owner.

Marked capacity of car	*Total weight of car and load*	*Load weight*
40,000 pounds	66,000 pounds	66,000 pounds, less light weight of car
60,000 pounds	103,000 pounds	103,000 pounds, less light weight of car
80,000 pounds	136,000 pounds	136,000 pounds, less light weight of car
100,000 pounds	169,000 pounds	169,000 pounds, less light weight of car
140,000 pounds	210,000 pounds	210,000 pounds, less light weitgh of car
200,000 pounds	251,000 pounds	251,000 pounds, less light weight of car

EXAMPLE

Capacity of car	100,000 pounds
Total weight of car and load	169,000 pounds
Light weight of car (to be subtracted)	37,000 pounds
Permissible weight of load	132,000 pounds

Load must be placed on the car so that there will not be more weight on one side of the car than on the other. One truck of the carrying car must not carry more than one-half of the load weight.

(4) *Idler Cars—to be used as follows:*

(a) When load projected beyond end sill of carrying car.

(b) When idler car is used, 4 in. clearance must be maintained below overhang portion of load and any part of idler car.

(c) When idler car is used, space on the idler may be utilized for loading provided, the ends of such material are located not less than 2 ft. from ends of overhanging portions.

(5) *Clearing Limits.*—The height and width of load must be within the clearance limits of the railroads over which it is to be moved. Army and Railroad officials must check on clearances prior to each move.

(6) *Stakes, Braces, Blocks, Cleats, Wedges.*—Such items must be of hardwood, fir, spruce, or long leaf yellow pine, straight grained and free from impairing knots.

(7) *Wire.*—Wire used for securing loads should be No. 8 Ga. black annealed wire.

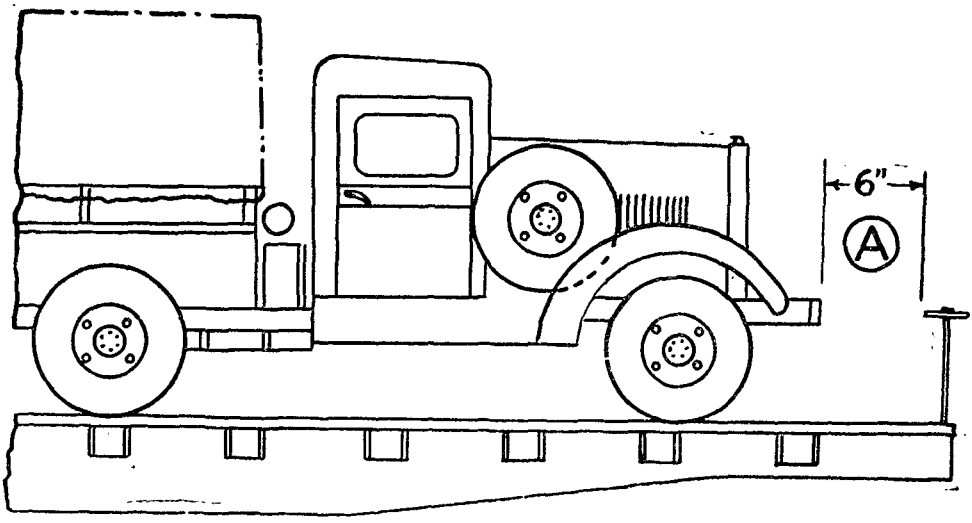
(8) *Nails.*—The following sizes of nails are specified throughout the various figures:

20-d (4 inches.)
40-d (5 inches.)

(9) *Fuel in Tanks of Individual Units.*—Paragraph 105, Interstate Commerce Commission Regulations. "Automobiles, motorcycles, tractors, or other self propelled vehicles, equipped with acetylene gas cylinders or gasoline or other fuel tanks are exempt from specification packaging and labeling requirements providing such cylinders and tanks are securely closed. When offered for transportation by carriers by rail or highway, drainage of fuel tanks is not required. When offered for transportation by rail express, fuel tanks must have been drained and securely closed."

(10) *Brakes on Individual Units.*—All pieces of equipment which are provided with brakes, must have the brakes applied before moving over the railroads.

Figure 6



BRAKE WHEEL CLEARANCE

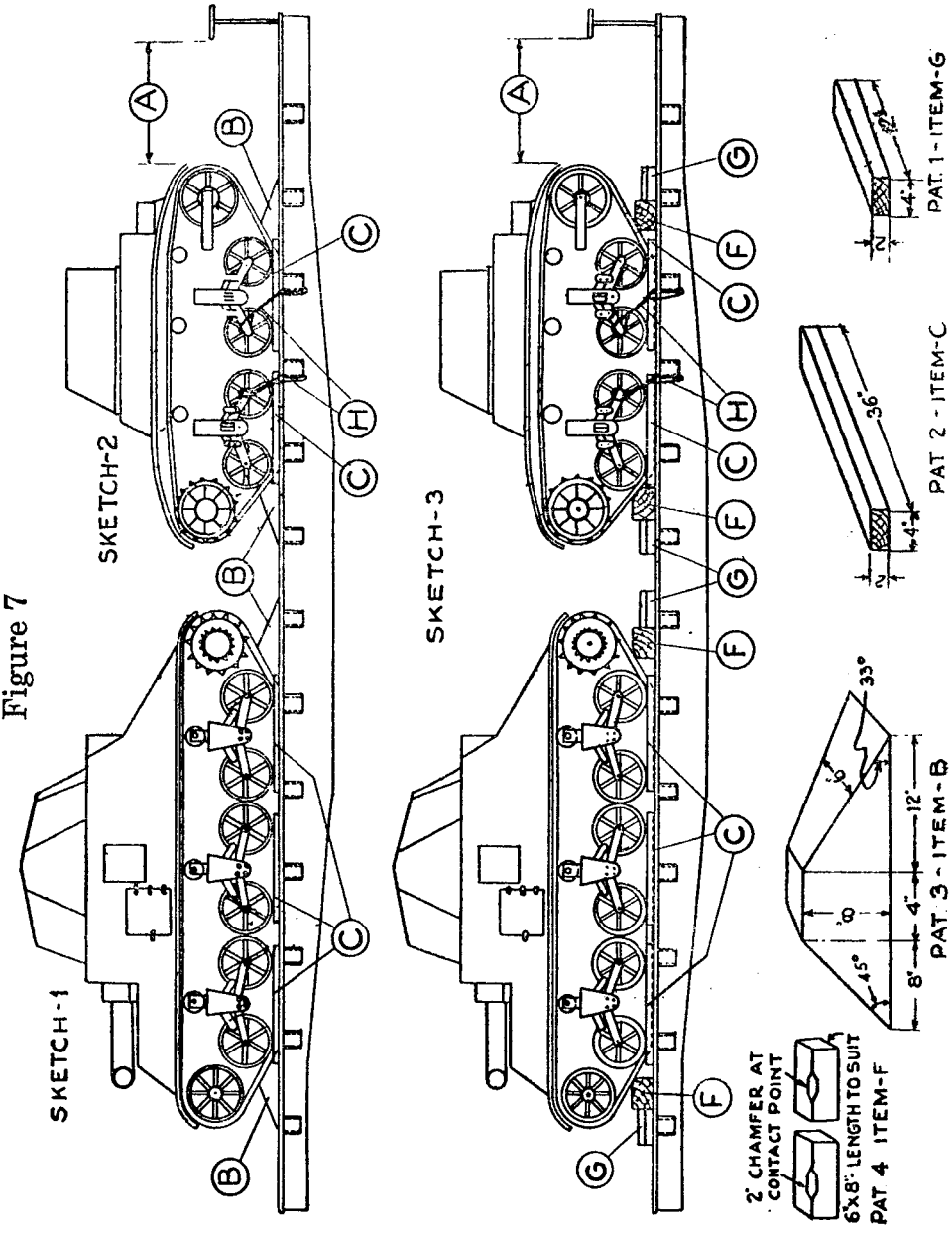
Item	*Description*
A	6 in. clearance in back, on both sides of, and above brake wheel. Brake wheel clearance should be increased as much as consistent with proper location of load.

(11) *Minimum Requirements for Securing Light and Medium Tanks.* —Flat, or Drop End Gondola Cars. See Fig. 7.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	4	6 in. x 8 in. x 24 in. blocks, (pattern 3), cut to fit contour of crawler tread. Nail heel of block to car floor with five 40-D nails and toe-nail that portion under crawler tread to car floor with two 40-D nails. Not required when Items "F" and "G" are used.
C	4 for light tanks. 6 for medium tanks.	2 in. x 4 in. x 36 in. cleats, (pattern 2). May be applied inside or outside of crawler tread. Medium tanks, oak stays aprox. 3' long should be placed in the cleats on the side of flat cars and the 2 x 4 placed on edge and nailed down inside of upright. Nail each to car floor with three 40-D nails.
D		VACANT.
E		VACANT.
F	2	6 in. x 8 in. timbers, (pattern 4), length not less than overall width of vehicle at car floor, chamfered 2 in. at point of contact with crawler tread. Apply as shown in sketch 3 and secure to prevent displacement. Not required when Items "B" are used.
G	8	2 in. x 4 in. x 12 in. cleats, (pattern 1). Locate against Items "F", lengthwise of car, at center of crawler tread. Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. Not required when Items "B" are used.
H	1 each inside bogie wheel. (Required for light tanks only)	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Secure around axle of each inside bogie wheel and to nearest stake pocket, tightening only enough to remove slack. Not required when loaded in gondola cars.

Brakes must be applied.
See General Rules for further details.

Figure 7


SKETCH-1
SKETCH-2
SKETCH-3
A
B
C
F
G
H
2" CHAMFER AT CONTACT POINT
6"x8" LENGTH TO SUIT
PAT 4 ITEM-F
33°
45°
8'
4'
12'
PAT. 3 - ITEM-B
36"
4½"
PAT 2 - ITEM-C
PAT. 1 - ITEM-G

(12) *Minimum Requirements for Securing Half Tracks.*—Flat, or Drop End Gondola Cars. See Fig. 8.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	4	6 in. x 8 in. x 24 in. blocks, (pattern 3), cut to fit contour of crawler tread. Nail heel of block to car floor with five 40-D nails and toe-nail that portion under crawler tread to car floor wiith two 40-D nails. Not required when Items "F" and "G" are used.
C	2	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail to car floor with three 40-D nails.
D	4	6 in. x 8 in. x 24 in. blocks, (pattern 3). Height at point of contact with tire must be not less than 4 in. from car ffoor. Locate in front and rear of wheels. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "E" are applied. Not required when Items "F" and "G" are used.
E	4 with Items "D" 2 with Items "F"	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. May be nailed to top of Items "F", if used, in which case only one is required at each location.
F	4	6 in. x 8 in. timbers, (pattern 4), length not less than overall width of vehicle at car floor, chamfered 2 in. at point of contact with tires and crawler treads. Apply as shown in sketch 2 and secure to prevent displacement. Not required when Items "B" and "D" are used.
G	16	2 in. x 4 in. x 12 in. cleats, (pattern 1. Locate against Items "F", lengthwise of car, at center line of tire or crawler tread. Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. Not required when Items "B" and "D" are used.
H	4	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Pass front wires through spokes, or holes in disc wheels and through stake pockets. Pass rear wires between equalizer and gudeon (above springs) and attach to nearest stake pocket. Tighten all wires only enough to remove slack. Not required when loaded in gondola cars.

Brakes must be applied.
See General Rules for further details.

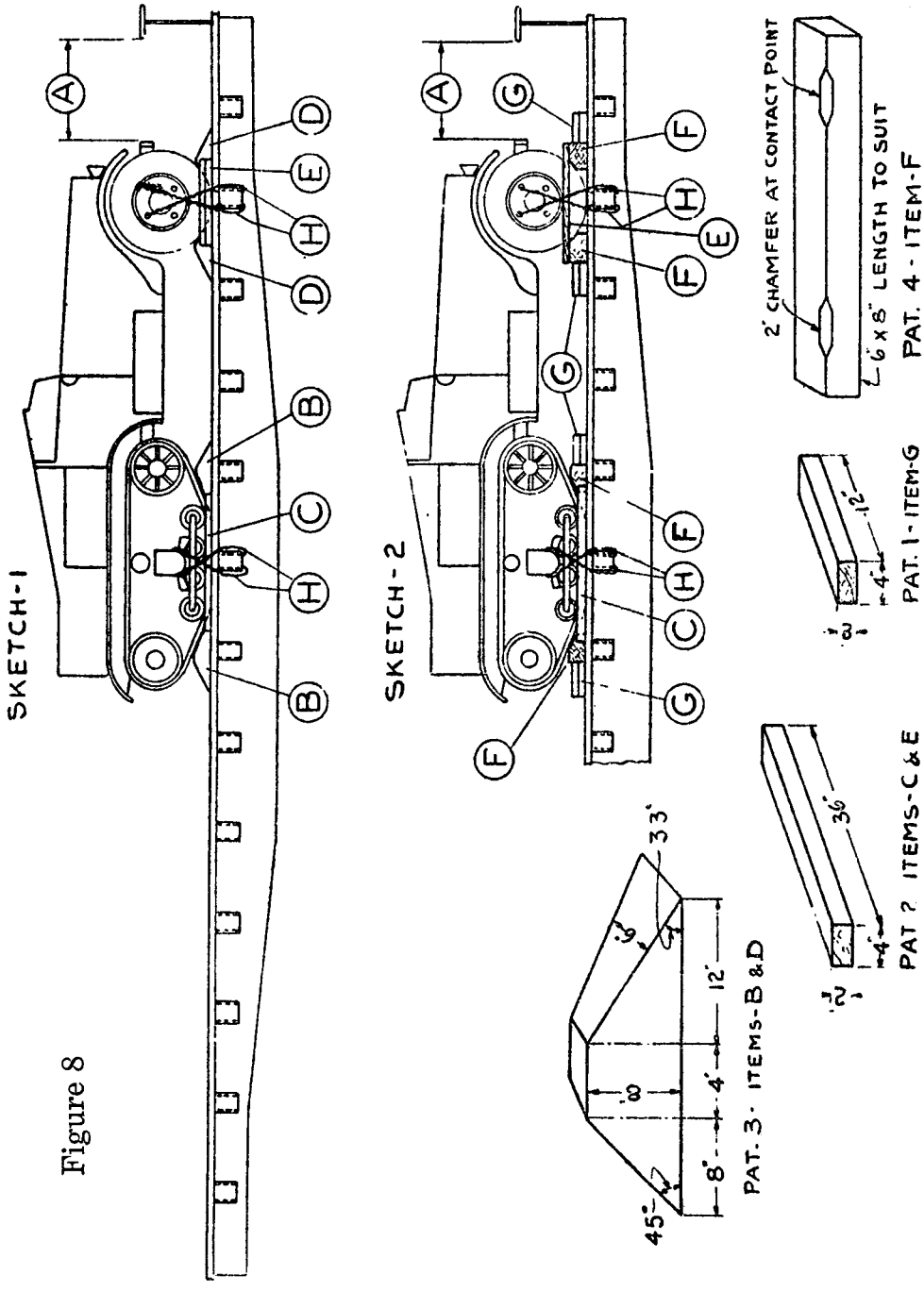

SKETCH-1
SKETCH-2
PAT. 3 - ITEMS-B & D
PAT 2 ITEMS-C & E
PAT. 1 - ITEM-G
PAT. 4 - ITEM-F
2" CHAMFER AT CONTACT POINT
6 x 8" LENGTH TO SUIT

Figure 8

(13) *Minimum Requirements for Securing Four Wheel Trucks and Passenger Cars, (Single or Dual Wheels).*—Flat, or Drop End Gondola Cars. See Fig. 9.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B		VACANT.
C		VACANT.
D	8	6 in. x 8 in. x 24 in. blocks, (pattern 3). Height at point of contact with tire must be not less than 4 in. from car floor. Locate in front and rear of outside wheels. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "E" are applied. Not required when Items "F" and "G" are used.
E	8 with Items "D" 4 with Items "F"	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. May be nailed to top of Items "F", if used, in which case only one is required at each location.
F	4	6 in. x 8 in. timbers, (pattern 4), length not less than overall width of vehicle at car floor, chamfered 2 in. at point of contact with tires. Apply as shown in sketch 2 and secure to prevent displacement. Not required when Items "D" are used.
G	16	2 in. x 4 in. x 12 in. cleats, (pattern 1). Locate against Items "F", lengthwise of car, at center line of tire. Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. Not required when Items "D" are used.
H	4	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Pass through spokes, or holes in disc wheels and through stake pockets, tightening only enough to remove slack. Not required when loaded in gondola cars.
J	4 Required for passenger cars only	2 in. x 4 in. x 36 in. cleats, (pattern 2), nailed to floor, lengthwise of car, with six 40 -D nails.
K	4 Required for passenger cars only	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Pass underneath Items "J", and over top of bumper spring. After passenger car springs have been compressed as much as possible, bring both ends of wire together and twist tie with rod or bolt. See sketch 3.

Brakes must be applied.
See General Rules for further details.

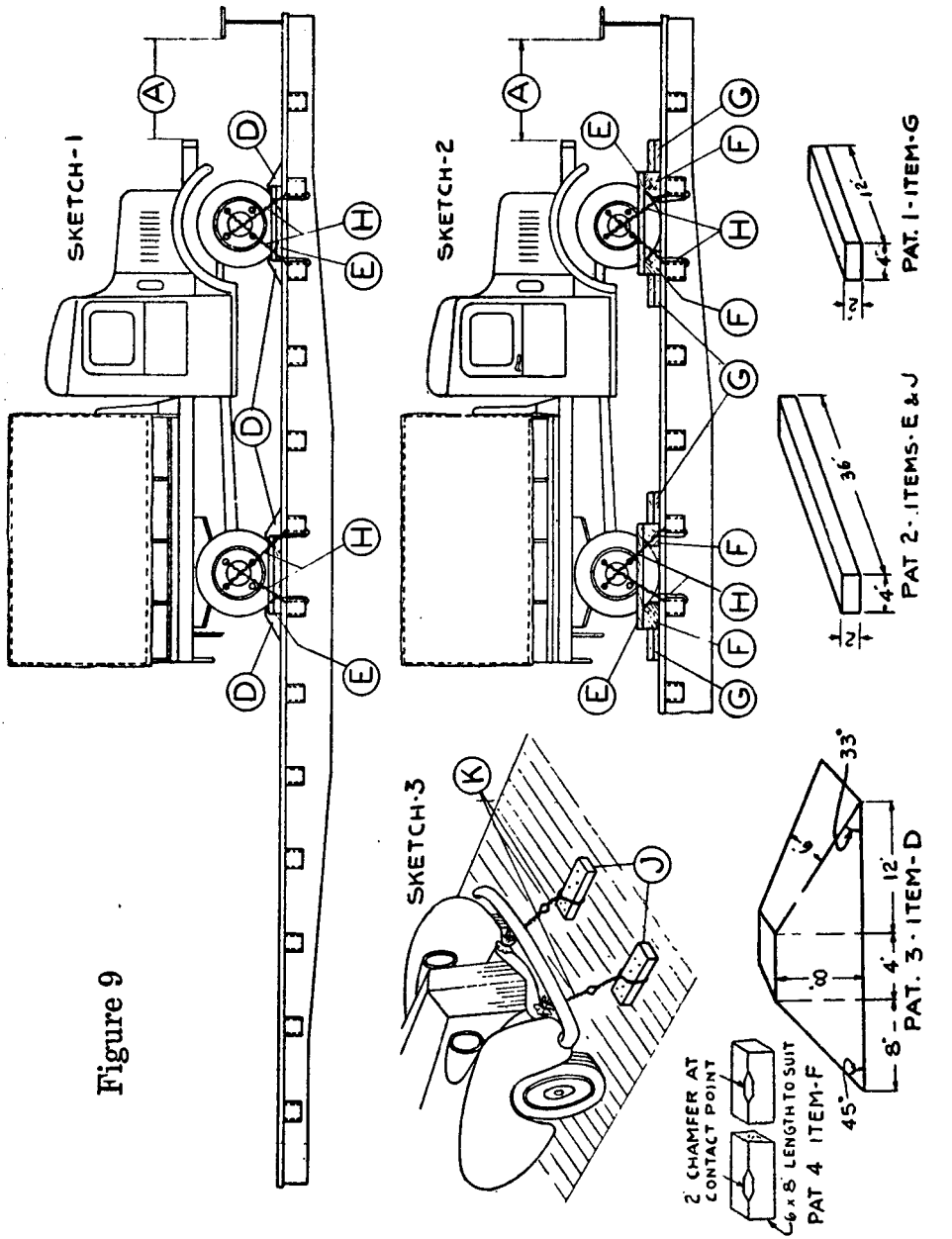

SKETCH-1
SKETCH-2
SKETCH-3
PAT. 1 - ITEM-G
PAT 2 - ITEMS-E & J
PAT. 3 - ITEM-D
PAT 4 ITEM-F
2" CHAMFER AT CONTACT POINT
6 x 8 LENGTH TO SUIT
33°
45°

Figure 9

(14) *Minimum Requirements for Securing Six Wheel Trucks (Single or Dual Wheels).*—Flat, or Drop End Gondola Cars. See Fig. 10.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B		VACANT.
C		VACANT.
D	8	6 in. x 8 in. x 24 in. block, (pattern 3). Height at point of contact with tire must be not less than 4 in. from car floor. Locate in front and rear of front wheels, in front of outside intermediate wheels and in back of outside rear wheels. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "E" are applied. Not required when Items "F" and "G" are used.
E	4 for front wheels. 8 for rear wheels.	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. They may, if of sufficient length, be nailed to top of Items "F", when used, in which case only one is required at each location.
F	4	6 in. x 8 in. timbers, (pattern 4), length not less than overall width of vehicle at car floor, chamfered 2 in. at point of contact with tires. Apply as shown in sketch 2 and secure to prevent displacement. Not required when Items "D" are used.
G	16	2 in. x 4 in. x 12 in. cleats, (pattern 1). Locate against Items "F", lengthwise of car, at center line of tire. Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails. Not required when Items "D" are used.
H	6	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Pass through spokes, or holes in disc wheels and through stake pockets, tightening only enough to remove slack. Not required when loaded in gondola cars.

Brakes must be applied.
See General Rules for further details.

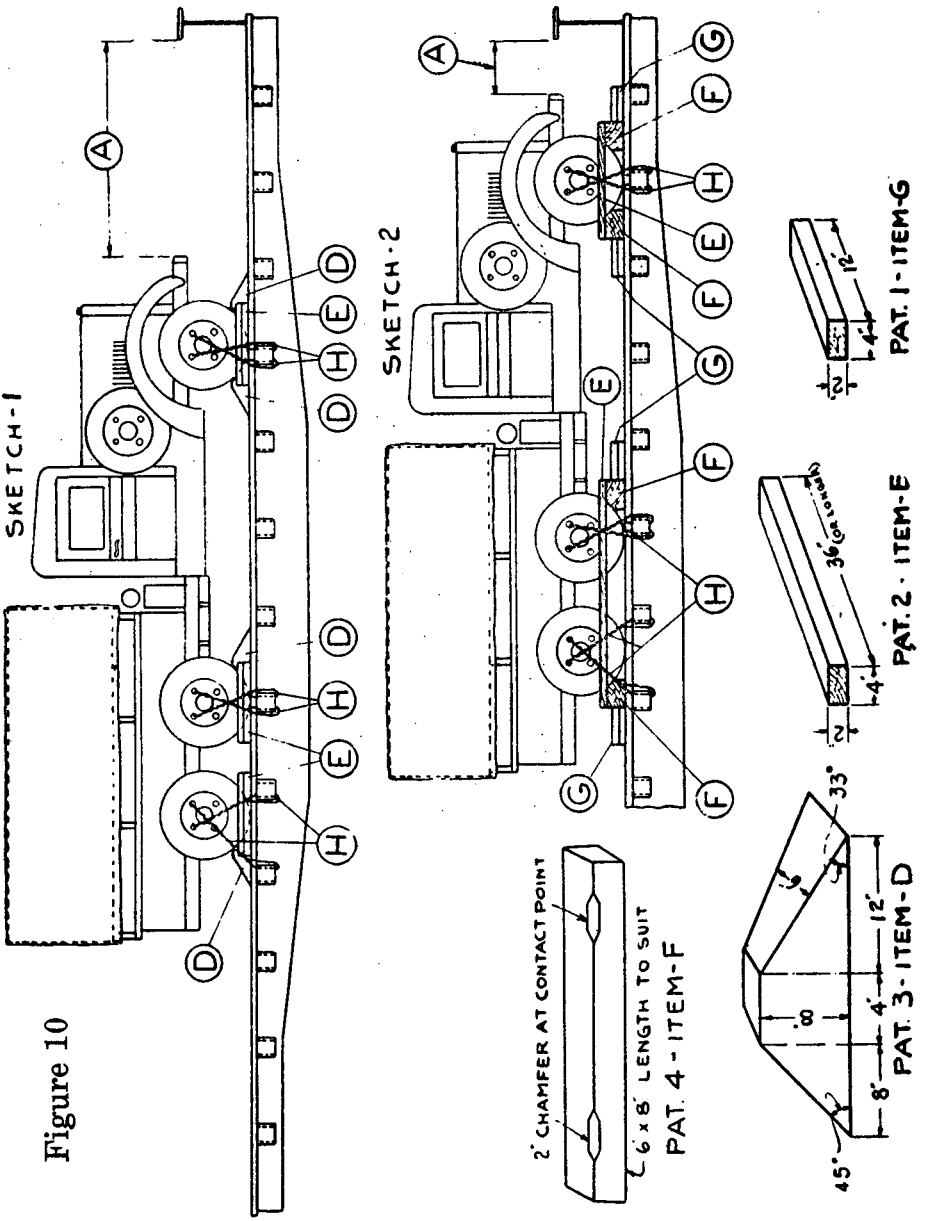

SKETCH-1
SKETCH-2
A
D
E
H
F
G
2" CHAMFER AT CONTACT POINT
6 x 8" LENGTH TO SUIT
PAT. 4 - ITEM-F
PAT. 2 - ITEM-E
PAT. 1 - ITEM-G
PAT. 3 - ITEM-D
33°
45°
8'
4'
12'

Figure 10

(15) *Minimum Requirements for Securing 37, 75, 90 and 105 mm Mounted Gun or Howitzer.*—Flat, or Drop End Gondola Cars. See Fig. 11.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	4	6 in. x 8 in. x 24 in. blocks, (pattern 3). Height at point of contact with tire must be not less than 4 in. from car floor. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "C" are applied.
C	4	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails.
D	2	Brace, (pattern 7), length ¼ in. longer than the distance between point of support on gun carriage and car floor. Place between floor and gun carriage to partially relieve weight on tires. Nail each to floor of car with six 40-D nails.
E	2	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Place through holes in wheels, which must be the same distance from car floor, secure to stake pockets and tighten only enough to remove slack.
F	2 for single spade.	
	4 for double spade.	6 in. x 8 in. x 24 in. block, (pattern 6), cut to fit contour of spade. Locate in front and rear of spade. Toe-nail to car floor with five 40-D nails.
G	2 each Item "F"	2 in. x 4 in. x 12 in. cleats, (pattern 1). Nail lower piece to car floor, against Item "F", with three 40-D nails and top piece to the one below with three 40-D nails.
H	2	2 in. x 4 in. x 12 in. cleats, (pattern 1). Locate against each side of spade and nail to car floor with three 40-D nails.
J	1 pair.	Side stakes, (pattern 8). 4 in. x 5 in. x 48 in. hardwood, or green saplings 5 in. in diameter, midway between top and bottom, extending 4 in. below stake pocket, with one 40-D nail driven into stake directly below and with head even with outside of stake pocket. Locate ⅓ the distance from end of trail to center of wheels.
K	1	6 strands, 3 wrappings, No. 8 Ga. black annealed wire. Loop around and over top of rear end of gun trail and secure to opposite stake pockets. Twist tie with rod or bolt on both sides of trail.

Brakes must be applied.
See General Rules for further details.

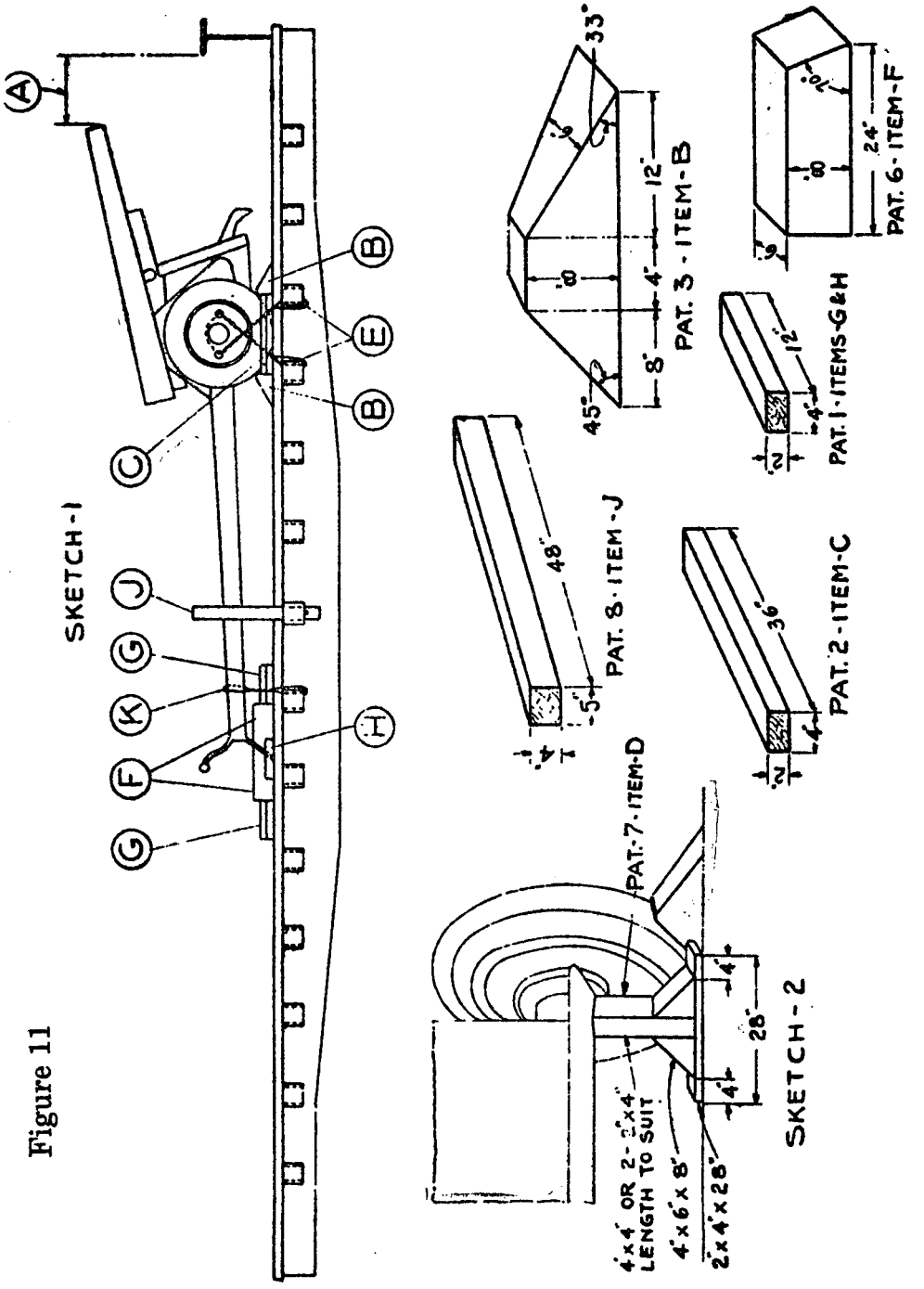

SKETCH-1
A
B
E
B
C
J
G
K
F
G
I
PAT. 3 - ITEM-B
33"
12"
4"
8"
45°
PAT. 6 - ITEM-F
24"
PAT. 1 - ITEMS-G&H
12"
4"
PAT. 8 - ITEM-J
48"
5"
PAT. 2 - ITEM-C
36"
4"
PAT. 7 - ITEM-D
4"
28"
4"
4"
4"x4" OR 2-2"x4" LENGTH TO SUIT
4"x6"x8"
2"x4"x28"
SKETCH-2

Figure 11

(16) *Minimum Requirements for Securing 155 mm Gun M-1—8" Howitzer Carriage.*—Flat Cars. See Fig. 12.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	8	6 in. x 8 in. x 24 in. blocks, (pattern 3). Hieght at point of contact with tire must be not less than 4 in. from car floor. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "C" are applied.
C	12	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to one below with three 40-D nails.
D	2 each side.	2 in. x 4 in. x 36 in. cleats, (pattern 2). Place side by side, lengthwise of car and nail each to car floor with three 40-D nails. Lower carriage to rest on Items "D" enough to partially relieve weight on tires.
E	As required.	Fill space under front end of gun carriage with 2 in. x 4 in. x 36 in. pieces, (pattern 2). Wedge tight and secure to prevent displacement.
F	2	Brace, (pattern 7), length ¼ in. longer than the distance between axle of limber and car floor. Place between car floor and axle to partially relieve weight on tires. Nail each to car floor with six 40-D nails.
G	1	6 strands, 3 wrappings, No. 8 Ga. black annealed wire. Loop around and over top of rear end of gun trail and secure to opposite stake pockets. Twist tie with rod or bolt on both sides of trail.

Brakes must be applied.
See General Rules for further details.

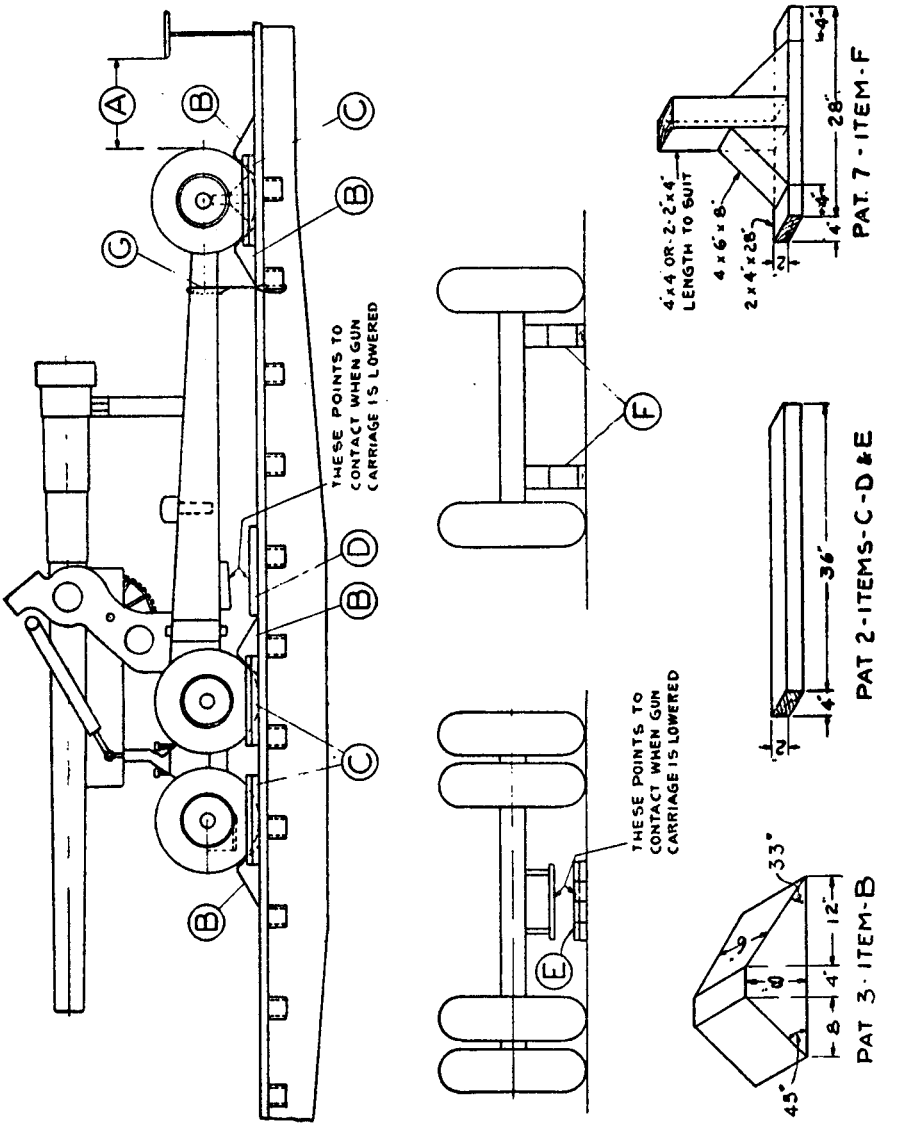

A
B
C
G
B
THESE POINTS TO CONTACT WHEN GUN CARRIAGE IS LOWERED
D
B
C
B
F
E
THESE POINTS TO CONTACT WHEN GUN CARRIAGE IS LOWERED
4x4 OR 2-2x4' LENGTH TO SUIT
4x6x8'
2x4x28'
28"
PAT. 7 - ITEM-F
36"
PAT 2-ITEMS-C-D & E
33°
45°
12"
PAT 3 - ITEM-B

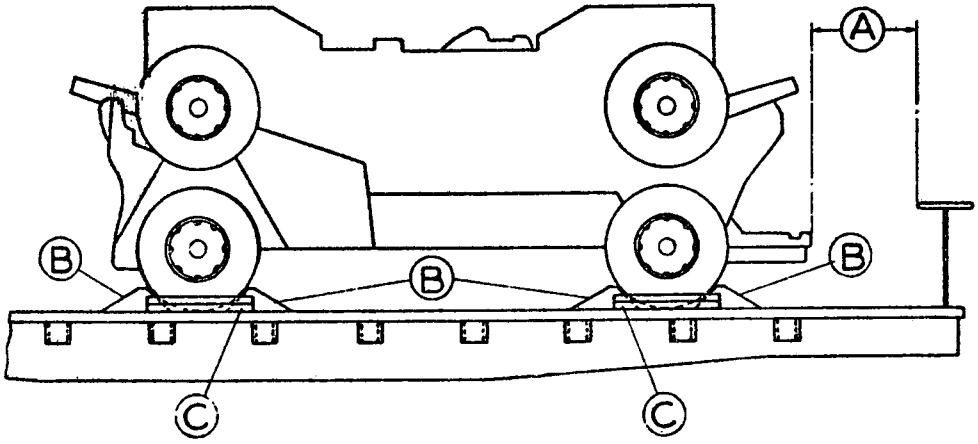
Figure 12

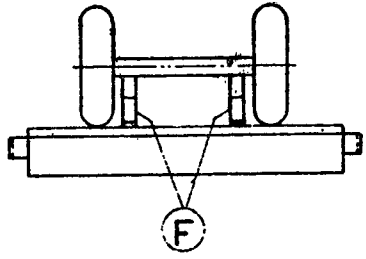
(17) *Minimum Requirement for Securing 3 Inch Anti-Aircraft Gun.*—Flat, or Drop End Gondola Cars. See Fig. 13.

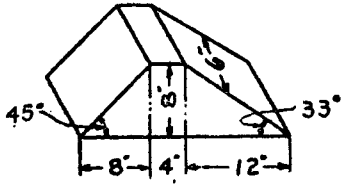
Item	*No of Pcs*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	8	6 in. x 8 in. x 24 in. blocks, (pattern 3). Height at point of contact with tire must be not less than 4 in. from car floor. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "C" are applied.
C	8	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails.
D		VACANT.
E		VACANT.
F	4	Brace, (pattern 7), length ¼ in. longer than the distance between axel and car floor. Place between car floor and axle to partially relieve weight on tires. Nail each to car floor with six 40-D nails.

Brakes must be applied.
See General Rules for further details.

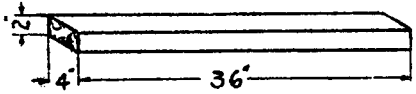
Figure 13



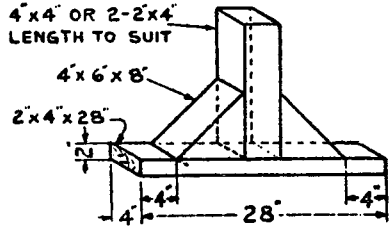




PAT. 3 · ITEM-B



PAT. 2 · ITEM-C



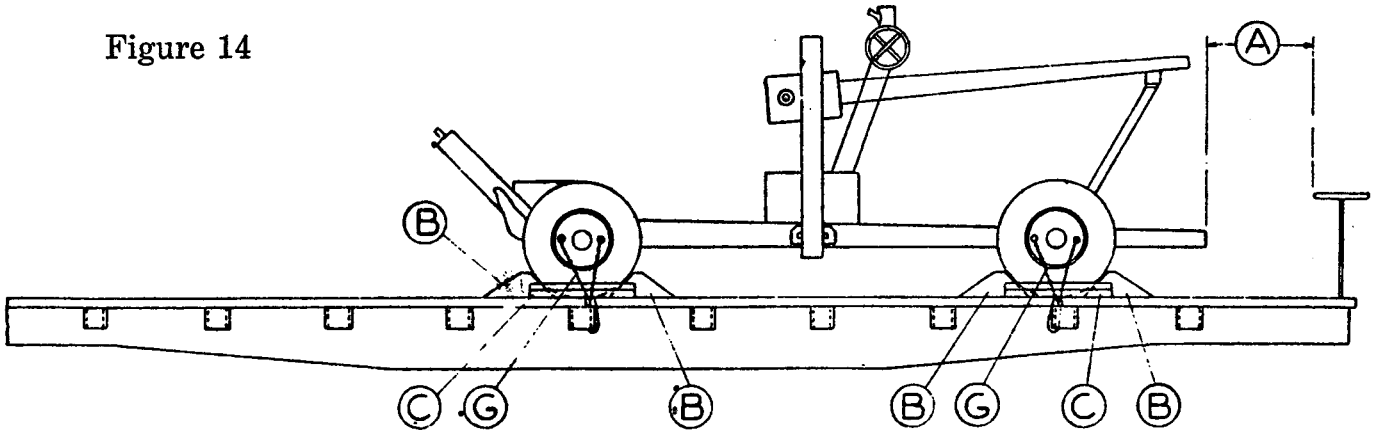
PAT. 7 · ITEM-F

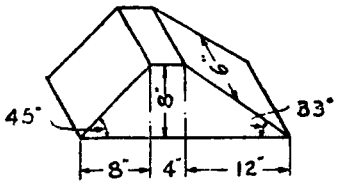
(18) *Minimum Requirement for Securing 37 mm Anti-Aircraft Gun.* —Flat, or Drop End Gondola Cars. See Fig. 14.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	8	6 in. x 8 in. x 24 in. blocks, (pattern 3). Height at point of contact with tire must be not less than 4 in. from car floor. Nail heel of block to car floor with three 40-D nails and toe-nail that portion under tire to car floor with two 40-D nails before Items "C" are applied.
C	8	2 in. x 4 in. x 36 in. cleats, (pattern 2). Nail lower piece to car floor with three 40-D nails and top piece to the one below with three 40-D nails.
D		VACANT.
E		VACANT.
F	4	Brace, (pattern 7), length ¼ in. longer than the distance between axle and car floor. Place between car floor and axle to partially relieve weight on tires. Nail each to car floor with six 40-D nails.
G	4	4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Place through holes in wheels, which must be the same distance from car floor, secure to stake pockes and tighten only enough to remove slack.

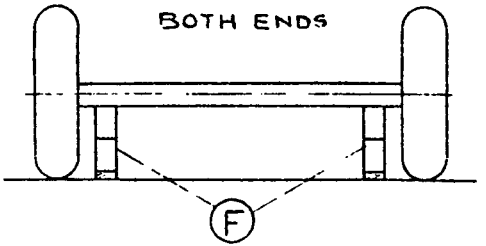
Brakes must be applied.
See General Rules for further details.

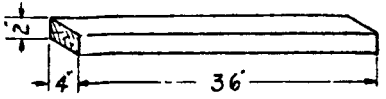
Figure 14



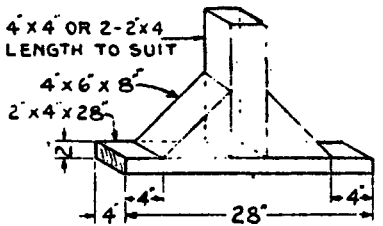


PAT. 3 - ITEM-B





PAT 2 - ITEM-C



PAT. 7 - ITEM-F

(19) *Minimum Requirements for Securing One or More, Two Wheel Motorcycles.*—Flat, or Drop End Gondola Cars. See Fig. 15.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	1 each wheel	Cradle, (pattern 5). Nail to car floor with six 20-D nails.
C	2	WHEN TWO OR MORE MACHINES ARE LOADED SIDE BY SIDE, PER SKETCH 1. 2 in. x 4 in., long enough to extend 8 in. beyond the two outside vehicle frames. Secure to frame of each machine with sufficient wire to prevent displacement. Wires used for this purpose must be secured to Items "C" with sufficient 20-D nails to prevent displacement.
D	2	WHEN TWO OR MORE MACHINES ARE LOADED SIDE BY SIDE, PER SKETCH 1. 2 strands, 1 wrapping, No. 8 Ga. black annealed wire. Place under and over Items "C", at each vehicle and attach to nearest stake pocket at each side of car. Twist tie at each side with rod or bolt.
E	1 each side of machine.	WHEN MACHINES ARE LOADED SINGLY, PER SKETCH 2. Brace, 2 in. x 4 in., length to suit. Nail one end to car floor with three 20-D nails and securely wire the top end to machine frame in rear of seat post. Not required when two or more machines are loaded side by side.
F	1 each machine.	WHEN MACHINES ARE LOADED SINGLY, PER SKETCH 2. 4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Loop around web of frame just in rear of handle bars and attach to nearest stake pocket at each side of car.Twist tie at each side with rod or bolt. Not required when two or more machines are loaded side by side.

Brakes must be applied.
See General Rules for further details.

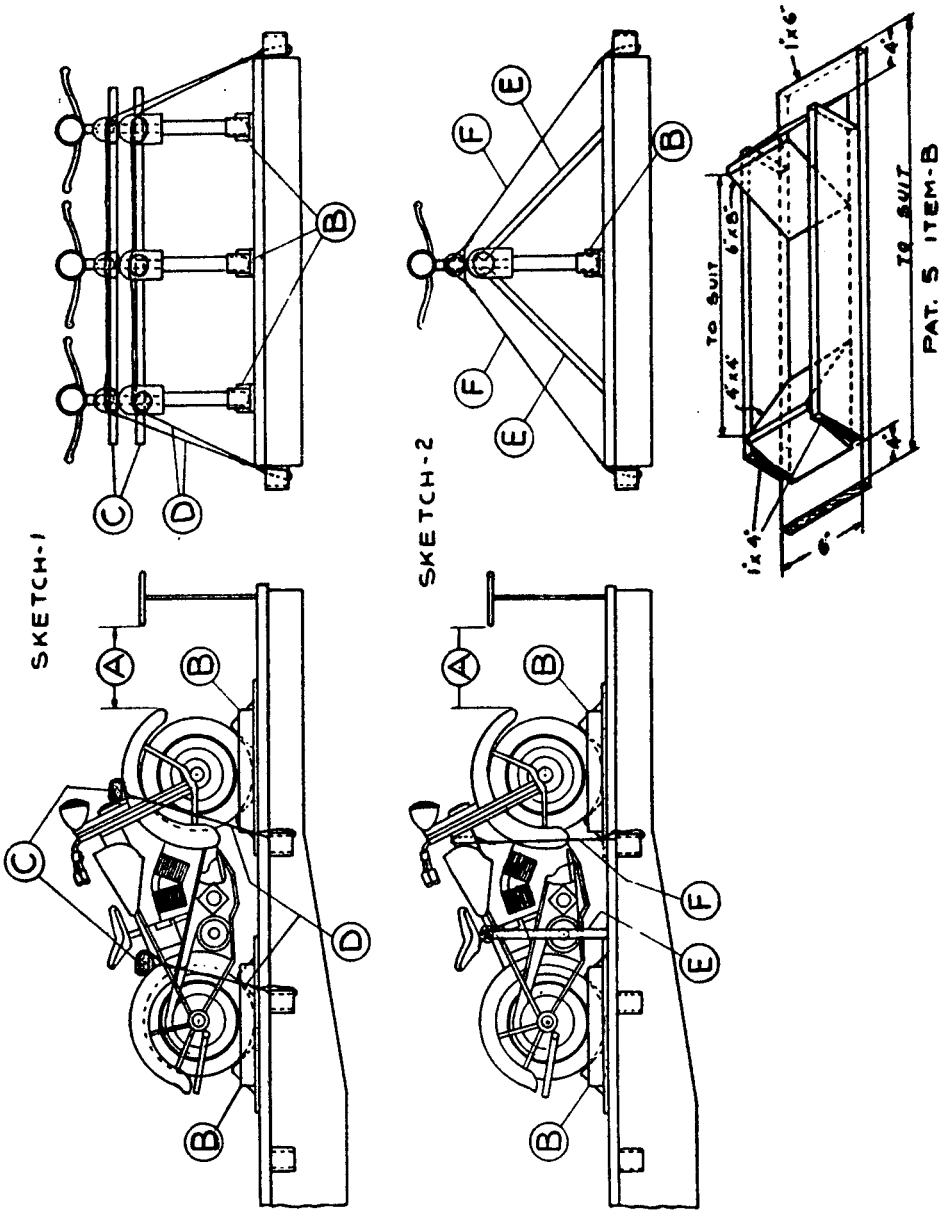

SKETCH-1
SKETCH-2
A
B
C
D
E
F
TO SUIT
4"x4"
6"x8"
1"x6"
1"x4"
TO SUIT
PAT. S ITEM-B

Figure 15

(20) *Minimum Requirements for Securing One or More, Three Wheel Motorcycles.*—Flat, or Drop End Gondola Cars. See Fig. 16.

Item	*No. of Pcs.*	*Description.*
A		Brake wheel clearance. See Fig. 6.
B	1 each wheel	Cradle, (pattern 5). Nail to car floor with six 20-D nails.
C	2	WHEN TWO OR MORE MACHINES ARE LOADED SIDE BY SIDE, PER SKETCH 1. 2 in. x 4 in., long enough to extend 8 in. beyond the two vehicles frames. Secure to frame of each machine with sufficient wire to prevent displacement. Wires used for this purpose must be secured to Items "C" with sufficient 20-D nails to prevent displacement.
D	2	WHEN TWO OR MORE MACHINES ARE LOADED SIDE BY SIDE, PER SKETCH 1. 4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Place under and over Items "C", at each vehicle and attach to nearest stake pocket at each side of car. Twist tie at each side with rod or bolt.
E	1 each side of machine	WHEN MACHINES ARE LOADED SINGLY, PER SKETCH 2. Brace, 2 in. x 4 in., length to suit. Nail one end to car floor with three 20-D nails and securely wire the top end to machine frame in rear of seat post. Not required when two or more machines are loaded side by side.
F	1 each machine	WHEN MACHINES ARE LOADED SINGLY, PER SKETCH 2. 4 strands, 2 wrappings, No. 8 Ga. black annealed wire. Loop around web of frame just in rear of handle bars and attach to nearest stake pocket at each side of car. Twist tie at each side with rod or bolt. Not required when two or more machines are loaded side by side.

Brakes must be applied.
See General Rules for further details.

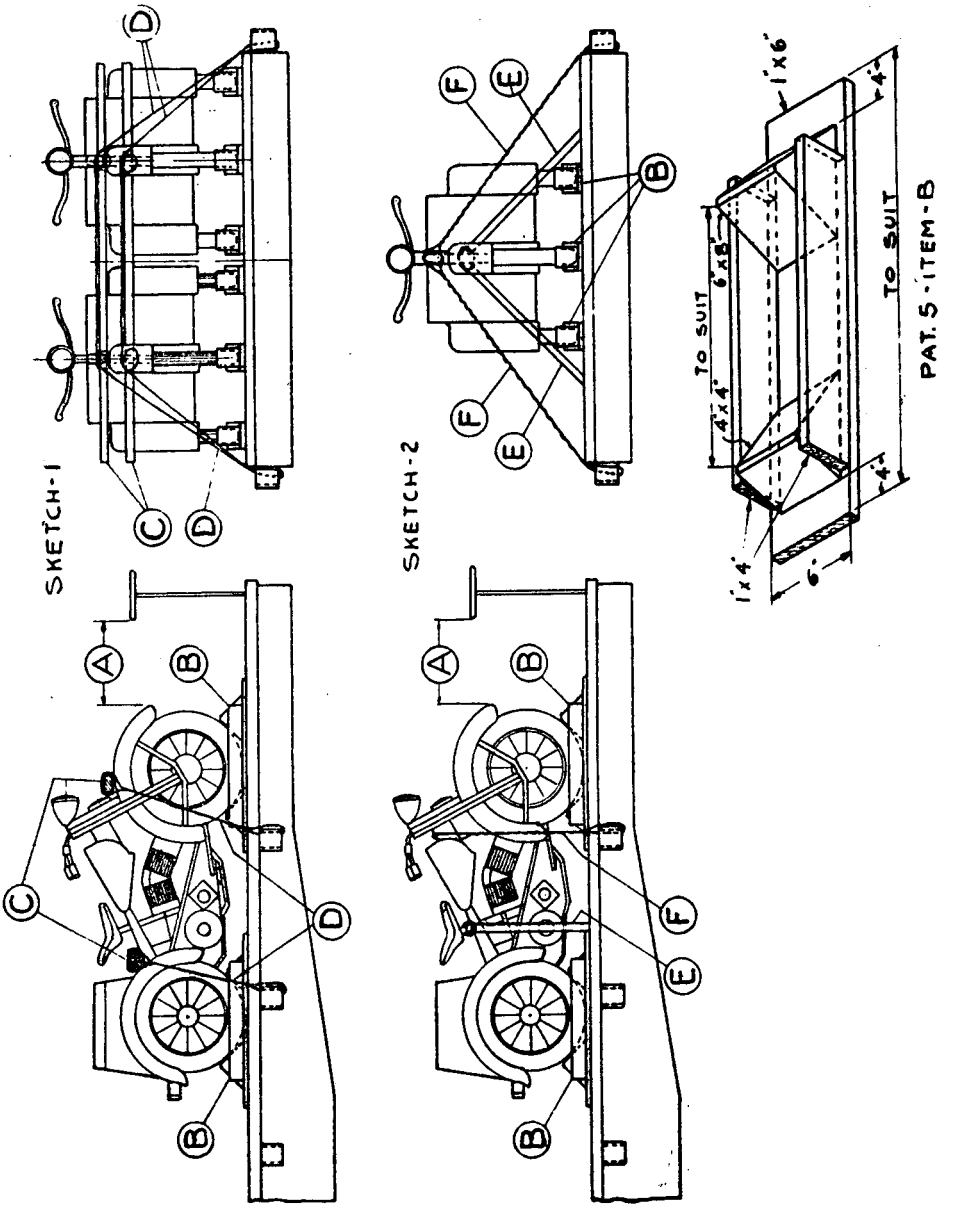

SKETCH-1
SKETCH-2
PAT. 5-ITEM-B
TO SUIT
TO SUIT
1'x6'
6'x8'
4'x4'
1'x4'
A
B
C
D
E
F

Figure 16

b. Material List for Use in Connection with Figures "7" to "16", Inclusive, of Rules Governing the Loading of Mechanized and Motorized Army Equipment. See Fig. 17.

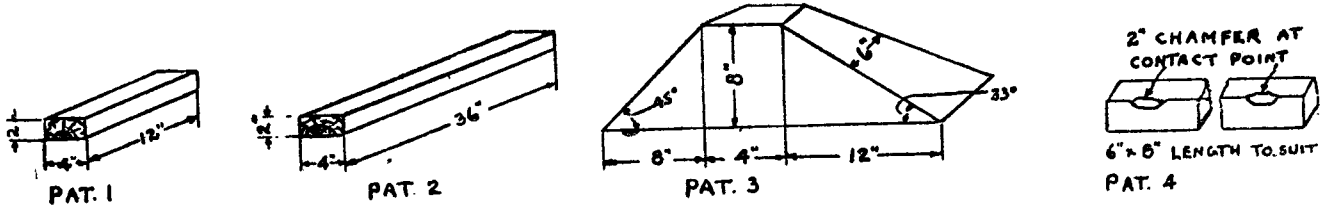
1	2	3	4	5	6	7	8	9	10
Figure No.	*Description*	*Pattern One*	*Pattern Two*	*Pattern Three*	*Pattern Four*	*Pattern Five*	*Pattern Six*	*Pattern Seven*	*Pattern Eight*
7	Light tanks	8 *	4	4	2 *				
7	Medium tanks	8 *	6	4	2 *				
8	Half-tracks	16 *	6	8	4 *				
9	4-wheel trucks	16 *	8	8	4 *				
9	Passenger cars	16 *	12	8	4 *				
10	6-wheel trucks	16 *	12	8	4 *				
11	37, 75, 90 and 105-mm guns & hows.	10	4	4			4	2	2
12	155-mm guns		24	8				2	
13	3-inch antiaircraft gun		8	8				4	
14	37-mm antiaircraft gun		8	8				4	
15	2-wheeled motorcycles					1 each wheel			
16	3-wheeled motorcycles					1 each wheel			

NOTES

* Patterns 1 and 4, designated with an asterisk, cover alternate methods of loading and are not required when patterns 2 and 3 are used on Figures 7, 8, 9 and 10.

No pattern numbers have been assigned Items C and E of Figures 15 and 16, as the number and length of pieces will depend upon the number of vehicles loaded.

For diagram of patterns, see Figure 17.


12"
4"
PAT. 1
36"
4"
PAT. 2
8"
45°
33°
8"
4"
12"
PAT. 3
2" CHAMFER AT CONTACT POINT
6" x 8" LENGTH TO SUIT
PAT. 4

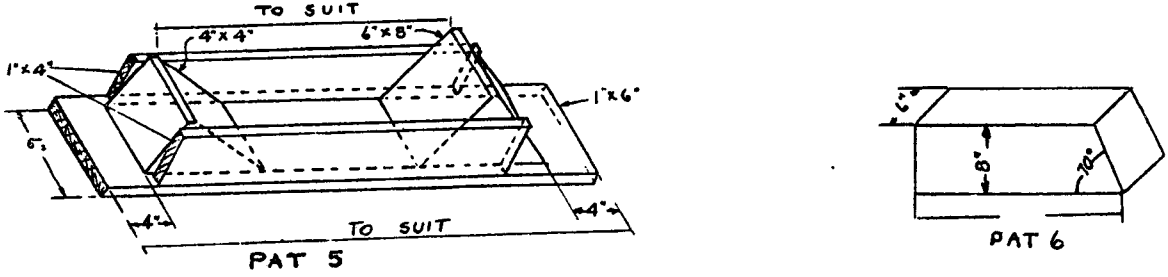
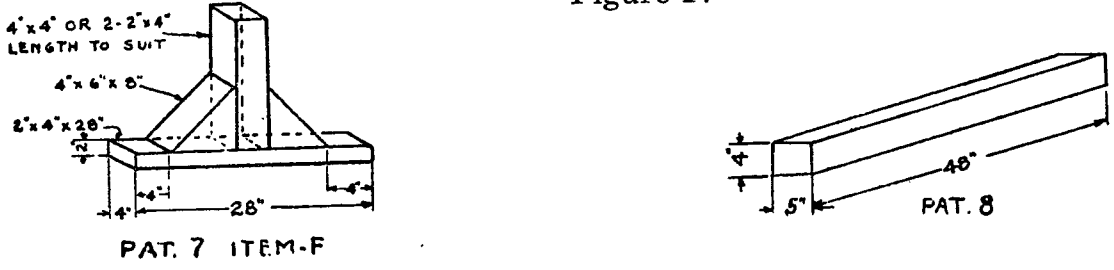

TO SUIT
4"x4"
6"x8"
1"x4"
1"x6"
6"
4"
TO SUIT
4"
PAT 5
8"
10°
PAT 6

Figure 17


4"x4" OR 2-2"x4"
LENGTH TO SUIT
4"x6"x8"
2"x4"x28"
4"
28"
PAT. 7 ITEM-F
4"
5"
48"
PAT. 8

■ 46. MOTOR MOVEMENTS.—*a. Truck capacities for troop movement.*—The capacity of motor transportation for movement of foot troops depends upon the rated capacity of the transportation employed, the type of body on the vehicles, and the method of carrying personnel. Normal capacities for trucks carrying personnel with rifles, packs, and extra ammunition, with no additional cargo:

		Men
Truck, ½-ton	(excluding driver)	5
Truck, 1½-ton	"	15
Truck, 2½-ton (or larger)	"	25

NOTES

1. Above capacities are based upon 5 men (with equipment) per thousand pounds rated capacity of truck, exclusive of the driver.
2. The body of the 2½-ton artillery prime mover is the same size as that of the 1½-ton cargo truck.
3. When 1½-ton dump trucks or 2½-ton artillery prime movers carry the loads shown above, some personnel will be required to stand.
4. Because of partial loading of some trucks, the probable location of entrucking points must be considered in determining the number of trucks required for movement of large units.

For example: Hq Co, Serv Co, and each bn of an inf regt should be computed separately; the total for the regiment being the total for its component parts. The required number of trucks determined in this manner will be somewhat greater than the number determined by dividing the total number of foot troops in the regiment by the capacity of trucks employed.

b. Truck capacities for animals.—

	Horses or mules
Truck, 1½-ton (exceptional)	2 plus 2 men with equipment
Truck, 2½-ton, cargo	4 plus 4 men with equipment
Semi-trailer, 4½-ton	8 plus 8 men with equipment, harness and forage for 1 day.

■ 47. FORM FOR TABULATING NUMBERS OF TRUCKS REQUIRED FOR MOVEMENT BY MOTOR TRANSPORT (TACTICAL MOVEMENTS) INFANTRY DIVISION.—The following form may be used to tabulate the approximate number of trucks required to move the foot elements, with individual equipment, of the infantry division, or of component units thereof:

1	2	3	4	5	6	7
1 *Unit* ②	*T/O strength*	*Actual strength*	*Transported in organic motors*	*Strengths for which transportation must be furnished*	*Number of trucks required*	
					1½-ton	*2½ ton*
2 Rifle Co						
3 Rifle Plat						
4 Weapons Plat						
5 Hv Wpn Co						
6 Cal .30 MG Plat						
7 Cal .50 MG Plat						
8 81-mm Mort Plat						
9 Inf Bn (w/Com Sec, Bn Sec Serv Co, & Bn Sec Med Det, atchd)						
10 Hq & Hq Co & Band Inf Regt (less 3 Bn Com Secs)						
11 AT Co						
12 Serv Co (less 3 Bn Secs)						
13 Med Det, Inf Regt (less 3 Bn Secs)						
14 Inf Regt (w/2 atchd chaplains)						
15 Inf Brig						
16 MP Co Inf Div						
17 Fwd Ech Div Hq & Hq Co ①						
18 Rr Ech Div Hq & Hq Co ①						
19 Div Hq & Sp Trs (foot troops) ①						
20 Inf Div (total) (foot troops)						

NOTES

① Officers of DHQ are transported in cars of Quartermaster.
② The units of an infantry division usually moved by means of their own transport are not included in the above table.

■ 48. TIME-LENGTH OF MOTOR COLUMNS.—*a. Close column.*—When each driver closes to safe driving distance from the vehicle ahead, the time-length of the column may be taken as .08 minutes per vehicle.

Thus, a column of 300 vehicles would have a time-length of 300 x .08, or 24 minutes (750 vehicles per hour). (See paragraph 48 *c* (1) for additional data.

b. Open column.—When the tactical situation requires extended distance as protection from air attack, the motor column must be elongated to a density of not more than 12 trucks per mile of highway or about 150 yards of road space per truck. See paragraph 48 *c* (2) for additional data.

c. Rates of motor movements.—(1) *Close column:*

1	2	3	4	5	6
Speed (mph)	*Road space per truck (yards)*	*Density per mile*	*Trucks per hour passing a given point*	*Maximum tonnage hauled by 1½-ton trucks (per hour)*	*Maximum tonnage hauled by 2½-ton trucks (per hour)*
10	23.5	75	750	1,125	1,875
15	35.5	50	750	1,125	1,875
20	47	37	750	1,125	1,875
25	59	30	750	1,125	1,875
30	70.5	25	750	1,125	1,875
35	82	21	750	1,125	1,875

(2) *Open column* (10 trucks per mile).

1	2	3	4	5
Speed (mph)	*Road space per truck (yards)*	*Trucks per hour passing a given point*	*Maximum tonnage hauled by 1½-ton trucks (per hour)*	*Maximum tonnage hauled by 2½-ton trucks (per hour)*
10	176	100	150	250
15	176	150	225	375
20	176	200	300	500
25	176	250	375	625
30	176	300	450	750
35	176	350	525	875

NOTE

To determine data for any truck density *less than* 10 per mile the road space (column 2) should be *increased* and data shown in columns 3, 4, and 5 should be *decreased* in proportion to the density employed.

For example: To move at 20 miles per hour with a truck density of 6 per mile:

Road space $1760 \div 6 = 293$ yards

Trucks per hour passing a given point $= .6 \times 200 = 120$

Maximum tonnage hauled (1½-ton trucks) $= .6 \times 300 = 180$

Maximum tonnage hauled (2½-ton trucks) $= .6 \times 500 = 300$

For truck densities *greater than* 10 per mile the road space is *decreased* and data shown in columns 3, 4, and 5 is *increased* in like manner.

See Fig. 8.

This chart applies to motor movements in which vehicles keep closed up to safe driving distances. Safe driving distance is assumed to be constant (14⅔ yards, center to center, for cars or trucks up to 3-ton) for speeds up to 5 miles per hour and to increase with the speed for rates above 5 miles per hour.

Chart shows average road space. Actual road space may vary 25% either way, depending on conditions.

To use chart:

Determine the number of motor vehicles in column, disregarding trailers or towed weapons.

Locate this figure in vertical scale on left of chart.

Follow horizontal line to right to intersection with diagonal line indicating the proper rate of travel.

From this intersection follow vertical line down to horizontal scale.

Read on horizontal scale the average road space of the column.

b. Open column.—Road space of a motor movement in open column may be obtained by dividing the number of motor vehicles in column (disregarding trailers) by the average density (number of vehicles per mile).

■ 49. AVERAGE ROAD SPACE OF MOTOR COLUMNS AT VARIOUS SPEEDS.
—*a. Close Column.*

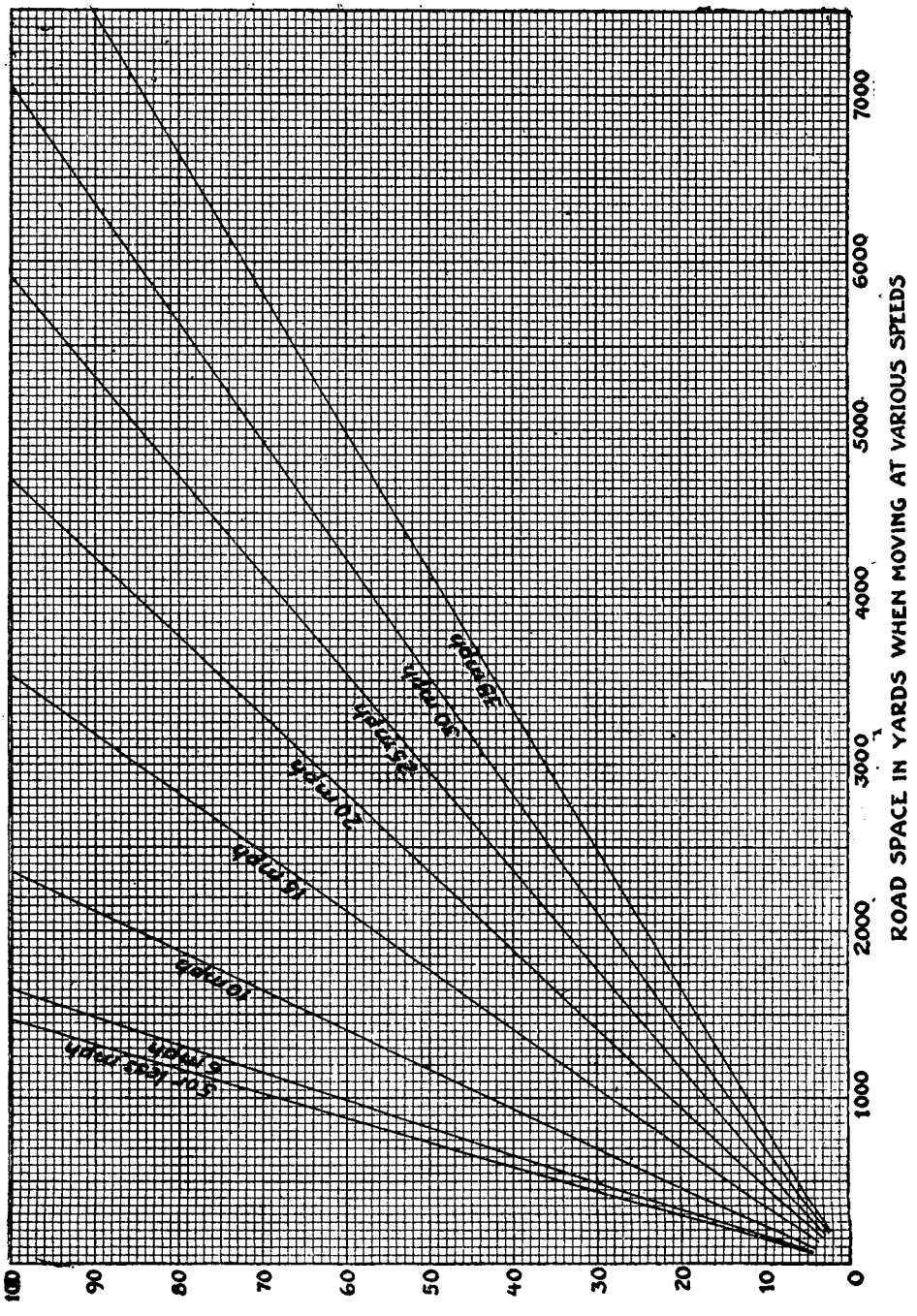


Figure 18

■ 50. AVERAGE TIME LENGTHS OF MOTOR COLUMNS AT VARIOUS SPEEDS.—*a. Close Column.*

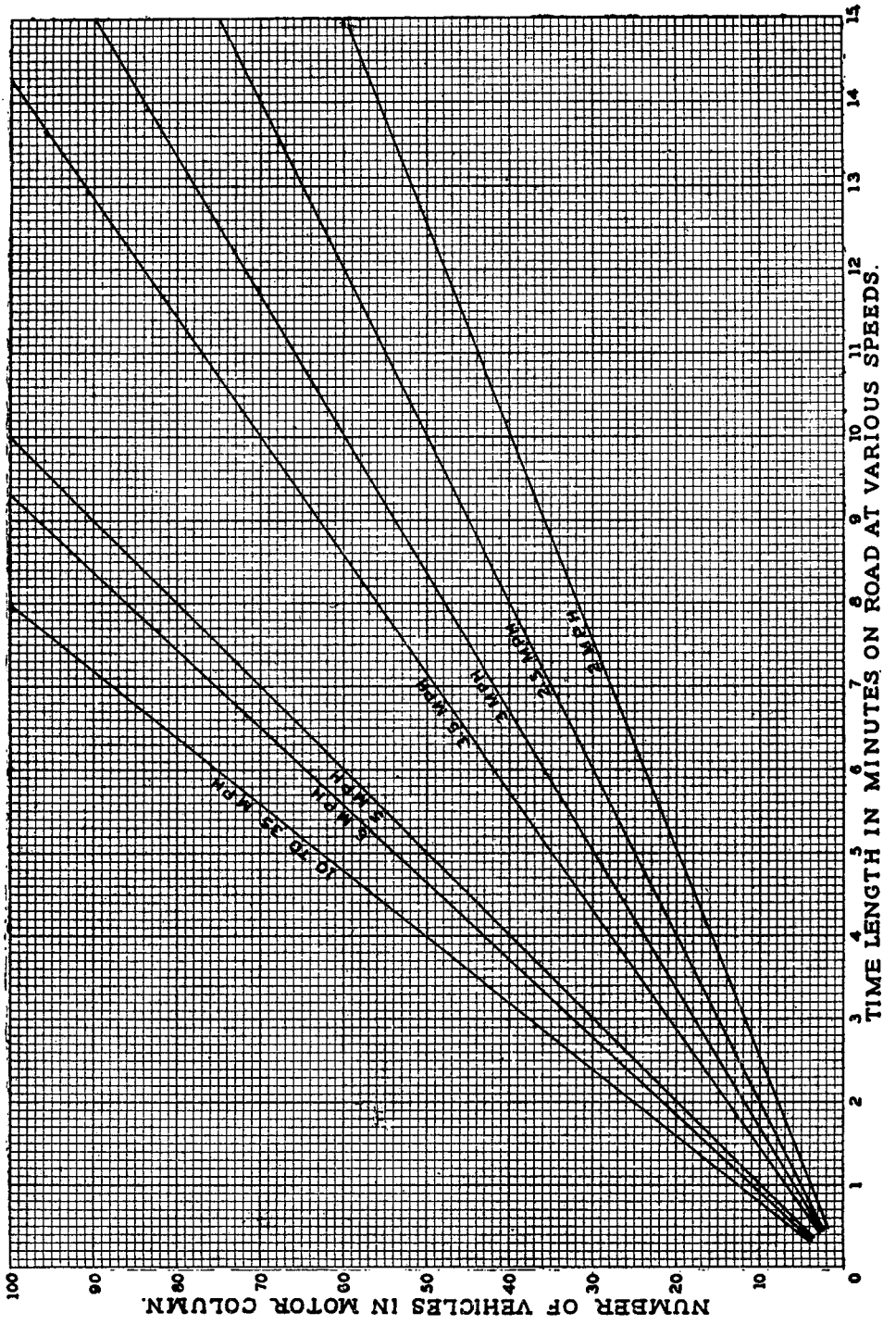


Figure 19

NOTES

This chart applies to motor movements in which vehicles keep closed up to safe driving distances. From 10 miles per hour to 35 miles per hour the safe driving distance varies directly with the speed, and the time-length of a column is therefore constant. At 5 miles per hour or less the safe driving distance is assumed to be constant (14⅔ yards, center to center, for cars or trucks up to 3-ton) and the time-length of a column therefore varies inversely with the speed.

Chart shows average time-length. Actual time-length may vary 25% either way, depending on conditions.

To use chart:

Determine the number of motor vehicles in column, disregarding trailers or towed weapons.

Locate this figure in vertical scale on left of chart.

Follow horizontal line to right to intersection with diagonal line indicating the proper rate of travel.

From this intersection follow vertical line down to horizontal scale.

Read on horizontal scale the average time-length of the column.

b. Open column.—Time length of a motor movement in open column may be obtained by the following formula:

$$\frac{\text{Number of motor vehicles in column}}{\text{Density (vehicles per mile) x speed (mph)}} = \text{Time length (in hours)}.$$

■ 51. SHUTTLE MOVEMENTS.—*a. Definition.*—Troop movement by shuttling is a movement by motor in which all or a portion of the trucks make successive trips in moving both cargoes and troops.

b. Time formula.—The following formula is useful for determining the total time of movement of a unit in shuttling:

$$\text{Hours required} = \frac{3 \times \text{distance in miles}}{\text{Speed in miles per hour}} + T$$

The figure "3" indicates the number of trips for each shuttle; for example, one trip to move foot troops, a return trip, and a third with organic cargo.

"T" (a variable), represents the number of hours consumed in unloading and loading personnel and equipment, in turn-arounds at forward and rear assembly areas, and in closing the column into its area of destination. When two routes are available for the movement a value of 3 may be assumed for "T" with a reasonable factor of safety. When more than two routes are available the value of "T" may be reduced.

Speed in miles per hour represents the average speed of the vehicles in the movement.

■ 52. MARCH GRAPHS AND MARCH TABLES.—*a.* The field order for a march may be accompanied by a march table, particularly when the details of the march are not subject to change and can be foreseen. The march table affords a convenient means of transmitting to subordinates the many details pertaining to the march, the inclusion of which in the body of the field order would tend to complicate or make it unduly lengthy.

b. A march graph is the simplest method of obtaining data required for a march table or order. It shows the approximate location at any hour of the head or tail of each serial, providing the march proceeds as scheduled. The march graph is prepared on cross-section paper, using one sheet for each route. The vertical scale to the left, with point of origin at the bottom, serves as a distance scale in miles and should show the relative locations along the route of critical points where coordination of the movement is required. The horizontal scale provides a time scale in hours, beginning at the left with the earliest hour at which the first serial may start the march.

c. A serial is represented on the graph by a horizontal line, drawn to scale, equal to the time-length of the serial. This line is plotted opposite the point on the vertical scale, corresponding to the initial point of the serial; the left of the line being plotted above the hour, on the horizontal scale, at which the serial begins the march. From this left end a line is drawn upward at a slope representing the rate of march (at 10 miles per hour the slope equals 10 miles on the vertical to 1 hour on the horizontal scale). This sloping line represents the march of the head of the column. The intersection of this line with the horizontal line from any point along the route, if projected down to the time scale, will show the time the head arrives at such point. A line drawn from the right end of the horizontal line representing the time-length of the serial and parallel to the line representing the head of the column will represent the tail of the serial. Time of clearances may be obtained as explained for the head of the serial. The movement or location of a unit after it leaves the route represented on the distance scale, or passes the rear boundary of its destination (new bivouac area), may be shown on the graph by dotted lines.

d. If the hour at which a march must be completed is the only time factor known, the graph may be constructed starting with the tail of the column at the destination and working back to obtain the hour of starting for the head of the column. The graphs of all serials may be adjusted to allow for crossing columns or other interferences. The need for and the means of making such adjustments may be visualized. In preparing the march graph a safety factor of 15 to 30 minutes should be allowed between serials at critical points on the route. In the march table this time is divided between serials, the major portion usually being assigned to the leading serial. A small gap of about 5 minutes should be reserved during which the route is clear.

■ 53. EXAMPLES OF MARCH GRAPHS AND MARCH TABLES.—*a.* The division commander has directed that the 1st Engr Bn, 1st QM Bn, 1st Med Bn, and the 1st Infantry, in army reserve, move under cover of darkness from their present bivouacs, areas A and B to areas C and D, beginning at 7:00 PM, 17 October 19__, under the following conditions.

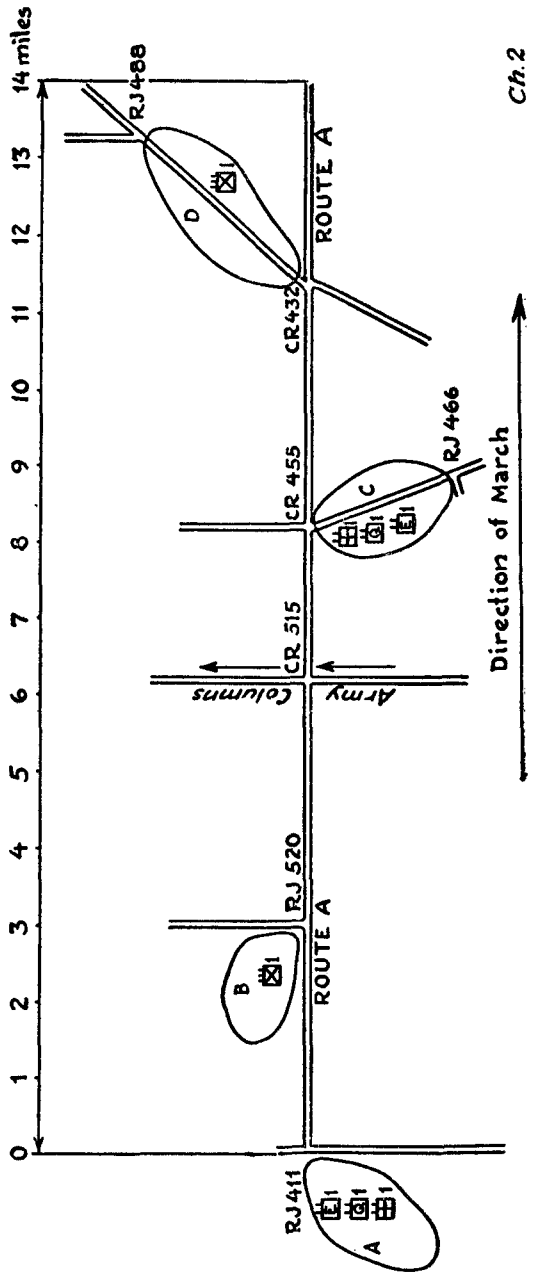


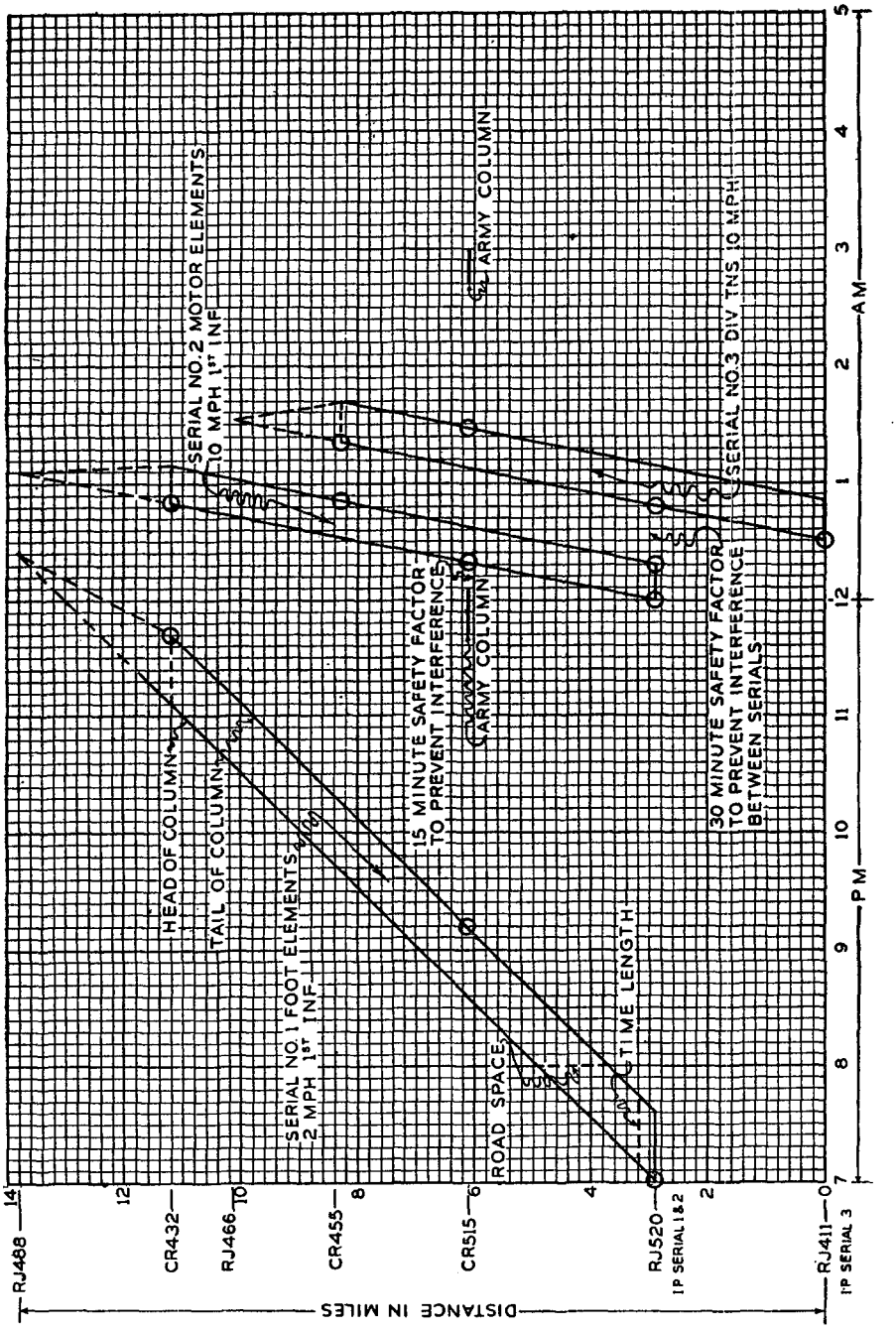
Figure 20

(1) Movement to be made without lights and to be completed prior to 5:00 AM, 18 October 19__.

(2) Route A is available for the movement but CR 515 is reserved for army columns from 11:36 PM to 12:06 AM and from 2:36 AM to 3:00 AM.

b. The following EXAMPLE OF MARCH GRAPH-ROUTE A is the graph used by the division staff, 1st Division in planning the march.

Figure 21



NOTES:

1. Time Lengths.
   (a) Serial 1-2650 men on foot in column of threes at 2 mph (Chart par. 37) = 36 min.
   (b) Serial 2-229 vehicles at 10 mph (Chart par. 50) = 19 min.
   (c) Serial 3-282 vehicles at 10 mph (Chart par. 50) = 28 min.
2. o Indicates remark in march table.

ANNEX No. 1 TO FO 2
MARCH TABLE

Map—Operations Map

1st Div
Pennsville (372–745), Pa
17 Oct 19...., 3:00 PM

Serial No.	*Organization and commander*	*Present location*	*Route*	*Location by 5:00 AM, 18 Oct*	*March*			*Control of Movement*			*Remarks*
					Rate (miles per hour)	*Type*	*Time-length (minutes)*	*Location*	*Earliest allowable arrival time*	*Latest allowable arrival time*	
1	Col "A" 1st Inf Comdg: Foot Troops 1st Inf 2,650 men	Area B	A	Area D	2	Column of 3's	36	RJ 520 (IP) CR 515 CR 432	7:00 PM	 10:10 PM 12:35 AM	
2	Lt Col "B" 1st Inf Comdg: Motor elements 1st Inf 229 vehicles	Area B	A	Area D	10	Close column	19	RJ 520 (IP) CR 515 CR 432 CR 455	12:01 AM 12:20 AM 12:45 AM	12:40 AM 1:10 AM	
3	Lt Col "C" 1st Engr Bn Comdg: Div Tns, 1st Engr Bn, 1st QM Bn, 1st Med Bn, 282 vehicles	Area A	A	Area C	10	Close column	23	RJ 411 (IP) RJ 520 CR 455 CR 515	12:30 AM 12:45 AM 1:15 AM	2:25 AM	

OFFICIAL:
Y
Lt Col GSC
G-3
Distribution: Same as FO

By command of Maj Gen A
X
Col GSC
C of S

SECTION II

INFANTRY DIVISION (SQUARE)

■ **54. FORM FOR AN ABRIDGED TABLE—ROAD SPACES AND TIME LENGTHS, INFANTRY DIVISION (Square).**

	1	2	3	4	5	6	7	8	9	10	11	12
			Authorized strength		*Actual strength*			*Road space at halt*		*Road space moving*		
	Units (including attached chaplains and medical personnel)	*T/O No*	*Men*	*Vehicles*	*Men*	*Vehicles*	*Men on foot*	*Men on foot (miles)*	*Vehicles (miles)*	*Men on foot (miles)*	*Vehicles 10 mph (miles)*	*Vehicles 25 mph (miles)*
1	Inf Div											
2	...Inf Brig											
3	...Inf Brig											
4	...Inf Regt											
5	...Inf Regt											
6	...Inf Regt											
7	...Inf Regt											
8	One Inf Bn											
9	Inf Bn w/Bn Sec Com Plat & Bn Sec T Plat Serv Co, Atchd											
10	One R Co											
11	FA Brig											
12	FA Regt, 105-mm How											
13	One FA Bn, 105-mm How											
14	FA Regt, 155-mm How											
15	One FA Bn, 155-mm How											
16	Engr Regt											
17	Med Regt											
18	QM Regt											
19	Sig Co											
20	MP Co											
21	Ord Co (M Maint)											
22	Brig C team											
23	Brig C team											
24	...C team											
25	...C team											
26	...C team											
27	...C team											

NOTES

Column 1: Designation of unit to be entered, as "1st Infantry Division."
Columns 5, 6, and 7: Based on periodic reports of subordinate units, the actual strength in men and vehicles should be entered.
Column 8: Number of men on foot×.8 (men in column of threes)=yards; ÷1760=miles.
Column 9: For a column of vehicles of all types, 10 yards per vehicle is used as the average road space.
Column 10: Road spaces of foot elements on the march are identical with road spaces at the halt.
Column 11: Number of vehicles×23.5 (2.35×mph) per vehicle.
Column 12: Number of vehicles×60 yards (2.35 ×mph) per vehicle.
Column 13: Number of men on foot×.011=minutes at 2½ mph (×.0135 at 2 mph).
Column 14: Number of vehicles×.08 =minutes.
Column 15: Men on foot (column 7) divided by 15 for 1½-ton trucks; divided by 25 for 2½-ton trucks. (See Note 4, paragraph 46, and paragraph 47.)

FORM FOR AN ABRIDGED TABLE—ROAD SPACES AND TIME-LENGTHS, INFANTRY DIVISION (Square) (Continued):

13		14	15		16		17		18	19
Time-length moving			Additional vehicles to carry foot troops (col 7)		Road space additional vehicles at halt (miles)		Time-length additional vehicles in close column		When Div moved by Trk	
Men on foot (min)		Vehicles in close column (min)							Road space at halt (cols 9+16) (miles)	Time-length in close column (cols 14+17) (min)
2 mph	2½ mph		1½-ton	2½-ton	1½-ton	2½-ton	1½-ton	2½-ton		

■ 55. SHUTTLING: INFANTRY DIVISION (Square).—*a.* Refer to paragraph 51 for general formula for shuttling, and to paragraph 46, 47 and 56 for transportation requirements and availability.

b. The following example of standing operating procedure for a motor movement by shuttling for an infantry division (square) should be used only as a guide from which to prepare shuttle plans upon the actual transportation available and the personnel to be moved:

c. Example based on WD T/O November 1, 1940.

(1) *Plan.*—Motor Movement 2 is a shuttle movement in which the division moves in its organic motors with Brigade Combat Teams abreast, behind a screen of other troops adequate to protect the movement against strong frontal attack. One infantry battalion from each BCT and one antitank battery remain in the rear area to guard dumped loads. The remainder of the combat units of the division move in the first shuttle. Each BCT moves on two or more routes and protects the immediate front of its movement with small advance guards. The flanks are protected by mobile flank guards operating under division control, with foot elements carried in trucks of the Quartermaster Regiment. Trucks of the Quartermaster Regiment are augmented by sufficient kitchen, and other administrative trucks (which are dumped in the rear area) to move foot troops of the first shuttle. At the conclusion of the first shuttle such trucks return to pick up their normal loads. Foot troops of the second shuttle are moved in trucks of the Quartermaster Regiment.

(2) *Warning Order.*—Preliminary arrangements for this shuttle movement will be inaugurated upon receipt of order "Alert for motor movement two," or "Alert for motor movement 2, after (designated hour)."

COMPOSITION OF FLANK GUARDS
(To cover movement of both shuttles)

FLANK GUARD NO. 1	*FLANK GUARD NO. 2*
1 bn 1st Brig (less 2 rifle cos)	1 bn 2d Brig (less 2 rifle cos)
1 AT plat (inf) 1st Brig	1 AT plat (inf) 2d Brig
1 btry 1st FA	1 btry 2d FA
1 plat Co B 1st Engrs	1 plat Co E 1st Engrs
Det 1st Med Regt	Det 1st Med Regt
17 trucks, 2½-ton, 1st QM Regt	17 trucks 2½-ton, 1st QM Regt

COMPOSITION OF FIRST SHUTTLE

Group 1: BCT 1 (less 1 bn & 1 flank guard)
1st Bn 1st Engrs (less dets)

Group 2: BCT 2 (less 1 bn & 1 flank guard)
1st Engrs (less Dets)

Group 3: 3d FA (less Btry H and 28 trucks)

COMPOSITION OF SECOND SHUTTLE

Group 1: 1 bn 1st Brig
50 trucks, 1st Brig
24 trucks, 1st FA

Group 2: 1 bn 2d Brig
50 trucks, 2d Brig
24 trucks, 2d FA

Group 3: Btry H, 3d FA
28 trucks, 3d FA
25 trucks, 1st Engrs
1st Med Regt (less dets)
1st QM Regt (less dets)

ASSIGNMENT OF MOTOR TRANSPORT

FROM	*TO*	*First Shuttle* 1½-TON	— 2½-TON	*Second Shuttle* 2½-TON
1st QM Regt	Flank Guards		34	34
1st QM Regt	BCT 1		83	34
1st QM Regt	BCT 2		83	34
1st Brig	BCT 1	50		
1st FA	BCT 1		24	
3d FA	BCT 1		14	
1st Engrs	BCT 1	25		
2d Brig	BCT 2	50		
2d FA	BCT 2		24	
3d FA	BCT 2		14	
1st Med Regt	BCT 2	5	12	

■ 56. EXAMPLE OF G-3 WORK SHEET SHOWING AVAILABILITY OF CARGO TRUCKS (1½, 2½, and 4-ton) IN THE INFANTRY DIVISION (Square) FOR MOVEMENT OF FOOT TROOPS (based on WD T/O November 1, 1940).—*a.* This table shows a priority which might be established within a division for the availability of organic motor transportation of units scheduled to move in the second shuttle, to be used for movement of foot troops of the first shuttle. With slight modification it might also serve to show availability of transportation to be returned by units of the first shuttle for movement of foot troops of the second shuttle.

G-3 WORK SHEET

AVAILABILITY OF MOTOR TRANSPORT FOR TROOP MOVEMENT

Priority	*Normal use*	*QM Regt 2½-T*	*105-mm Regt 2½-T*	*155-mm Regt 2½-T*	*Inf Regt 1½-T*	*Engr Regt 1½-T*	Med *Regt 2½-T*	*Sig Co 1½-T*	*Total*
1	Cargo trucks	192							192
2	Personnel & baggage	1	2	2	5*	4		4	35
3	Organization equipment	8	11	13	4	22	18	1	100
4	Kitchen	8	11	13	15	7	*1½-T* 7 3	1	121
	Ammunition		36	40	13	1			165
5	Command & operations		12	12	1				40
	Signal		21	21				20	83
	Engineer pers & tools					42			42
	Medical	1	3	3	2	3			21
	Supplies	10	4	4			5		27
	TOTAL	220	100	108	40	79	33	26	826
Emergency Only	Motor maintenance	20	17	(4T) 2 17	5	2	*1½-T* 6 5	1	
	Special equipment	11				2	*1½-T* 7		
	Prime movers, 2½-ton		30	16					76
	Prime movers, 4-ton			30		7			37

NOTES

1 The availability of cargo trucks and the priority of such availability are command decisions.
2 Reference prime movers see par. 344 FM 100–5 (FSR).
3 Ordinarily the Sig Co and the Div Hq and Div Hq and MP Co, by pooling transport, can move all the personnel and equipment pertaining to these organizations in 1½ round-trips and at the same time perform essential functions (assuming that the car Co of the QM Regt also transports Div Hq personnel).
4 Unit motor repair vehicles are not available for other purposes. They usually accompany the motor vehicles of the unit.
* Includes 3 trucks for personnel of the AT Co.

■ 57. EXAMPLE OF A RAILWAY MOVEMENT OF AN INFANTRY DIVISION (SQUARE).—List of transportation groupings for planning purposes, (baeed on application of data to WD T/O published November 1, 1940):

Type Train	*Symbol*	*Transportation Groupings*
		1st Infantry
A	1st Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	1st Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	1st Inf 3	Co E; Co F; Hq & Hq Det 2d Bn (See notes)
A	1st Inf 4	Co G; Hv Wpn Co; ½ Hq & Hq Co 1st Brig
B	1st Inf 5	AT Co; Serv Co (less dets)
A	1st Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	1st Inf 7	Co L; Hv Wpn Co; ½ Regt Hq & Hq Co
		2d Infantry
A	2d Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	2d Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	2d Inf 3	Co E; Co F; Hq & Hq Det 2d Bn (See notes)
A	2d Inf 4	Co G; Hv Wpn Co; ½ Hq & Hq Co 1st Brig
B	2d Inf 5	AT Co; Serv Co (less dets)
A	2d Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	2d Inf 7	Co L; Hv Wpn Co; ½ Regt Hq & Hq Co
		3d Infantry
A	3d Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	3d Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	3d Inf 3	Co E; Co F; Hq & Hq Det 2d Bn (See notes)
A	3d Inf 4	Co G; Hv Wpn Co; ½ Hq & Hq Co 2d Brig
B	3r Inf 5	AT Co; Ser Co (less dets)
A	3d Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	3d Inf 7	Co L; Hv Wpn Co; ½ Regt Hq & Hq Co
		4th Infantry
A	4th Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	4th Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	4th Inf 3	Co E; Co F; Hq & Hq Det 2d Bn (See notes)
A	4th Inf 4	Co G; Hv Wpn Co; ½ Hq & Hq Co 2d Brig
B	4th Inf 5	AT Co; Serv Co (less dets)
A	4th Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	4th Inf 7	Co L; Hv Wpn Co; ½ Regt Hq & Hq Co
		1st Field Artillery (105 MM Regiment) (See Note 7)
B	1st FA 1	Regt Hq & Hq Btry; ½ Hq & Hq Btry 1st F.A. Brig
B	1st FA 2	Btry A; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	1st FA 3	Btry B; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	1st FA 4	Btry C; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	1st FA 5	Btry D; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
B	1st FA 6	Btry E; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
B	1st FA 7	Btry F; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
		2d Field Artillery (105 MM Regiment)
B	2d FA 1	Regt Hq & Hq Btry; ⅓ Hq & Hq Btry 1st FA Brig
B	2d FA 2	Btry A; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry 1st Bn
B	2d FA 3	Btry B; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	2d FA 4	Btry C; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	2d FA 5	Btry D; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn

EXAMPLE OF A RAILWAY MOVEMENT OF AN INFANTRY DIVISION (SQUARE).—List of transportation groupings for planning purposes, (based on application of data to WDT/O published November 1, 1940) (Continued):

B	2d FA 6	Btry E, ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
B	2d FA 7	Btry F; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
		3d Field Artillery (155 MM Regiment)
B	3d FA 1	Btry A; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	3d FA 2	Btry B; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	3d FA 3	Btry C; ⅓ Hq & Hq Btry, 1st Bn; ⅓ Serv & Am Btry, 1st Bn
B	3d FA 4	Btry D; ½ Regt Hq & Hq Btry
B	3d FA 5	Btry E; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
B	3d FA 6	Btry F; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
B	3d FA 7	Btry G; ⅓ Hq & Hq Btry, 2d Bn; ⅓ Serv & Am Btry, 2d Bn
B	3d FA 8	Btry H; ½ Regt Hq & Hq Btry
		1st Engineers
B	Engrs 1	Regt Hq, Hq Co & Serv Co (less dets)
A	Engrs 2	1st Bn; Det Serv Co
A	Engrs 3	2d Bn; Det Serv Co
		1st Quartermaster Regiment
B	QM 1	Regtl Hq & Hq Co; ½ Co F
B	QM 2	Hq 1st Bn; ½ Co A
B	QM 3	½ Co A; ½ Serv Co
B	QM 4	½ Co B; ½ Co E
B	QM 5	Hq 3d Bn; ½ Co B
B	QM 6	Hq 2d Bn; ½ Co C
B	QM 7	½ Co C; ½ Serv Co
B	QM 8	½ Co D; ½ Co E
B	QM 9	½ Co D; ½ Co F
		1st Medical Regiment
B	Med 1	Co D; Co G; Hq 3d Bn; ½ Regtl Hq & Serv Co
B	Med 2	Co A; Co E; Hq 2d Bn
B	Med 3	Co B; Co C; Co F; Hq 1st Bn
B	Med 4	Co H; Co I; ½ Regt Hq & Serv Co
		HEADQUARTERS AND HEADQUARTERS COMPANY AND SPECIAL TROOPS 1ST DIVISION
B	Hq 1	½ of: Div Hq & Hq Co; 1st MP Co; 1st Sig Co
B	Hq 2	½ of: Div Hq & Hq Co; 1st MP Co; 1st Sig Co
B	Ord 1	1st Ord Co (M Maint)
Total	69	26 A and 43 B

NOTES

Infantry

1. Attached Med Det of 2 Officers, 27 men figured with each Bn.
2. The additional Med Det of 4 Officers, 19 men, 5 vehicles of headquarters section are placed on train No. 4 in each Regt.
3. The Bn sect, Com Plat, Regt Hq Co, 1 Officer, 17 men figured with each Bn.
4. The Bn Sect, Trans Plat, Serv Co, 1 Officer, 19 men figured with each Bn.

Field Artillery

5. Band included with Hq & Hq Btry Div Arty.
6. Attached Medical included with Hqrts Btry.
7. Requirements for 75-mm gun batteries same as for 105-mm howitzer.

■ 58. *a. Example of a Railway Movement of Foot Troops Only.—Type, Number and Loadings of Trains (Square Division)* See pars. 41 and 63 of Type Trains.

COMBINED RAIL AND MOTOR MOVEMENT

1	2	3
Trains		*Troops Carried on Each Train*
Type	*No.*	
C	4	Inf Bn, Regt Hq Co, Det Div Hq & MP Co & Sig Co
C	4	Inf Bn, AT Co Det Brig Hq & Hq Co
C	4	Inf Bn, Serv Co, Det Div Hq & MP Co & Sig Co
Total	12	

b. (BCT).—Brigade Combat Team.

ALL MOVING BY RAIL

1	2	3
Trains		*Troops Carried on Each Train*
Type	*No*	
A	12	Infantry—See par 57
B	2	Infantry—See par 57
B	7	1st FA—See par 57
B	1	Engr & Med
B	1	Med
B	1	Brig & Div Hq
Total	24	12 A 12 B

c. (BCT).—Brigade Combat Team Foot Elements only by Rail. Motor Elements and Prescribed Personnel overland.

1	2	3
Trains		*Troops Carried on Each Train*
Type	*No*	
C	6	Infantry

SECTION III

INFANTRY DIVISION (TRIANGULAR)

■ 59. FORM FOR AN ABRIDGED TABLE—ROAD SPACES AND TIME-LENGTHS, INFANTRY DIVISION (Triangular).

	1	2	3	4	5	6	7	8	9	10	11	12
	Units (including attached chaplains and medical personnel)	*T/O No*	*Authorized strength*		*Actual strength*			*Road space at halt*		*Road space moving*		
			Men	*Vehicles*	*Men*	*Vehicles*	*Men on foot*	*Men on foot (miles)*	*Vehicles (miles)*	*Men on foot (miles)*	*Vehicles 10 mph (miles)*	*Vehicles 25 mph (miles)*
1	....Inf Div											
2	....Inf Regt											
3	....Inf Regt											
4	....Inf Regt											
5	....One Inf Bn											
6	One Inf Bn, w/Med Det, Bn Sec Com Plat & Bn Sec Trans Plat Serv Co, Atchd											
7	....Div FA											
8	One Bn 105-mm How											
9	One Bn 155-mm How											
10	....Rcn Tr											
11	....Engr Bn											
12	....Med Bn											
13	....QM Bn											
14	....Sig Co											
15	....Div Hq & MP Co											
16	....Combat team											
17	....Combat team											
18	....Combat team											

NOTES

Column 1: Designation of unit to be entered, as "1st Infantry Division."
Columns 5, 6, and 7: Based on periodic reports of subordinate units, the actual strength in men, and vehicles should be entered.
Column 8: Number of men on foot×.8 (men in column of threes)=yards; ÷1760=miles.
Column 9: For a column of vehicles of all types, 10 yards per vehicle is used as the average road space.
Column 10: Road spaces of foot elements on the march are identical with road spaces at the halt.
Column 11: Number of vehicles×23.5 (2.35×mph) per vehicle=yards÷1760=miles.
Column 12: Number of vehicles×60 yards (2.35×mph) per vehicle=yards÷1760=miles.
Column 13: Number of men on foot×.011=minutes at 2½ mph (×.0135 at 2 mph).
Column 14: Number of vehicles×.08 =minutes.
Column 15: Men on foot (column 7) divided by 15 for 1½-ton trucks; divided by 25 for 2½-ton trucks. (See Note 4, paragraph 46, and paragraph 47.)

13		14	15		16		17		18	19
Time-length moving			*Additional vehicles to carry foot troops (col 7)*		*Road space additional vehicles at halt (miles)*		*Time-length additional vehicles in close column*		*When Div moves by Trk*	
Men on foot (min)		*Vehicles in close column (min)*							*Road space at halt (cols 9+16) (miles)*	*Time-length in close column (cols 14+17) (min)*
2 mph	*2½ mph*		*1½-ton*	*2½-ton*	*1½-ton*	*2½-ton*	*1½-ton*	*2½-ton*		

NOTES

Column 1: Designation of unit to be entered, as "1st Infantry Division."
Columns 5, 6, and 7: Based on periodic reports of subordinate units, the actual strength in men, and vehicles should be entered.
Column 8: Number of men on foot×.8 (men in column of threes)=yards; ÷1760=miles.
Column 9: For a column of vehicles of all types, 10 yards per vehicle is used as the average road space.
Column 10: Road spaces of foot elements on the march are identical with road spaces at the halt.
Column 11: Number of vehicles×23.5 (2.35×mph per vehicle=yards÷1760=miles.
Column 12: Number of vehicles×60 yards (2.35×mph) per vehicle=yards÷1760=miles.
Column 13: Number of men on foot×.011=minutes at 2½ mph (×.0135 at 2 mph).
Column 14: Number of vehicles×.08 =minutes.
Column 15: Men on foot (column 7) divided by 15 for 1½-ton trucks; divided by 25 for 2½-ton trucks. (See Note 4, paragraph 46, and paragraph 47.)

■ 60. SHUTTLING: INFANTRY DIVISION (Triangular).—*a.* Refer to paragraph 51 for general formula for shuttling, and to paragraph 46, 47 and 61 for transportation requirements and availability.

b. The following example of standing operating procedure for a motor movement by shuttling for an infantry division (triangular) should be used only as a guide from which to prepare shuttle plans based upon the actual transportation available and the personnel to be moved:

c. Example based on WD T/O November 1, 1940.

(1) *Plan.*—Motor Movement I is a shuttle movement in which the division moves in its organic motors in two shuttles, behind a screen of other troops adequate to protect the movement against strong frontal attack. CT 1 and CT 2, with reinforcements from division troops, constitute the first shuttle. It moves on two or more routes and protects the immediate front of its movement with small advance guards. In addition to its organic transportation, sufficient additional trucks from units of the division not moving in the first shuttle are attached to CT 1 and CT 2 to transport by motor all their personnel and equipment. At the conclusion of the first shuttle, trucks belonging to units of second shuttle return to pick up prescribed loads and move CT 3 (reinforced). Necessary trucks from units of first shuttle dump loads in forward area and return to assist in moving foot troops of second shuttle. Division troops move behind the second shuttle without distance.

(2) *Security.*—The Reconnaissance Troop protects the movement by conducting reconnaissance to the front and flanks. Battery D 4th Field Artillery Battalion is held in mobile reserve to provide antitank protection. None of its organic transportation is employed for other purposes during the movement.

(3) *Warning Order.*—Preliminary arrangements for this shuttle movement will be inaugurated upon receipt of order "Alert for motor movement one," or "Alert for motor movement one, after (designated hour)."

MOTOR MOVEMENT NUMBER ONE (MM1)—1ST DIVISION (Triangular).

FIRST SHUTTLE

Group 1	*Group 2*
1st Inf	2d Inf
1st FA Bn	2d FA Bn
1st Plat (w/tractor) Co A 1st Engr Bn	1st Plat (w/tractor) Co B 1st Engr Bn
Co A 1st Med Bn	Co B 1st Med Bn
Det 1st Sig Co	Det 1st Sig Co

SECOND SHUTTLE

Group 3	*Group 4*
3d Inf	
3d FA Bn	
1st Plat (w/tractor) Co C 1st Engr Bn	Division Troops (less dets)
Co C 1st Med Bn	
Det 1st Sig Co	

ASSIGNMENT OF TRANSPORT (MM 1)

Unit from which Transport is detached	*Number of trucks provided and unit to which transport is attached*			*REMARKS*
	1st Shuttle		*2d Shuttle*	
	1st Inf	*2d Inf*	*3d Inf*	
1st QM Bn	48 *a*	5 *a*	7 *a*	A det of 1st Div Arty Hq & Hq Btry marches with the 105-mm Bn of one of the groups of the 1st Shuttle.
1st Med Bn	13 *a* 11 *b*			
1st Div Arty		98 *a*	57 *a*	1st Sig Co assists in shuttling the foot troops and equipment of DHQ and Div Hq & MP Co.
1st Engr Bn	29 *b*	9 *b*		At 10 minutes per 100 vehicles, the approximate time length of march groups 1, 2 and 3 is 50 minutes; of march group 4, 30 minutes.
1st Inf			37 *b*	
2d Inf			37 *b*	
3d Inf	39 *b*			
TOTALS *c*				
2½-ton *a*	61	103	64	
1½-ton *b*	79	9	74	

NOTES

a 2½-ton trucks.
b 1½-ton trucks.
c Includes 1 extra truck, 1½-ton, for each inf regt.

■ 61. EXAMPLE OF G-3 WORK SHEET SHOWING AVAILABILITY OF CARGO TRUCKS (1½, 2½, and 4-TON) IN THE INFANTRY DIVISION (Triangular) FOR MOVEMENT OF FOOT TROOPS *a* (based on WD T/O November 1, 1940).— *a.* This table shows a priority which might be established within a division for the availability of organic motor transportation of units scheduled to move in the second shuttle, to be used for movement of foot troops of the first shuttle. With slight modification it might also serve to show availability of transportation to be returned by units of the first shuttle for movement of foot troops of the second shuttle.

G-3 WORK SHEET

AVAILABILITY OF MOTOR TRANSPORT FOR TROOP MOVEMENT

Priority	*Normal use*	*QM Bn* 2½-*T*	*105-mm Bn* 2½-*T*	*155-mm Bn* 2½*T*-	*Inf Regt* 1½-*T*	*Engr Bn* 1½-*T*	*Med Bn* 1½-*T*	*Med Bn* 2½-*T*	*Sig Co* 1½-*T*	*Total*
1	Cargo trucks	48								48
2	Personnel & baggage				5*	3	8		11	37
3	Organization equipment	3	5	6	4	9	1	13		59
4	Kitchen	2	5	6	15	4	5		2½-*T* 1	78
	Ammunition		18	20	13					113
5	Command & operations		5	5	1				3	26
	Signal		9	9					22	58
	Engineer pers & tools					30				30
	Medical	1½-*T* 1	1	1	2	1				12
	Supplies	4	2	2			4			16
	TOTAL	58	45	49	40	47	18	13	37	477
Emergency only	Motor maintenance	4	8	1-4-*T* 8	5	1	3	5		
	Special equipment	4				7				
	Prime movers 2½-ton		15	8						53
	Prime movers 4-ton			15		3				18

NOTES

1 The availability of cargo trucks and the priority of such availability are command decisions.
2 Reference prime movers see par. 344 FM 100–5 (FSR).
3 Ordinarily the Sig Co and the Div Hq and Div Hq and MP Co, by pooling transport, can move all the personnel and equipment pertaining to these organizations in 1½ round-trips and at the same time perform essential functions (assuming that the car plat of the QM Bn also transports Div Hq personnel).
4 Unit motor repair vehicles are not available for other purposes. They usually accompany the motor vehicles of the unit.
* Includes 3 trucks for personnel of the AT Co.

■ 62. EXAMPLE OF A RAILWAY MOVEMENT OF AN INFANTRY DIVISION (Triangular).—List of transportation groupings for planning purposes (based on application of data to WDT/O published November 1, 1940):

Type Train	*Symbol*	*Transportation groupings*
		1st Infantry
A	1st Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	1st Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	1st Inf 3	Co E; Co F; Hq & Hq Det 2 dBn (See notes)
A	1st Inf 4	Co G; Hv Wpn Co; ½ Hq & Hq Co 1st Brig
B	1st Inf 5	AT Co; Serv Co (less dets)
A	1st Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	1st Inf 7	Co L;Hv Wpn Co; ½ Regt Hq & Hq Co
		2d Infantry
A	2d Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	2d Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	2d Inf 3	Co E; Co F; Hq & Hq Det 2d Bn (See notes)
A	2d Inf 4	Co G; Hv Wpn Co; ½ Hq & Hq Co 1st Brig
B	2d Inf 5	AT Co; Serv Co (less dets)
A	2d Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	2d Inf 7	Co L;Hv Wpn Co; ½ Regt Hq & Hq Co
		3d Infantry
A	3d Inf 1	Co A; Co B; Hq & Hq Det 1st Bn (See notes)
A	3d Inf 2	Co C; Hv Wpn Co; ½ Regt Hq & Hq Co
A	3d Inf 4	Co E; Co F; Hq & Hq Det 2d Bn (See notes)
A	3d Inf 3	Co G; Hv Wpn Co; ½ Hq & Hq Co 2d Brig
B	3d Inf 5	AT Co; Serv Co (less dets)
A	3d Inf 6	Co I; Co K; Hq & Hq Det 3d Bn (See notes)
A	3d Inf 7	Co L;Hv Wpn Co; ½ Regt Hq & Hq Co
		Field Artillery
B	HQ Div Arty-1	Hq & Hq Btry Div Arty
B	1st FA BN 2	Btry A; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	1st FA Bn 3	Btry B; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	1st FA Bn 4	Btry C; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	2d FA Bn 5	Btry A; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	2d FA Bn 6	Btry B; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	2d FA Bn 7	Btry C; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	3d FA Bn 8	Btry A; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	3d FA Bn 9	Btry B; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	3d FA Bn 10	Btry C; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	4th FA Bn 11	Btry A; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	4th FA Bn 12	Btry B; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	4th FA Bn 13	Btry C; ⅓ Bn Hq Btry; ⅓ Serv & Am Btry
B	4th FA Bn 14	Btry D; (75-mm Antitank Btry)
		Engineers
B	Engrs 1	½ Engr Bn, less dets
B	Engrs 2	½ Engr Bn, less dets
		Medical
B	Med 1	½ Med Bn; less dets
B	Med 2	½ Med Bn; less dets
		Quartermaster
B	QM 1	½ QM Bn, less dets
B	QM 2	½ QM Bn, less dets
		Division Headquarters and Miscellaneous
B	HQ 1	½ Div Hq & Hq Co; Det Sig Co; Det QM Bn
B	HQ 2	Recn Tr; Det Med Bn
B	HQ 3	½ Div Hq & Hq Co; Sig Co (less dets); Det QM Bn
Total	44	18 A and 26 B

NOTES

Infantry
1. Attached Med Det of 2 Officers, 27 men figured with each Bn.
2. The additional Med Det of 4 Officers, 19 men, 5 vehicles of headquarters section are placed on train No. 4 in each Regt.
3. The Bn Sect, Com Plat, Regt Hq Co, 1 Officer, 17 men figured with each Bn.
4. The Bn Sect, Trans Plat, Serv Co, 1 Officer, 19 men figured with each Bn.

Field Artillery.
5. Band Included with the Hq & Hq Btry Div Arty.
6. Attached Medical included with Hqtrs Btry.
7. Requirements for 75-mm gun batteries same as for 105-mm howitzer.

■ 63. *a.* EXAMPLE OF A RAILWAY MOVEMENT OF FOOT TROOPS ONLY.—INFANTRY DIVISION (Triangular).—*Type, number, and loadings of trains* (combined rail and motor movement) : (See pars. 41 and 62)

1	2	3
Trains		*Troops carried on each train*
Type	*No.*	
C	3	Inf Bn, Regtl Hq Co, det Div Hq & MP Co
C	3	Inf Bn, AT Co, det Div Hq & MP Co
C	3	Inf Bn, Serv Co, det Div Hq & MP Co
TOTAL	9	

NOTES

Assumptions:
67 officers and 6,491 men ride overland in the 1,560 motor vehicles of the division.
Units, including atchd Med and Ch: average per train: + (or —) 40 officers, 931 men.
Arrangements made for motors to meet trains at detraining points, or for necessary motor service there to be provided from other sources.
All units except Inf regts and Div Hq and Hq and MP Co completely motorized.

b. (CT).—Regimental Combat Team All moving by Rail.

1	2	3
Trains		*Troops carried on each train*
Type	*No.*	
A	6	Infantry
B	1	Infantry
B	3	Field Artillery
B	1	Engr and MP Co
B	1	Div Hq & Co A 1st Med
TOTAL	12	6 A, 6 B

c. (CT).—Foot elements only by rail, Motor elements and prescribed personnel overland.

1	2	3
Trains		*Troops carried on each train*
Type	*No.*	
C	3	Infantry

■ 64. WORK SHEET FOR PREPARING ENTRAINING TABLES.—*Troop movements by railway:*

		Entraining points					
Location		*Hardy*	*Barnett 1*	*Barnett 2*	*Barnett 3*	*Tollgate*	
Miles from forward entraining point		0	4	4	4	8	
Minutes from forward entraining point		0	12	12	12	24	
Train No.	*Train schedule*	*Entraining plan*					
1	II		H—0:12 ① B-Hq-1				1st Echelon
2	H+0:40 ④			H+28 B-1st Inf-1			
3	1:20 ⑤				H+1:08 ② A-1st Inf-2		
4	2:00					H+1:36 B-2d Inf-1③	
5	2:40	H+2:40 B-QM-2					
6	3:20		H+3:08 A-1st Inf-3				
7	4:00			H+3:48 A-1st Inf-4			
* *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	
21	14:00			H+13:48 B-4th Inf-1			Division less 1st Echelon
22	14:40				H+14:28 A-4th Inf-2		
* *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	* * * * *	

NOTES

① H—0:12=H (hour) minus 12 minutes from forward entraining point.
② H=1:08=H (hour) plus 1 hour and 8 minutes.
③ B—2d Inf—1=Type B train, 2d Infantry, 1st train.
④ H=0:40=H (hour) plus 40 minutes.
⑤ 1:20=H (hour) plus 1 hour and 20 minutes.

Procedure.—Determine the entraining points to be used (based on loading facilities and convenience of foot troops) and tentatively the units and numbers of trains to load at each.

Block off on the work sheet for each entraining point, by units, the number of trains to load there (for each echelon successively, if the movement is to be by echelon).

Number of trains in the order of their departure from the entraining area.

Check to see that each train is allowed time for loading (at least 3 hours between trains from one entraining point if vehicles and matériel are to be loaded. Where only foot elements move by rail and motorized elements of the unit move overland, allow one-half hour for loading and one-half hour for unloading).

Check to see that the train density prescribed by the Railway Transportation Service is not exceeded and that time is not unnecessarily lost; for instance, with a train density of 36, that one train can leave the entraining area every forty minutes. Make necessary adjustments.

Determine the time at which each successive train is to leave the entraining area.

Determine and enter the time required for trains from each entraining point to reach the forward entraining point (limit of the entraining area).

Enter, for each train successively, the time it must leave its entraining point to reach the forward point at the regular intervals of train density (at least, not more than that interval).

Prepare one entraining table (Form 11, SOFM 101-5) for each entraining point, designating the specific units or elements to be loaded on each train.

A detraining table often is not made. When desired, the running time from the entraining point to the detraining point may be added to the time of departure from the entraining point to give the expected day and hour of arrival.

SECTION IV

CAVALRY DIVISION (HORSE)

■ 65. FORM FOR AN ABRIDGED TABLE—ROAD SPACES AND TIME-LENGTHS, CAVALRY DIVISION:

	1	2	3	4	5	6	7	8	9	10	11	12	13
			Authorized strength			*Actual strength*			*Road space*			*Time length*	
1	***Units***	*T/O No.*	*Men*	*Anls*	*M vehicles*	*Men*	*Anls*	*M vehicles*	*Mtd elements (col of twos) at halt or moving (yds)*	*Motor elements*		*Mtd elements (col of twos) 6 mph (min)*	*M elements 25 mph (min)*
										Halt (yds)	*25 mph (yds)*		
2	.... Cav Div												
3	.... Cav Brig												
4	.... Cav Brig												
5	.... Cav Regt												
6	.... Cav Regt												
7	.... Cav Regt												
8	.... Cav Regt												
9	.... Div FA												
10	.... Engr Sq												
11	.... Rcn Sq Mecz												
12	.... Med Sq												
13	.... QM Sq												
14	.... Cav Div Hq												
15	.... Div Hq Tr												
16	.... Sig Troop												
17	.... Antitank Tr												
18	.... Ord Co, M Maint												
19	Atchd Med (+5 Ch)												
20	One Cav Sq												
21	One FA Bn, 75-mm How												
22	One FA Bn, 105-mm How												

NOTES

Column 1: Designation of unit to be entered, as "1st Cavalry Brigade."
Columns 6, 7, and 8: Based on periodic reports of subordinate units, the actual strength in men, animals, and vehicles should be entered.
Column 9: The road spaces of animal elements at a halt and moving are identical. Average road space for large units (column of twos) = 3 yards × number of animals.
Column 10: For a column of vehicles of all types, 10 yards per vehicle is used as the average road space.
Column 11: Number of vehicles × 60 yards (2.35 × mph) per vehicle = road space at 25 mph.
Column 12: Using average road spaces per animal (large units, 3 yards per animal), the time-length per animal at 6 mph is .017 minutes. Number of animals × .017 minutes = minutes, time-length.
Column 13: Number of vehicles × .08 = minutes, time-length at 25 mph.
Columns 9, 10, and 11: For convenience, entries may be made in miles rather than yards.

■ 66. EXAMPLE OF A RAILWAY MOVEMENT OF A CAVALRY DIVISION, FOR PLANNING PURPOSES.—T/O's dated Nov. 1, 1940.

Type	*Train*	
A	1 Cav 1	Tr A: dets; A. T. Troop.
A	1 Cav 3	Tr D; Hq & Hq & Serv Tr; 2 Sqn Hq Det; Med & Vet Det (no horses).
E	1 Cav 2	Tr B; Tr C; (less det) Sqn horses.
E	1 Cav 5	Tr E; Tr F; (less det) Sqn horses.
E	1 Cav 4	MG Tr; Sp Wpn Tr; (less det) rest of horses.
		2d Cavalry
A	2 Cav 1	Tr A; Dets; 1st Brig Wp Troop.
E	2 Cav 2	Tr B; Tr C; (less det) Sqn horses.
A	2 Cav 3	Tr D; Hq & Hq & Serv Tr; 2 Sqn Hq Dets; Med & Vet Det (no horses).
E	2 Cav 4	MG Tr; Sp Wpn Tr; (less det) rest of horses.
E	2 Cav 5	Tr E; Tr F; (less det) Sqn horses.
		3d Cavalry
A	3 Cav 1	Tr A; Dets; 2d Brig Wpn Troop.
E	3 Cav 2	Tr B; Tr C; (less det) Sqn horses.
A	3 Cav 3	Tr D; Hq & Hq & Serv Tr; 2 Sqn Hq Dets; Med & Vet Det (no horses).
E	3 Cav 4	Tr E; Tr F (less det) Sqn horses.
E	3 Cav 5	MG Tr; Sp Wpn Tr; (less det) rest of horses.
		4th Cavalry
A	4 Cav 1	Tr A; Dets; Collecting Tr.
E	4 Cav 2	Tr B; Tr C; (less det) Sqn horses.
A	4 Cav 3	Tr D; Hq & Hq & Serv Tr; 2 Sqn Hq Dets; Med & Vet Det.
E	4 Cav 4	Tr E; Tr F; (less det) Sqn horses.
E	4 Cav 5	MG Tr; Sp Wpn Tr; (less det) rest of horses.
		1st F. A. Bn.
B	1 FA 1	Btry A; Bn Hq Btry (no horses).
D	1 FA 2	Btry B; Serv & Am Btry; Med Det; ½ Div Hq Btry.
E	1 FA 3	Btry C; Horse train.
		2d F. A. Bn.
B	2 FA 1	Btry A; Bn Hq Btry.
D	2 FA 2	Btry B; Serv & Am Btry; Med Det; ½ Div Hq Btry.
E	2 FA 3	Btry C; horse train.
		3d F. A. Bn.
B	3 FA 1	⅓ Hq Btry; Btry A; ⅓ Serv & Am Btry.
B	3 FA 2	⅓ Hq Btry; Btry B; ⅓ Serv & Am Btry.
B	3 FA 3	⅓ Hq Btry; Btry C; ⅓ Serv & Am Btry.
		Engineer Squadron
D	1 Eng 1	½ Sqn Hq Tr; Tr A.
D	1 Eng 2	½ Sqn Hq Tr; Tr B.
		Reconnaissance Squadron
D	1 Rcn 1	Hq Rcn Sqn; Med Det; Tr A.
B	1 Rcn 2	Tr B; Armored Troop.
B	1 Rcn 3	½ Mtcyl Tr; Ord Co (M-M).
B	1 Rcn 4	½ Mtcyl Tr; Lt Maint Tr (QM Sqn).
		Quartermaster Sqn.
D	1 QM 1	½ Sqn Hq Tr-Det Tr A.
D	1 QM 2	Tr A-Det Vet Tr.
D	1 QM 3	½ Sqn Hq Tr-Det Tr B.
D	1 QM 4	Troop B-Det Vet Tr.
D	1 QM 5	Det Tr A; Det Tr B.
		Signal Troop
D	1 Sig 1	½ Sig Troop; Hq Det Med Sqn.
D	1 Sig 2	½ Sig Troop; Clearing Troop.
		Division Headquarters
B	1 Div 1	½ Div Hq & Hq Tr; Brig Hq Tr.
B	1 Div 2	½ Div Hq and Hq Tr; Brig Hq Tr; Det Vet Tr.
E	1 Div 3	Det Div Hq; Pack Tr. (Horse Train).

Type	*Trains*	
	Totals	Type A- 8 Type B-10 Type D-12 Type E-15 45 trains.

SECTION IV
ARMORED DIVISION AND GHQ TANKS

■ 67. *a. Example of a Railway Movement of an Armored Division, for planning purposes.*—T/O's dated Nov. 15, 1940:

		2	*3*	*4*
1	*Troop units carried on each train*	*No of trains*	*Type*	*Total*
2	1/3 DHQ and Hq Co, and Sig Co	3	D	3 D
3	1 Armd Co, L and MG Co	1	D	
4	1/3 Armd Co, L 1/3 Rcn Co, and 1/3 Serv Co	3	D	
5	3 Bn Hq, L and Regt'l Hq & Hq Co	1	D	
6	2 1/3 Armd Co, L	1	D	
7	2 1/3 Armd Co, L	2	D	
8	Total Armd Regt, L			8 D
9	1½ Armd Co, M and ¼ Hq & Hq Co	4	D	
10	2/3 Bn Hq, M and 1/3 Serv Co	3	D	
11	Total Armd Regt, M			7 D
12	2/3 FA Btry, 1/3 Am Tn, and 1/3 Serv Btry	3	D	
13	FA Btry and 1/2 Hq & Hq Btry	2	D	
14	Total FA Regt			5 D
15	Hq and Hq Co Armd Brig	1	D	1 D
16	Total Armd Brig			32 D
17	1 Inf R Co, 1/3 Serv Co, and 2/3 Bn Hq & Hq Det	3	D	
18	3/4 Inf R Co, 1/2 Hv W Co, and 1/4 AT Co	4	D	
19	1 Hq and Hq Co, Inf Regt	1	D	
20	Total Inf Regt			8 D
21	1 FA Btry, Bn and 1/2 AT Btry	2	D	
22	1/2 FA Btry, 1/2 Serv & Am Btry, and 1/2 Hq & Hq Co	2	D	
23	Total FA Bn			4 D
24	1/3 Bdg Co and 1/3 Hq & Hq Co	3	D	
25	1½ Engr Co	2	D	
26	Total Engr Bn			5 D
27	1 Rcn Co and 1/2 Inf R Co	2	D	
28	1 Armd Co, L and 1 Hq & Hq Det	1	D	
29	Total Rcn Bn			3 D
30	2/3 Ord Co and 1/3 Hq & Hq Co	3	D	

	1	2	3	4
1	*Troop units carried on each train*	*No of trains*	*Type*	*Total*
31	Total Ord Bn			3 D
32	1 Coll Co	1	D	
33	1 Clr Co and Hq & Hq Det	1	D	
34	Total Med Bn			2 D
35	1/3 Trk Co and 1/3 L Maint Co	3	D	
36	Hq & Hq Co	1	D	
37	Total QM Bn			4 D
38	TOTAL ARMD DIV			61 D

b. Example of a Railway Movement of an Armored Division less Wheeled Vehicles and Personnel, for training purposes.—T/O's dated Nov. 15, 1940:

		2	3	4
1	*Troop units carried on each train*	*No of trains*	*Type*	*Total*
2	Armd Bn L	3	D	
3	1 Rcn Co, 1 MG Co, 1 Serv Co, and 1 Hq & Hq Co	1	D	
4	Total Armd Regt L			4 D
5	2 Armd Co, M Bn Hq H, and Serv Co	1	D	
6	2 Armd Co, M and Bn Hq M	1	D	
7	2 Armd Co, M and Regtl Hq & Hq Co	1	D	
8	Total Armd Regt, M			3 D
9	1 FA Btry, 1 Serv Btry and Brig Hq & Hq Co	1	D	
10	1 1/2 FA Btry, and 1/2 Hq & Hq Btry	2	D	
11	Total FA Regt and Brig Hq & Hq Co			3 D
12	TOTAL ARMD BRIG			14 D
13	2 Inf R Co and 1/2 AT Co	1	D	
14	1 Inf R Co, 1/2 AT Co, Serv Co, and Hq & Hq Co	1	D	
15	2 Hv W Co, 2 Bn Hq & Hq Co, and 1/4 Inf R Co	1	D	
16	2 3/4 Inf R Co	1	D	
17	Total Inf Regt			4 D

b. Example of a Railway Movement of an Armored Division less Wheeled Vehicles and Personnel, for training purposes.—T/O's dated Nov. 15, 1940 (Continued):

1	1 Troop units carried on each train	2 No of trains	3 Type	4 Total
18	1 FA Btry (Bn), 1 Serv & Am Btry, Hq & Hq Btry	1	D	
19	1 FA Btry and 1/2 AT Btry	2	D	
20	Total FA Bn			3 D
21	1/2 Bdg Co, and Hq & Hq Co	1	D	
22	3 Engr Co	1	D	
23	1/2 Bdg Co	1	D	
24	Total Engr Bn			3 D
25	Total Rcn Bn			1 D
26	TOTAL ARMD DIV			25 D

c. Example of a Railway Movement of GHQ Reserve Tank Group Units, for planning purposes.—T/O's dated Nov. 15, 1940:

1	Unit	2 Personnel	3 Vehicles	4 5 No and type of railway cars per unit ③		6 Total No of cars ⑥	7 8 No and type of railway cars per unit for track vehicles* ③⑦⑧		9 Total No of cars ⑥
				Flat cars ⑤	Coaches ④		Flat cars ⑤	Coaches ④	
2	Armd Co, L (3)	111	31	13	1.9	14.9	10	.3	10.3
3	Bn Hq & Hq, Co L ②	210	67	25.7	3.7	29.3	6	.2	6.2
4	Total Tk Bn, L	543	160	64.7	9.3	74.0	36	1.1	37.2
5	Armd Co, M (3)	164	32	14	2.8	16.8	11.5	.8	12.3
6	Bn Hq & Hq Co, M ②	216	90	37	3.8	40.8	5	.2	5.2
7	Total Tk Bn M	708	186	79	12.0	90.7	39.5	2.6	42.1
8	Hq & Hq Co	161	50	17.3	2.8	20.2	5	.2	5.2
9	Ord Co, Hv Maint (Atchd)	223	50	23	3.8	26.8			

① Based on T/Os dated November 15, 1940.
② Includes personnel and vehicles of attached medical.
③ One baggage or box car, for kitchen, is in composition of each train.
④ The capacity of each coach is 60 enlisted men or 40 officers. Coaches are replaced by tourist pullmans for journeys involving movement of two nights or longer.
⑤ Cars, flat or gondola, are loaded as follows:

Motorcycles per car	15
Trucks, ¼-ton, liaison per car	4
Four-wheeled vehicles, half-track cars, or tanks per car	2
Prime mover and towed load per car	1

⑥ Cabooses are included in trains having no passenger car equipment.
⑦ Includes railway car to transport personnel for protection and care of vehicles.
⑧ Includes antitank guns, howitzers and towed loads.
⑨ Includes half-track vehicles.

d. Example of a Railway Movement of GHQ Reserve Tank Group Units, for planning purposes.—T/O's dated Nov. 15, 1940.

1		2	3	4
	Troop units carried on each train	*No of trains*	*Type*	*Total*
2	1/3 Tk Bn, L	3	D	
3	Total Tk Bn, L			3 D
4	1 Armd Co, M and 1/4 Bn Hq & Hq Co M	2	D	
5	1/2 Armd Co, M and 1/4 Bn Hq & Hq Co M	2	D	
6	Total Tk Bn, M			4 D
7	Hq & Hq Co, Tk Gp	1	D	1 D
8	Ord Co, Hv Maint (Atchd)	1	D	1 D

e. Example of a Railway Movement of GHQ Reserve Tank Group Units less Wheeled Vehicles and Personnel for planning purposes.—T/O's dated Nov. 15, 1940.

1		2	3	4
	Troop units carried on each train	*No of trains*	*Type*	*Total*
2	2 Armd Co, L and 1 Bn Hl & Hq Co	1	D	
3	1 Armd Co, L	1	D	
4	Total Tk Bn, L			2 D
5	2 Armd Co, M	1	D	
6	1 Armd Co, M and Bn Hq & Hq Co	1	D	
7	Total Tk Bn, M			2 D
8	Hq & Hq Co, Tk Gp	1	D	1 D

f. Loading and Movement by Rail. Division. (1)

1	Unit	2 Personnel	3 Vehicles	4 No and type of railway cars per unit (7) Flat cars (8)	5 No and type of railway cars per unit (7) Coaches (8)	6 Total No of cars (4)	7 No and type of railway cars permit for track vehicles* (1)(5)(6) Flat cars (8)	8 No and type of railway cars permit for track vehicles* (1)(5)(6) Coaches (8)	9 Total No of cars (4)
2	DHQ & Hq Co	325	102	35.3	5.8	41.1			
3	Sig Co	249	74	27	4.2	31.2			
4	Armd Co, L (3 Cos)	93	26	10.5	1.6	12.1	8	.5	8.5
5	Bn Hq L	24	9	2.5	.4	2.9	2	.2	2.2
6	Total Armd Bn, L (3 Bns)	303	87	34	5.2	39.2	26	1.7	27.7
7	Rcn Co	167	51	15.5	2.9	18.4	9	.6	9.6
8	MG Co	200	35	13.5	3.4	16.9	9	.6	9.6
9	Serv Co (5)	283	117	52	4.8	56.8	.5	.1	.6
10	Hq, Hq Co & Band	209	50	16.7	3.6	20.3	7.5	.5	8.0
11	Total, Regt, L	1,768	514	199.7	30.3	230.0	104.0	6.9	110.9
12	Armd Co, M (3 Cos)	164	32	14.3	2.8	17.1	11.5	.7	12.2
13	Bn Hq M	40	10	3.0	.7	3.7	2.5	.2	2.7
14	Total Armd Bn M (2 Bns)	532	106	45.8	9.1	54.8	37.0	2.3	39.3
15	Serv Co (6)	283	143	64.7	4.8	69.6	.5	.1	.5
16	Hq, Hq Co & Band	146	34	10.5	2.6	13.0	3.5	.3	3.8
17	Total, Regt, M	1,493	389	166.8	25.6	192.2	78.0	5.0	82.9
18	FA Btry (4 Btrys) 105-mm How	166	40	17.5	2.8	20.3	15.5	1.0	16.5
19	Am Tn	114	45	20.8	1.9	22.7			
20	Serv Btry (5)	119	46	20.5	2.1	22.6	2.0	.1	2.1
21	Hq, Hq Btry & Band	195	38	13.7	3.4	17.1	9.0	.6	9.6
22	Total, FA Regt 105-mm How	1,092	289	125.0	18.6	143.6	73.0	4.7	77.7
23	Hq & Hq Co, Brig	130	43	14.9	2.3	17.2	1.0	.1	1.1
24	Total Armd Brig	6,251	1,749	706.1	107.1	813.0	360.0	23.6	383.5
25	R Co, Inf (3 Cos)	216	27	12.0	3.7	15.7	9.5	.6	10.1
26	Hv W Co, Inf	159	30	12.5	2.7	15.2	10.0	.7	10.7
27	Bn Hq & Hq Det	32	12	3.0	.6	3.6	2.0	1.	2.1
28	Total Inf Bn (2 Bns)	839	123	51.5	14.4	65.9	40.5	2.6	43.1
29	AT Co	148	38	16.5	2.5	19.0	14.5	1.0	15.5
30	Serv Co (5)	210	61	24.0	3.6	27.6	1.0	.1	1.1
31	Hq, Hq Co & Band	178	42	14.5	3.1	17.6	8.0	.6	8.6
32	Total Inf Regt, Armd	2,214	387	158.0	38.0	196.0	104.5	6.9	111.4
33	FA Btry, 105-mm How (3 Btrys)	145	36	15.2	2.5	17.7	13.5	.9	14.4
34	AT Btry	153	46	18.0	2.6	20.6	15.5	1.0	16.5
35	Serv and Am Btry (5)	136	51	22.7	2.3	25.0	2.5	.2	2.7
36	Hq & Hq Btry	142	35	11.8	2.5	14.3	7.0	.5	7.5
37	Total, FA Bn Armd	866	240	98.1	14.9	113.0	65.5	4.4	69.9

1	Unit	Personnel	Vehicles	No nad type of railway cars per unit ⑦		Total No of cars ④	No nad type of railway cars permit for track vehicles ①⑤⑥		Total No of cars ④
				Flat cars ⑧	Coaches ③		Flat cars ⑧	Coaches ③	
38	Engr Co (3 Cos)	137	29	13.5	2.3	15.8	7.5	.5	8.0
39	Bdg Co	163	119	56.5	2.8	59.3	42.0	.16	43.6
40	Hq & Hq Co ⑤	183	47	21.4	3.2	24.6	5.0	.3	5.3
41	Total Engr Bn Armd	757	253	118.4	12.9	131.3	69.5	3.4	72.9
42	Rcn Co (2 Cos)	193	57	17.5	3.3	20.8			
43	R Co	222	27	12.0	3.8	15.8	9.5	.6	10.1
44	Armd Co, L	93	26	10.5	1.6	12.1	8.0	.5	8.5
45	Hq & Hq Det ⑤	89	28	11.0	1.6	12.6	.5		.5
46	Total Rcn Bn Armd	790	195	68.5	13.6	82.1	18.0	1.1	19.1
47	Ord Co, Maint (2 Cos)	158	56	25.0	2.8	27.8			
48	Hq & Hq Co ⑤	91	61	29.5	1.6	31.1			
49	Total Ord Bn, Maint	427	174	79.5	7.2	86.7			
50	Coll Co "A"	169	54	20.8	2.8	23.6			
51	Clr Co	130	29	12.5	2.3	14.8			
52	Hq & Hq Det ⑤	59	15	5.7	1.1	6.8			
53	Total Med Bn Armd	358	98	39.0	6.2	45.2			
54	Trk Co	113	101	49.7	1.9	51.6			
55	L Maint Co	189	51	24.5	3.2	27.7			
56	Hq & Hq Co ⑤	158	35	13.0	2.8	15.8			
57	Total QM Bn	460	187	87.2	7.9	95.1			
58	TOTAL ARMD DIV	12,697	3,459	1417.1	217.8	1634.7	617.5	39.4	656.8

① Includes railway car to transport personnel for protection and care of vehicles.
② Based on T/Os dated November 15, 1940.
③ The capacity of each coach is 40 officers or 60 enlisted men. Coaches are replaced by tourist pullmans for journey involving movement of two nights or longer.
④ Cabooses are included in trains having no passenger car equipment.
⑤ Includes attached medical detachment and attached chaplains.
⑥ Includes antitank guns, howitzers, and trailers.
⑦ One barrage or box car for kitchen is in composition of each train.
⑧ Cars, flat or gondola, are loaded as follows:

Motorcycles per car	15
Trucks, ¼-ton, liaison, per car	4
Four-wheeled vehicles, half-track cars, or tanks per car	2
Prime mover and towed load per car	1

⑨ Includes half-track vehicles.

Chapter 3
SUPPLY*

		Paragraphs
SECTION I.	General	68-101
II.	Infantry Division (Square)	102-113
III.	Infantry Division (Triangular)	114-118
IV.	Infantry Division (Triangular, Motorized)	119-120
V.	Armored Division	121-133
VI.	Cavalry Division (Horse)	134-140
VII.	Army Corps	141-145
VIII.	Field Army	146-149
IX.	GHQ Reserve Units	150-153
X.	Air Force	?

SECTION I
GENERAL

■ 68. CLASSIFICATION OF SUPPLY.—For convenience supplies are divided into Class I, II, III, IV, and V (See FM 100-10)

■ 69. BASIC WEIGHTS FOR COMPUTATION OF LOADS.—*Miscellaneous.*

Item	*Unit*	
A-ration *a*	ea	5.12 lbs net; 6:22 lbs packed. Average for planning—6 lbs per ration.
B-ration *b*	ea	Approximately same weight as A-ration.
C-ration *c*	ea	5.1 lbs packed.
D-ration *d*	ea	¾ pound.
Grain ration	ea	10 lbs average for horses and mules.
Grain ration	ea	5 lbs per animal aboard ship.
Hay ration	ea	14 pounds per animal.
Wood for cooking	per ration	2.8 lbs per ration.
Gasoline for cooking	per kitchen	10 gal per day per 3-unit kitchen.
Gasoline for trucks	unit mile	The amount in gallons required to move every motor vehicle of a unit one mile.
Oil for trucks	gallons	Approximately 3% of the gallons of gasoline required.
Water	10 gal in container	109 lbs per container.*e*
	5 gal in container	----------*f*
Oil	10 gal in container	93 lbs per container. *e*
	5 gal in container	----------*f*

NOTES

*a*A-ration contains items of fresh food and is perishable.

*b*B-ration is the same as the A-ration with nonperishable items substituted for perishable items.

*c*C-ration consists of prepared canned meals in individual cans.

*d*D-ration consists of three prepared chocolate bars each weighing four ounces.

*e*Average for planning—100 pounds per container.

*f*Average for planning—50 pounds per container.

*Supply in overseas operations is covered in Chapter 10. Supply by air transport is covered in Chapter 11.

70. Basic Weights for Computation of Loads.—(*Ammunition*).

Item	*Number*	*Average Weight (including packing)*
Caliber .30	Box of 1500	114 lbs
Caliber .45	Box of 2000	110 lbs
Caliber .50	Box of 300	120 lbs
37-mm gun AT (tank)	Box of 40	140 lbs
37-mm gun (AA)	Per Box of 20	85 lbs
60-mm mortar	Per fiber container of 6	24.4 lbs
81-mm mortar	Per bundle of 6 (L projectile)	58 lbs
81-mm mortar	Per container of 3 (Hv projectile)	54 lbs
Grenades, hand	Per box of 10	19 lbs
4.2-inch mortar, cml	Per box of 2	65 lbs
75-mm how	Per bundle of 3	69 lbs
75-mm gun	Per bundle of 3	69 lbs
75-mm gun (AT)	Per bundle of 3	71 lbs
105-mm how	Per bundle of 3	150 lbs
155-mm how	Per round	105 lbs
155-mm gun	Per round	140 lbs
240-mm how	Per round	400 lbs
3-inch AA gun	Per box of 4	150 lbs
90-mm AA gun	Per box of 4	225 lbs
105-mm AA gun	Per box of 2	197 lbs
8-inch gun or how	Per round	317 lbs
12-inch mortar	Per round	871 lbs
12-inch gun	Per round	1134 lbs
14-inch gun	Per round	1860 lbs

■ 71. Dimensions and Weight of Items of Equipment in Traveling Position.*

Item	Over-all dimensions			Weight (pounds)
	Length (inches)	Width (inches)	Height (inches)	
Ambulance	225	85	83	3,290 net
Car, bantam	128	62	69-top up 42-top down	3,000 gross
Car, half-track—M2	228	66	88	17,000 gross
Car, light, 5-passenger	188	72	69	----------
Caisson, light M1	105	67	49	862 empty 1,245 loaded
Caisson (75-mm), M1918	123	74	63	1,425 empty 2,755 loaded
Carrier, personnel, half-track	243	66	89	16,500 gross
Carrier, 81-mm mortar, M4	228	66	88	17,500 gross
Cart and reel, Arty, 6-horse	323	74	63	3,873
Compressor, air, 1½-ton	204	86	92	12,180
Electric light set, 5-KVA	58	22	58	1,020
Grader, road, 7½-ton	302	91	120	20,000
Gun, 75-mm	198	78	57	4,850
Gun, 37-mm, AT	160	----------	----------	----------
Gun, 155-mm, M1918	345	106	76	30,000
Gun, 155-mm, M1	417	99	100	30,740
Gun, 37-mm, AA	183	70	81	5,000
Gun, 3-inch, AA	293	93	110	16,800
Gun, 90-mm, AA	248	102	113	17,300
Height finder, 1½-ton truck, Sp body	260	83	106	10,105
Howitzer, 75-mm, field	152	68	44	3,340
Howitzer, 75-mm (pack), M1	----------	----------	----------	1,390
Howitzer, 105-mm	236	81	66	4,300
Howitzer, 155-mm	257	90	73	9,120
Howitzer, 8-inch, M1	280	99	100	30,200
Howitzer, 240-mm	316	102	103	58,600
Locator, sound	210	180	126	6,490
Limber, light, M2	164	67	42	770 empty 1,245 loaded
Limber, gun caisson, 75-mm	172	74	61	1,071 empty 1,900 loaded
Power earth auger	236	86	92	9,775
Reel, battery, 4-horse	183	74	65	1,385 empty 2,252 loaded

*Approximate only due to changes in models.

DIMENSIONS AND WEIGHTS OF ITEMS OF EQUIPMENT IN TRAVELING POSITION (Continued).

Item	Over-all dimensions			Weight (pounds)
	Length (inches)	Width (inches)	Height (inches)	
Motorcycle, with side car	94	72	42	804
Reel, Btry 4-horse	198	75	72	1,385
Scout car, M3A1	222	78	76	11,700
Searchlight, 60" mobile	263	92	128	15,917
Shovel, gasoline, 7½-ton	270	92	181	22,000
Shovel, gasoline, 15-ton	304	96	203	34,000
Tank, light, M2, A4	175	88	110	23,000
Tank, light, M3	204	100	84	26,000
Tank, medium, M2A1	209	98	109	36,000
Tank, medium, M3	223	108	112	60,000
Tank, heavy, T1	277	123	119	100,000
Tractor, light				
Tractor, medium, arty, 5-ton	134	63	73	10,700
Tractor, 7½-ton, medium, w/bulldozer	188	103	88	15,000
Tractor, heavy, 10-ton, artillery	192	94	94	32,600
Trailer, 1-ton, cargo	136	71	72	1,450
Trailer, 250-gallon, tank				
Trailer, cargo, 4-wheel				
Truck, ½-ton, pick-up	172	71	79	2,410
Truck, ½-ton, 4 x 4, command	190	71	79	2,413
Truck, ½-ton, 4 x 4, cargo	217	82	99	3,448
Truck, 1½-ton, 4 x 4, cargo	234	86	112	8,200 net
Truck, 1½-ton, 4 x 4, dump				
Truck, 2½-ton, 6 x 6, cargo	257	88	114	9,590
Truck, 2½-ton, 6 x 6, wrecker				
Truck, 4-ton, 6 x 6, cargo	240	84	123	23,000
Truck, 4-ton, 6 x 6, wrecker				
Truck, 5-ton, cargo				
Truck, 7½-ton, cargo				
Truck, tank, 750-gallon				
Water purification unit	258	91	123	16,900
Filter tank, carried on trailer	26	26	45	800
Treatment unit, carried on trailer	31	25	38	800
Pump unit	27	32	37	740
Truck, 7½-ton, 6 x 6 (prime mover)	284	96	102	37,000

■ 72. STANDARD LOAD OF CARGO VEHICLES.

Item	*Load*		
	1½-ton truck	*1-ton trailer*	*2½-ton truck*
Ammunition ① ②			
Cailber .30	26 boxes	13 boxes	44 boxes
Caliber .45	27 boxes	14 boxes	45 boxes
Caliber .50	29 boxes	14 boxes	49 boxes
37-mm gun, AT (tank)	26 boxes	13 boxes	44 boxes
37-mm gun, AA	35 boxes	17 boxes	58 boxes
60-mm mortar	800 rounds	400 rounds	1,330 rounds
81-mm mortar (L projectile)	33 boxes	16 boxes	55 boxes
81-mm mortar (Hv projectile)	34 boxes	16 boxes	56 boxes
Grenades, hand	158 boxes	79 boxes	263 boxes
4.2-inch mortar	46 boxes	23 boxes	77 boxes
75-mm How	43 bundles	29 bundles	72 bundles
75-mm gun	43 bundles	29 bundles	72 bundles
75-mm gun (AT)	42 bundles	28 bundles	70 bundles
105-mm How	19 bundles	13 bundles	32 bundles
155-mm How	28 rounds	19 rounds	47 rounds
155-mm gun	21 rounds	14 rounds	35 rounds
240-mm How	7 rounds	5 rounds	12 rounds
3-inch AA	20 boxes	13 boxes	30 boxes
90-mm AA gun	13 boxes	8 boxes	22 boxes
105-mm AA	15 boxes	7 boxes	25 boxes
8-inch How or gun	9 rounds	4 rounds	15 rounds
12-inch mortar	3 rounds	1 round	5 rounds
14-inch gun	1 round		2 rounds
Antitank mines	300 each	200 each	500 each
Miscellaneous—			
Water in 10-gallon containers	27	14	45
Gasoline in 10-gallon drums	38	19	62
Baled straw (bedding)	35	10	50

NOTES

① Weight shown for individual rounds is for complete rounds, including packing.
② For dimensions of containers, cubic feet of containers or ship-ton requirements, see Appendix II, page 114, *Ordnance Field Manual, FM 9-5 (1939)*.

■ 73. FIELD BAGGAGE ALLOWANCE FOR OFFICERS.

Grade	*Weight*
General officer	150 pounds
Colonel or lieutenant colonel	100 pounds
Major	75 pounds
Captain or lieutenant	50 pounds

■ 74. AMMUNITION CAPACITY OF INFANTRY TRUCKS.

The two types of ammunition carrying vehicles available within the infantry regiment when carrying no other loads, will haul, without overload, ammunition of the various types in the amounts indicated below:

	Truck, cargo 1½-ton	Weapon carrier ½-ton
Caliber .30 rifle and auto rifle	35,000	11,500
Caliber .30 machine gun, in belts	37,500	12,500
Caliber .50 machine gun, in belts	9,000	3,000
60-mm mortar	810	270
81-mm mortar	300	100
37-mm antitank	600	200

■ 75. Dimensions and Weight of Quartermaster Vehicles by Make.

Vehicle	Type body	Body Dimensions Inside		Vehicle Dimensions Overall			Vehicle Weight		Displacement	
		Length	Width	Length	Width	Height	Net	Gross	Cubic feet	Ship tons
Harley Davidson	Solo			89	34	41.5	438	668	72.6	1.8
Indian	Solo			85	36	44	480	680	77.9	1.9
Harley Davidson	With side car			92.5	69	42.5	825	1259	156.9	3.9
Indian	With side car			97.5	88½	44	845	1245	219.7	5.5
Plymouth 4 x 2	Light sedan	101½	54¾	194½	73¾	68⅜	3130	3930	567.8	14.2
Chevrolet 4 x 2	Light sedan	95	55	192 3/16	72	68⅞	3115	3915	552.0	13.8
Chevrolet	Sedan Del	70 13/16	56½	192 3/16	72	66½	3260	4060	560.0	13.4
Ford 4 x 2	Light sedan			190.86	72	68	3078	3878	533.2	13.3
Buick 4 x 2	Med sedan			219	76⅛	71¾	4589	5589	693.5	17.3
Chevrolet ½-ton 4 x 2	Pan Del	86 7/16	54⅞	197	72	78	3550	4550	640.2	16.0
Chevrolet ½-ton 4 x 2	Pan Del	86 7/16	57⅞	197	72	78	3535	4535	640.2	16.0
Chevrolet ½-ton 4 x 2	Tel Maint	69	39⅞	188	72	81	3780	4780	634.5	15.8
Chevrolet ½-ton 4 x 2	Carry-all	89⅝	54⅞	197	72	78	3680	4680	640.2	16.0
Chevrolet ½-ton 4 x 2	Carry-all	89⅝	57⅜	197	72	77 13/16	3670	4670	640.2	16.0
Chevrolet ½-ton 4 x 2	Can Expr	80	54⅞	197	72	78	3410	4410	640.0	16.0
Chevrolet ½-ton 4 x 2	Pickup	75	48½	189	72	78	3575	4575	614.2	15.3
Chevrolet ½-ton 4 x 2	Pickup	75	48½	191½	72	78½	3750	4750	632.0	15.8
Chevrolet ½-ton 4 x 2	Pickup	75	45¾	187	72	78⅜	3620	4620	607.9	15.2
Dodge (VC-1) ½-ton 4 x 4	Reconn	78½	55⅜	186⅛	74 1/16	83¼	4220	5220	661.0	16.5
Dodge (VC-2) ½-ton 4 x 4	Radio	105	55⅜	186⅛	74 1/16	83¼	4395	5395	661.1	16.5
Dodge (VC-3) ½-ton 4 x 4	Pickup	78⅛	48¼	188¼	74 1/16	88 1/16	4280	5280	708.4	17.7
Dodge (VC-4) ½-ton 4 x 4	Pickup	78⅛	48¼	188¼	74 1/16	88 1/16	4160	5160	708.4	17.7
Dodge (VC-5) ½-ton 4 x 4	Pickup	78⅛	48¼	188¼	74 1/16	88 1/16	4000	5000	708.4	17.7
Dodge (VC-6) ½-ton 4 x 4	Carry-all	92	58⅜	191 1/16	74 1/16	84	4560	5560	687.0	17.2
Packard ½-ton 4 x 2	Ambulance	105	48	243½	75	78	5460	6460	826.0	20.6
Packard ½-ton 4 x 2	Hearse	Table 85	58	243½	75	78	5300	6300	826.0	20.6
Chevrolet ¾-ton 4 x 2	Pickup	87	48½	203	72	75¼	3460	4960	634.3	15.8
Chevrolet ¾-ton 4 x 2	Pickup	86	48½	203	72	84	4305	5805	710.5	17.7
GMC AF 361 1-ton 4 x 2	Panel	116⅞	78½	206¼	86½	110½	6512	9012	1151.2	28.7
Chevrolet 1½-ton 4 x 2	Tractor			190	85	79½	4465	9465	747.6	18.7
Chevrolet 1½-ton 4 x 2	Tractor			214	85	79½	4540	7450	842.1	21.0
Chevrolet 1½-ton 4 x 2	Cargo	108	70	220½	86	107½	5725	8725	1187.8	29.7

DIMENSIONS AND WEIGHT OF QUARTERMASTER VEHICLES BY MAKE.—(*Continued*).

Vehicle	Type body	Body Dimensions Inside		Vehicle Dimensions Overall			Vehicle Weight		Displacement	
		Length	Width	Length	Width	Height	Net	Gross	Cubic feet	Ship tons
Chevrolet 1½-ton 4 x 2	Plat stake	105 5/8	80 3/4	220	87 1/2	80	5030	8030	896.2	22.4
Chevrolet 1½-ton 4 x 2	Plat stake	141 1/2	80 3/4	256	87 1/2	110	5650	8650	1434.0	35.8
Chevrolet 1½-ton 4 x 2	Plat stake	141 1/2	80 3/4	256	87 1/2	80	5150	8150	1042.9	26.0
Chevrolet 1½-ton 4 x 2	Can Expr	109 1/2	55 7/8	219 1/2	86	83 1/2	4785	7785	919.7	23.0
Chevrolet 1½-ton 4 x 2	Pick-up	108 1/8	52 7/16	226 1/2	86	79	4780	7780	892.4	22.3
Chevrolet 1½-ton 4 x 2	Pan Del	112 3/4	55 7/8	222	86	83 1/2	4770	7770	927.5	23.1
Chevrolet 1½-ton 4 x 2	Dump	84	66	203	81	79	5610	8610	751.7	18.8
Chevrolet 1½-ton 4 x 2	Dump	84	66	203	83	79 1/2	5775	8775	780.0	19.5
Chevrolet 1½-ton 4 x 2	Wrecking			221 1/2	86	82	5915	8915	905.9	22.6
Chevrolet 1½-ton 4 x 2	Ambulance	112 3/4	Upper 2/3 54 Lower 1/3 52 3/4	224	86	83 1/2	5610	8010	936.4	23.4
Chevrolet 1½-ton 4 x 2	Cargo	96	70	217	83	103	5580	8580	1073.5	26.8
Chevrolet 1½-ton 4 x 2	Cargo	186	70	266	86	104	7085	10085	1376.7	34.4
Chevrolet 1½-ton 4 x 2	Dump	108	66	226	83	79	6625	9625	857.5	21.4
Diamond T 1½-ton 4 x 2	Explosive	106	82	228 3/4	88	112	7000	10000	1306.1	32.6
Diamond T 1½-ton 4 x 2	Cargo	180 1/16	70	298 1/2	86	110 1/4	6000	9000	1636.8	40.9
GMC AFX-312, 1½-ton 4 x 2	Panel	110 1/4	55 1/2	189	87	97	5657	8657	923.0	23.0
GMC AC-302, 1½-ton 4 x 2	Howe Hose & Chem	96	45	222	83	73	5900	8900	778.4	19.4
Dodge (VF406) 1½-ton 4 x 4	Dump	108	66	225 3/32	85	113 3/8	7850	10850	1250.6	31.2
Dodge (VF406) 1½-ton 4 x 4	Cargo	108	70	233 9/32	86	111 7/8	7600	10600	1304.3	32.6
Dodge (VF404) 1½-ton 4 x 4	Cargo	108	70	223 25/32	86	111 7/8	7250	10250	1304.3	32.6
Dodge (VF402) 1½-ton 4 x 4	Cargo, with winch	108	70	233 9/32	86	113 3/8	8200	10600	1315.9	32.8
Dodge (VF401) 1½-ton 4 x 4	Cargo	108	70	223 25/32	86	113 3/8	7250	10250	1315.9	32.8
Mack EHU-S 2-ton 4 x 2	Van			273	96	120	10700	14700	1820.0	45.5
Diamond T 2½-ton 4 x 2	Line Constr	109	58	234 1/2	93 1/2	91	11600	16600	1163.3	29.0
Diamond T 2½-ton 4 x 2	Explosive	142	82	264 3/4	88	109 7/8	7950	12950	1484.4	37.1
Diamond T 2½-ton 4 x 2	Stake Plat	144	90	264 3/4	95 1/4	120	7860	12860	1748.2	43.7
Diamond T 2½-ton 4 x 2	Dump	96	72	229	84	76	7680	12680	846.0	21.1
Diamond T 2½-ton 4 x 2	Stake Plat	120	80.3	253	85	95	6900	11900	1182.2	29.5
GMC, AC, 453, 2½-ton 4 x 2	Stake Plat	120	80	250	88	88 17/32	7373	12373	1133.1	28.3
GMC, ACX, 453, 2½-ton 4 x 2	Dump	96	78	220	87 1/8	88 11/32	7584	12584	985.7	24.6
Mack, TES, 2½-ton, 4 x 2	Dump	96	78	218	91	85	8450	13450	975.8	24.3
Mack, EH, 2½-ton 4 x 2	Tank, 1,000-gallon			263	95	108	7870	19870	1561.5	39.0
Mack, EHS, 2½-ton 4 x 2	Tank, 1,000-gallon			306	94	87 3/8	7500	19500	1448.1	36.2

DIMENSIONS AND WEIGHT OF QUARTERMASTER VEHICLES BY MAKE.—(*Continued*).

Vehicle	*Type body*	*Body Dimensions Inside*		*Vehicle Dimensions Overall*			*Vehicle Weight*		*Displacement*	
		Length	*Width*	*Length*	*Width*	*Height*	*Net*	*Gross*	*Cubic feet*	*Ship tons*
Autocar tractor, 2½-ton 4 x 4	For gas tank trailer			201	92	103⅜	10090	19090	1102.2	27.5
Autocar, 2½-ton 4 x 4	Oil servicing			192½	88¼	104 1/16	8770	17820	1022.1	25.5
Mack, NB, 2½-ton 6 x 4	Cargo	168	90	288	96	139	10630	15630	2224.0	55.6
GMC, ACKWX-353, 2½-ton 6 x 6	Cargo, with winch	108	80	277	88	111	9675	14675	1565.8	39.1
GMC, AFKWX-352, 2½-ton 6 x 6	Cargo	120	80	237	88	111	11196	16196	1339.7	33.4
GMC, ACKWX-353 winch 2½-ton 6 x 6	Cargo	144	80	257	88	111	9700	14700	1452.7	36.3
Autocar 4-ton 6 x 6	Cargo, with winch	120	90¼	262¾	96	118½	17060	24060	1738.7	43.4
White 4-ton 6 x 6	Cargo, with winch	120	88	266⅛	96	116	15580	23580	1714.2	42.8
Autocar 5-ton 4 x 2	Cargo	168	84	274¼	93⅞	90¼	12765	22765	1341.4	33.5
Diamond T 5-ton 4 x 2	Refrigerator	160	85	286¾	96	112	14875	24875	1785.7	44.6
Diamond T 5-ton 4 x 2	Explosive	164	90	292	96	128	12225	22225	2076.4	51.9
Mack MN 6-ton 6 x 6	Cargo, with winch	132	88	284½	96¼	121	21750	33750	1915.8	47.8
Ward LaFrance 10-ton 6 x 4	Winch-tractor			264½	96	98¼	27000	40700	1442.7	36.0
Lavine trailer, 2-wheel, ¾-ton	Cargo	96	46¼	145½	68½	71½	1175	2675	419.7	10.4
Saginaw trailer, 2-wheel, ¾-ton	Cargo	96	46	146	68	76	1200	2700	436.6	10.9
Streich trailer, 2-wheel, ¾-ton	Cargo	96	46¼	144	68½	74	1160	2660	425.5	10.6
Plimpton trailer, 2-wheel, ¾-ton	Cargo	122	57	156	80	102	1500	3900	736.6	18.4
Auto cruiser trailer, 4-wheel	Recruiting office	265½	84	303	89	104½	4680	7680	1638.6	40.9
Fleetwheels semi-trailer, 2-wheel	Communications	222	79	291	88	113	5078	6808	1674.5	41.8
Fruehauf semi-trailer, 2-wheel	Van	218	76	222½	84	126	5175	12175	1365.8	34.1
Whitehead & Kales trailer, 4-ton 2-wheel	Stake Plat	191	77	197	83	88	5000	12000	832.6	20.8
Fruehauf trailer, 8-wheel	Platform	228	96	420	96	80	18360	82360	1866.6	46.6

■ 76. DIAGRAM OF CLASS I SUPPLIES OBTAINED BY DAILY TELEGRAM.

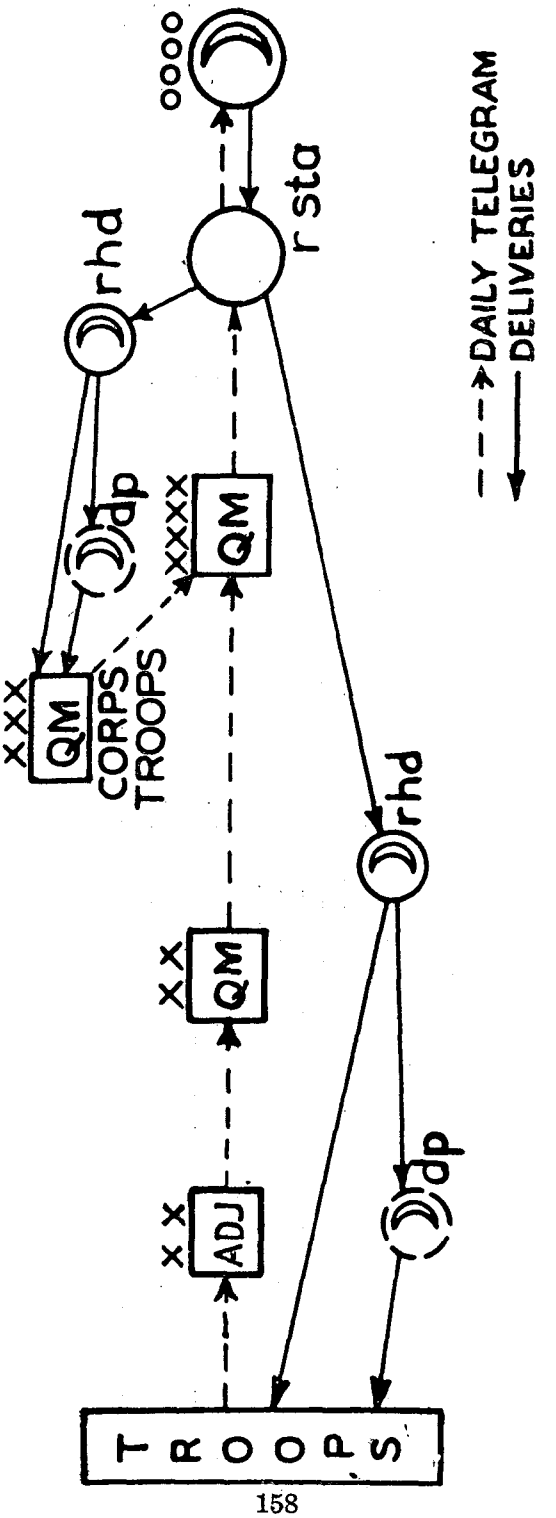


Figure 22

■ 77. DIAGRAM OF DISTRIBUTION OF CLASS I SUPPLIES.

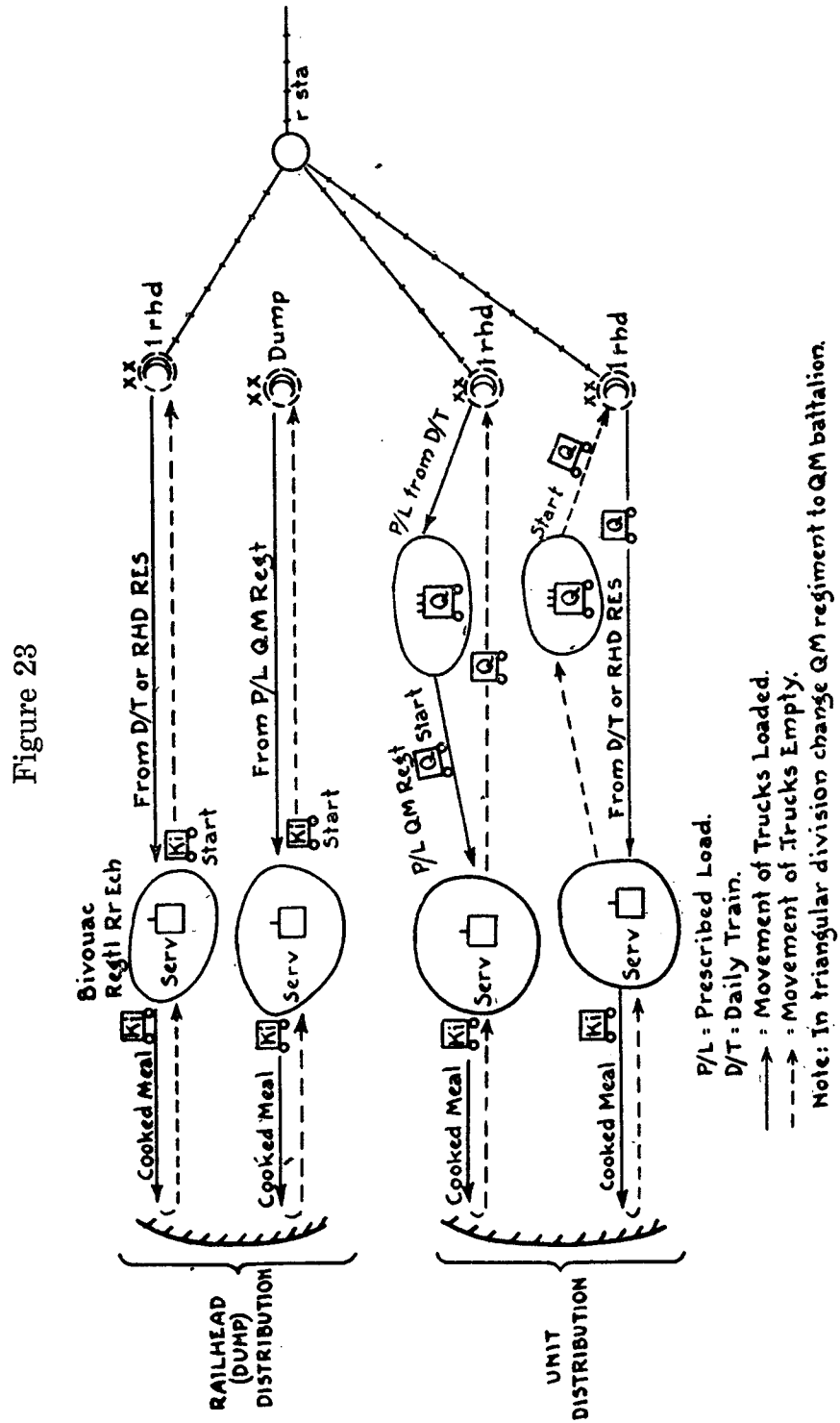


Figure 23

78. PRESCRIBED LOADS OF CLASS I SUPPLY.—

(Infantry Divisions)

Unit	*Rations*	*Grain*
Each company and battery for its own use *a*	1	1
Quartermaster regiment or battalion for the entire division	1 *b*	1
Total for the division	2	2

NOTE

a The number of rations carried in the company or battery may be increased by direction of the division or higher commander when required. When additional rations are carried additional trucks should be attached for their transportation.
b May be either "B" or "C" ration.

79. TIME ELEMENTS IN REGIMENTAL SUPPLY.

(In the field under campaign conditions, the following time elements are the approximate periods required to perform the work indicated.)

Work	*Daylight*	*Dark*
Distribution of Class-I supplies to regiment by higher echelon at one distributing point	½ hour	½ hour
Distribution of Class-I supplies to separate battalion by higher echelon or similar unit	¼ hour	¼ hour
Preparation of one day's Class-I supplies for issue at regimental Class-I distributing point	1 hour	1½ hours
Physical distribution by regimental supply agencies of one field ration (transfer of loads) to kitchens	15 min	20 min
Kitchens to be taken off trucks, set up, and ready to begin cooking	15 min	20 min
Division of one ration into three meals at kitchens	15 min	20 min
Kitchens to cook and prepare for serving a hot meal, starting with a hot kitchen	2 hours	2½ hours
Kitchens to prepare a cold noon meal. The issue of this meal to take place usually coincident with serving of breakfast. (Included in item next above.)	1 hour	1½ hours
Serving a hot meal to troops from a kitchen truck when majority of men are served at the truck	45 min	1 hour
Serving a hot meal to troops by means of carrying parties (assuming the kitchen truck not farther than 1,000 yards in rear of the company)	1½ hours	2 hours
Issue of extra ammunition to a battalion in an assembly area	30 min	40 min

■ 80. GRAPH OF TONNAGE REQUIREMENTS OF CLASS I AND CLASS III SUPPLIES.

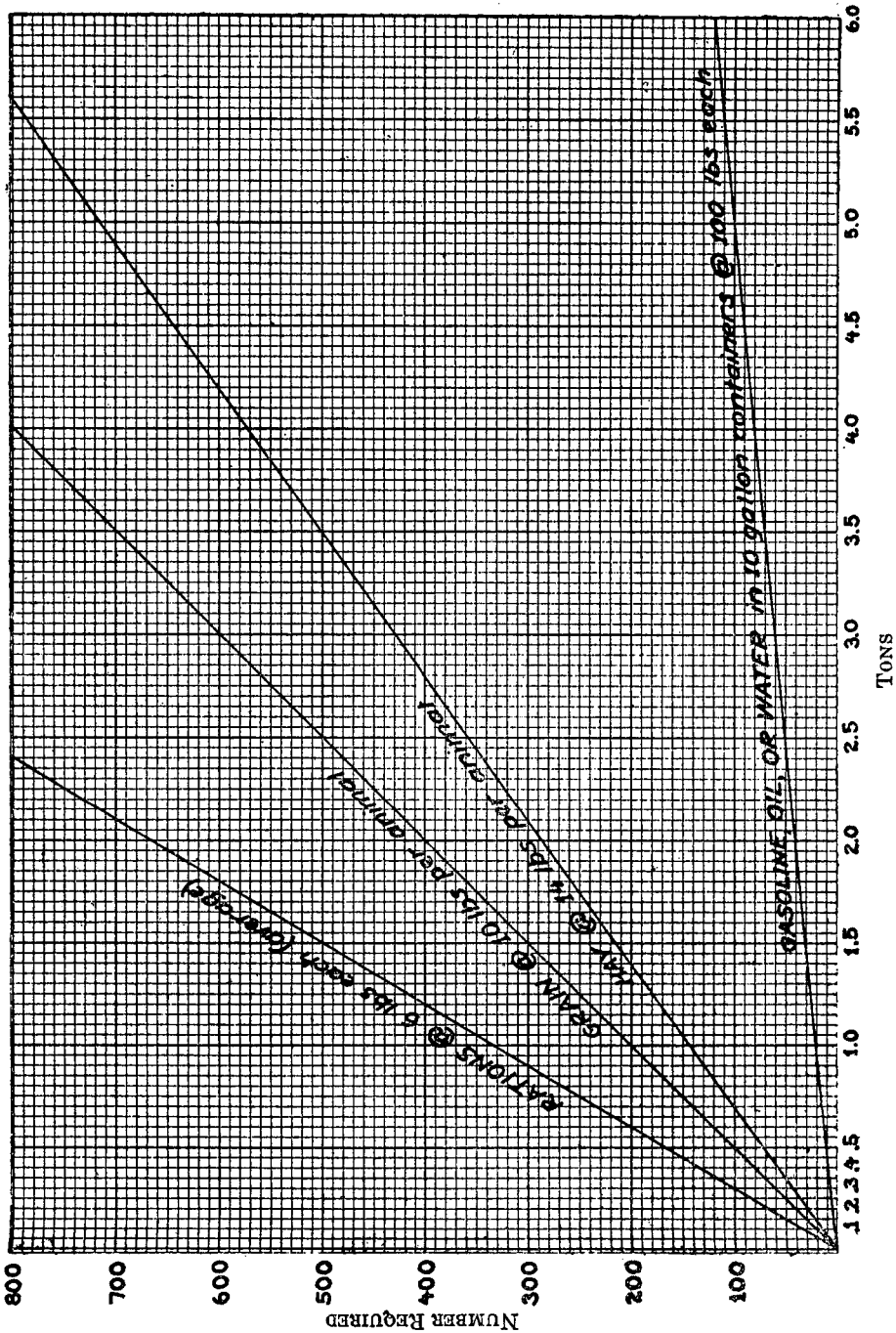
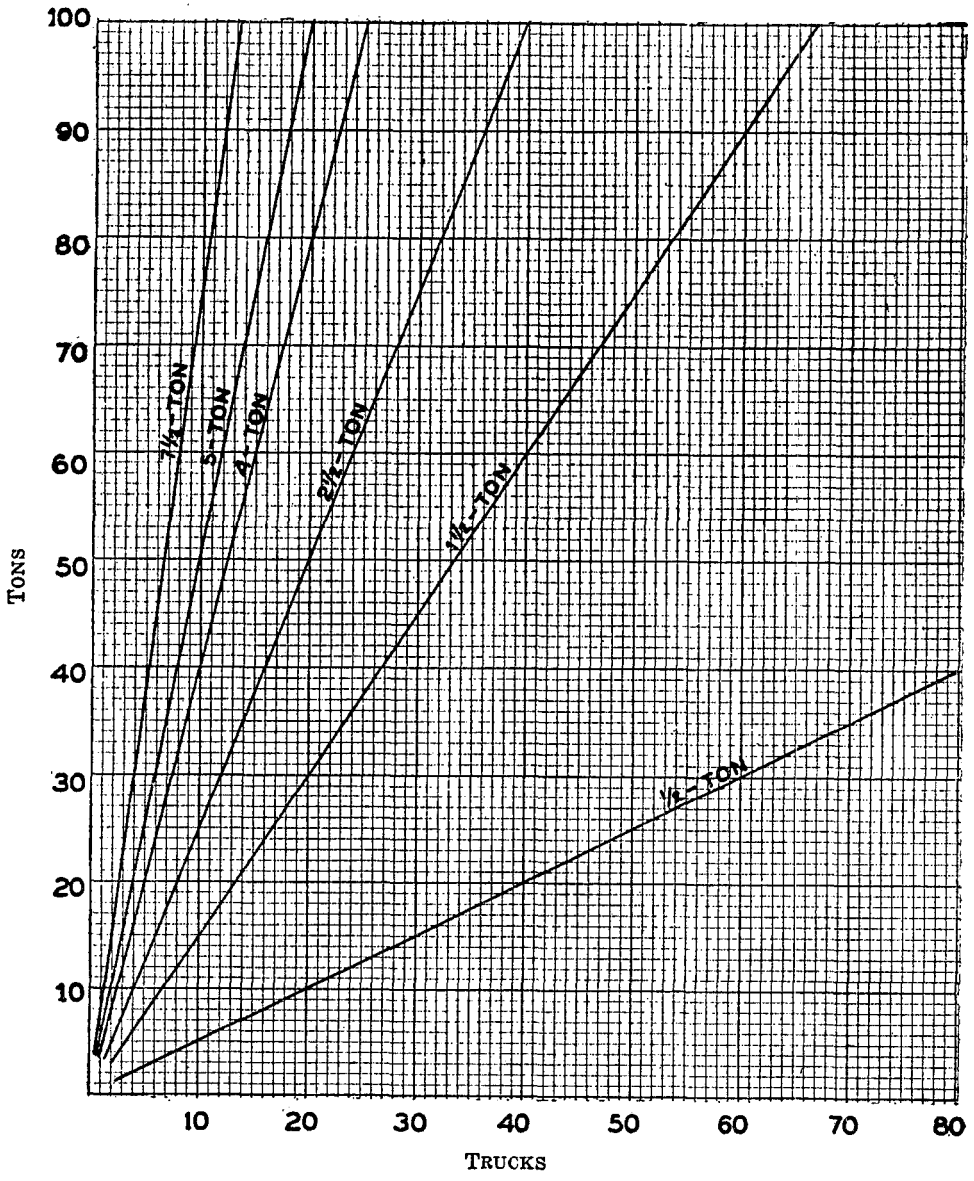


Figure 24

81. Graph of Conversion of Tons to Trucks or Trucks to Tons.

(Note: Conversion is based on rated capacity of trucks.)

Figure 25



■ 82. DIAGRAM OF REQUISITION AND SHIPMENT OF CLASS II AND CLASS IV SUPPLIES.

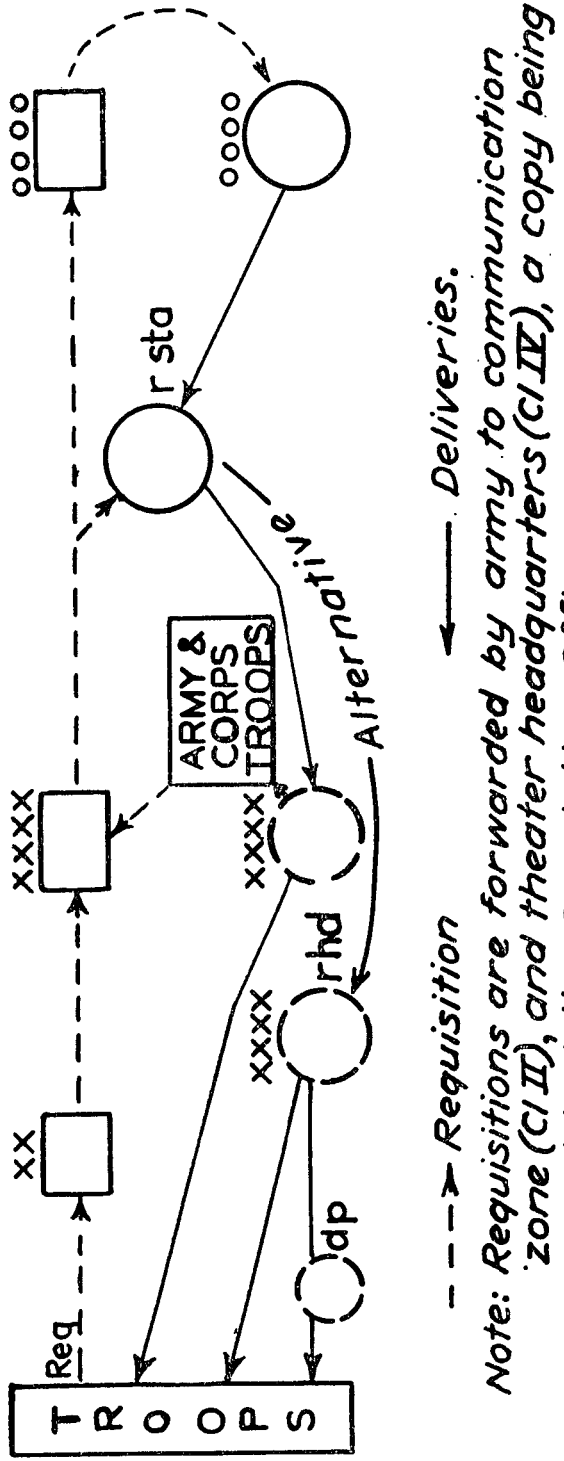


Figure 26

■ 83. DAY OF SUPPLY IN POUNDS PER MAN PER DAY *a*.—

Class and Service	*Division, Corps, or Army e (pounds)*
QUARTERMASTER CORPS:	
Class I Supplies (including hay) *b*	10.0
Class II Supplies	3.3
Class III Supplies *c*	5.0
Class IV Supplies	1.0
ENGINEER CORPS:	
Class II Supplies	.3
Class IV Supplies *d*	2.5
SIGNAL CORPS:	
Class II supplies	.3
Class IV Supplies	.1
MEDICAL DEPARTMENT:	
Class II Supplies	.2
Class IV	.2
CHEMICAL WARFARE SERVICE:	
Class II Supplies	.1
ORDNANCE DEPARTMENT:	
Class II Supplies	1.0
Total Classes I, II, III, and IV	24.0

NOTES

a The DAY OF SUPPLY given in the above table is based on the following assumptions: major operations against an enemy equally well trained and equipped, home territory or territory adjacent thereto, temperate climate, and a highly industralized theater of operations. The quantities given in the table are intended to serve the need of basic reference data on the subject for planning purposes only.

b Includes mail, sales commissary, and recreational supplies.

c The figure of five pounds per man per day for gasoline and oil is only approximate. Specific computations should be made per par. 85 for each operation.

d Exclusive of road metal, railway ballast, and fortification materials.

e These figures refer to essential combat supplies only. Lists of items that constitute essential combat items are published from time to time by the War Department or by the theater commander.

■ 84. DIAGRAM OF REQUISITION AND SHIPMENT OF CLASS III SUPPLIES.

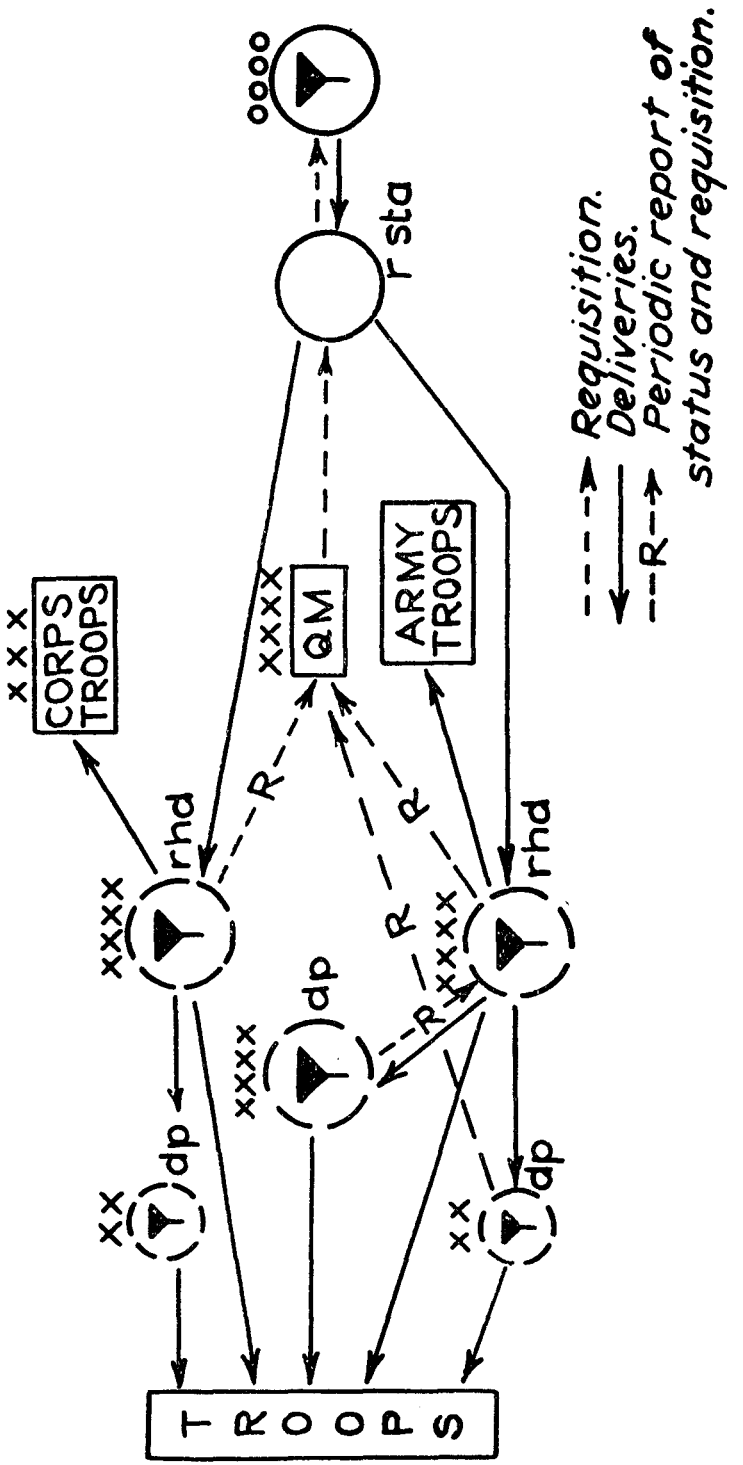


Figure 27

■ 85. ESTIMATES OF GASOLINE EXPENDITURE.—The factors controlling gasoline requirements in military operations are:

a. Movement distance (MD) is the distance in miles that the center of mass of a unit is displaced. On a march this distance is measured from center to center of successive bivouac areas.

b. Supply distance (SD) is the average one-way distance between supply points and the troops.

c. Variables (V), consisting of internal travel, reconnaissance, warming up of engines, and abnormal periods of time required in low-gear operation. These items differ in each situation with the character of operation, season of the year, weather, roads and terrain and must be estimated in accordance with conditions. Under average conditions, a constant of 10 unit miles of travel will usually cover these variables for estimating purposes.

The unit mile of gasoline is the amount of gasoline in gallons required to move every vehicle in the unit one mile. For small organizations having a preponderance of one type of vehicle, specific computations are required to determine the amount of gasoline necessary to move every vehicle in the unit one mile. For example: a small unit of 15 cargo trucks that from experience average 10 miles per gallon, three motorcycles that average 30 miles per gallon, and six passenger cars that average 15 miles per gallon. To move all vehicles of the unit one mile, under average conditions will require:

For trucks,	15 x 1/10 of a gallon=1.5 gal
For motorcycles,	3 x 1/30 of a gallon= .1 gal
For passenger cars,	6 x 1/15 of a gallon= .4 gal
	2.0 gal

The unit mile of gasoline for this organization is two gallons.

Experience in field exercises has shown that in large organizations containing a great number of all types of vehicles, such as an infantry or cavalry division, corps troops or army troops the average consumption of gasoline is approximately 10 miles per gallon per vehicle regardless of type of vehicle. The unit mile of gasoline in gallons for such organizations is therefore one-tenth the number of gasoline consuming vehicles in the unit.

The total consumption of gasoline by a large organization while moving from one point to another is greater than the unit miles of gasoline multiplied by the distance between the two points. This is due to a number of factors, including the fact that supply vehicles must move to a supply point and return to the unit at its new location. Therefore, it becomes necessary to determine an arbitrary figure—known as a unit mile of travel—which when multiplied by the unit mile of gasoline for the unit will give the total consumption of gasoline required.

To determine the predicted expenditure of gasoline in the operation of the large units shown in graphs in paragraph 87 it is only necessary to compute the number of unit miles of travel involved and the amount of gasoline in gallons may be read directly from the graph (Fig. 28, par. 87). To determine the number of unit miles of travel (UM) the following formula is used:

$$UM = MD + .4\ SD\ (1) + V$$

Example:

Infantry Division (Triangular)

Movement (MD)	=20 miles of travel
Supply Distance (SD) *(1)* average one-way	=50 miles of travel
Variable (V) (average conditions)	=10 miles of travel

$$UM = 20 + (.4 \times 50) + 10$$
$$UM = 50$$

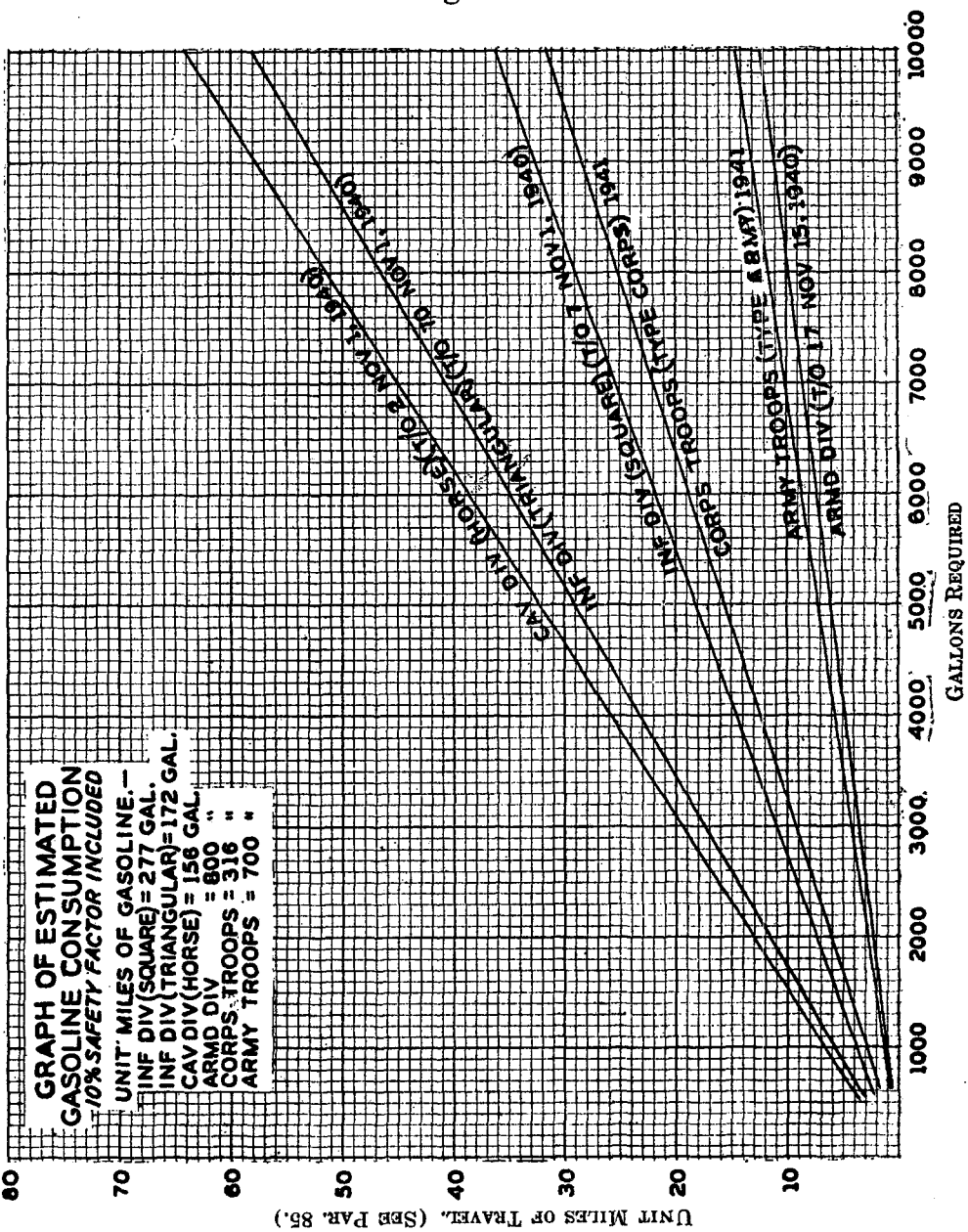
Fifty unit miles of travel for a triangular division, under the conditions stated, amounts to 8600 gallons (fifty on the vertical scale of the chart is equivalent to 8600 gallons on the horizontal scale.

(1) Approximately two-tenths of the vehicles of a division function as supply vehicles. If the average one way distance to supply points is multiplied by four-tenths, the result is the same as multiplying the average round trip distance by two-tenths.

■ 86. PRESCRIBED LOADS OF CLASS III SUPPLY.—A reserve of gasoline and oil in containers is carried in each unit. As far as practicable, initial distribution of this reserve will be made to each motor vehicle. Each vehicle sent to any army supply point replenishes its supply at some convenient gasoline supply point established by army at or en route to the army supply point. Vehicles remaining in the forward areas are resupplied by exchanging empty containers for full ones brought forward from gasoline and oil supply points by regimental or division transportation.

87. Graph of Estimated Gasoline Consumption.

Figure 28



■ 88. GASOLINE, OIL, AND GREASE.—(Estimated requirements per day per motor vehicle for field service.)

1	2	3	4	5	6	7	8
	Average consumption per day			*Estimated factors for computations*			
Vehicle	*Gasoline (gallon)*	*Oil (gallon)*	*Grease (pounds)*	*Average travel per day (miles)*	*Gasoline miles per gallon (miles)*	*Oil per gallon gasoline (gallons)*	*Grease per 100 miles pounds)*
Car, light, 5-passenger	4.4	.176	.19	75	15	.04	.25
Car, medium, 5-passenger	5.	.20	.19	75	15	.04	.25
Car, heavy, 7-passenger	6.25	.25	.19	75	12	.04	.25
Ambulance, field	6.25	.25	.19	75	10.5	.04	.25
Truck, recon, ½-ton	5.	.20	.19	75	12	.04	.25
Motorcycle, with side car	1.9	.0475	.0375	75	25	.025	.05
Truck, pick-up, ½-ton	3.33	.133	.25	50	12	.04	.50
Truck, 1½-ton (L C)	4.17	.167	.25	50	8	.04	.50
Truck, 1½-ton (H C)	5.	.2	.25	50	8	.04	.50
Truck, 2½-ton (L C)	6.25	.25	.25	50	6.6	.04	.50
Truck, 5-ton	10.	.4	.25	50	5	.04	.50
Truck, 4-ton 6 x 6	3.85	.154	.125	25	5	.04	.50
Truck, 7½-ton	7.7	.308	.125	25	3.25	.04	.50
Car, scout	5.	.14	.288	40	8	.028	.72
Tank, light	8.	.208	.064	12	1.5	.026	.533
Tank, medium	13.7	.48	.24	12	.875	.035	2.
Tractor, artillery, 5-ton	12.	1.27	.6	12	1	.106	5.
Tractor, artillery, 10-ton	13.3	1.10	.6	10	.75	.083	6.
Average of all vehicles of large units					10		

■ 89. DIAGRAM OF CALL AND SHIPMENT OF CLASS V SUPPLIES.

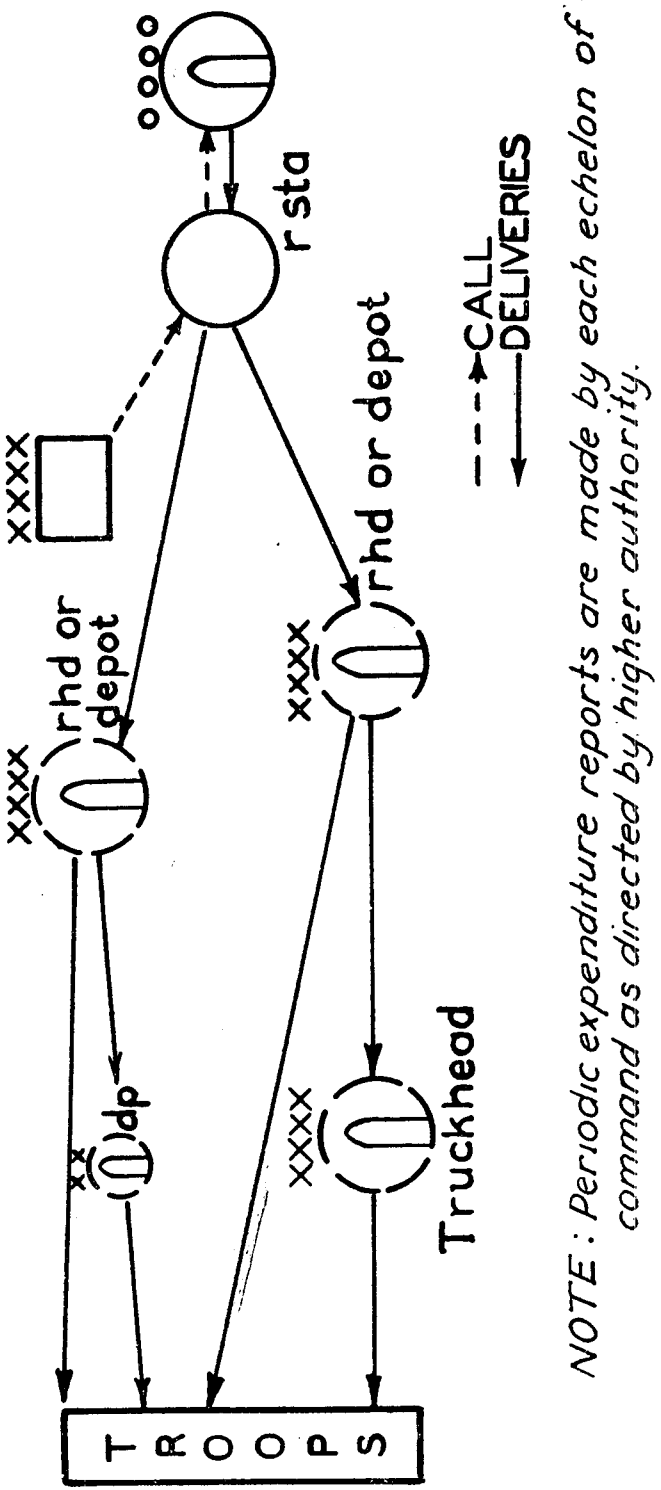
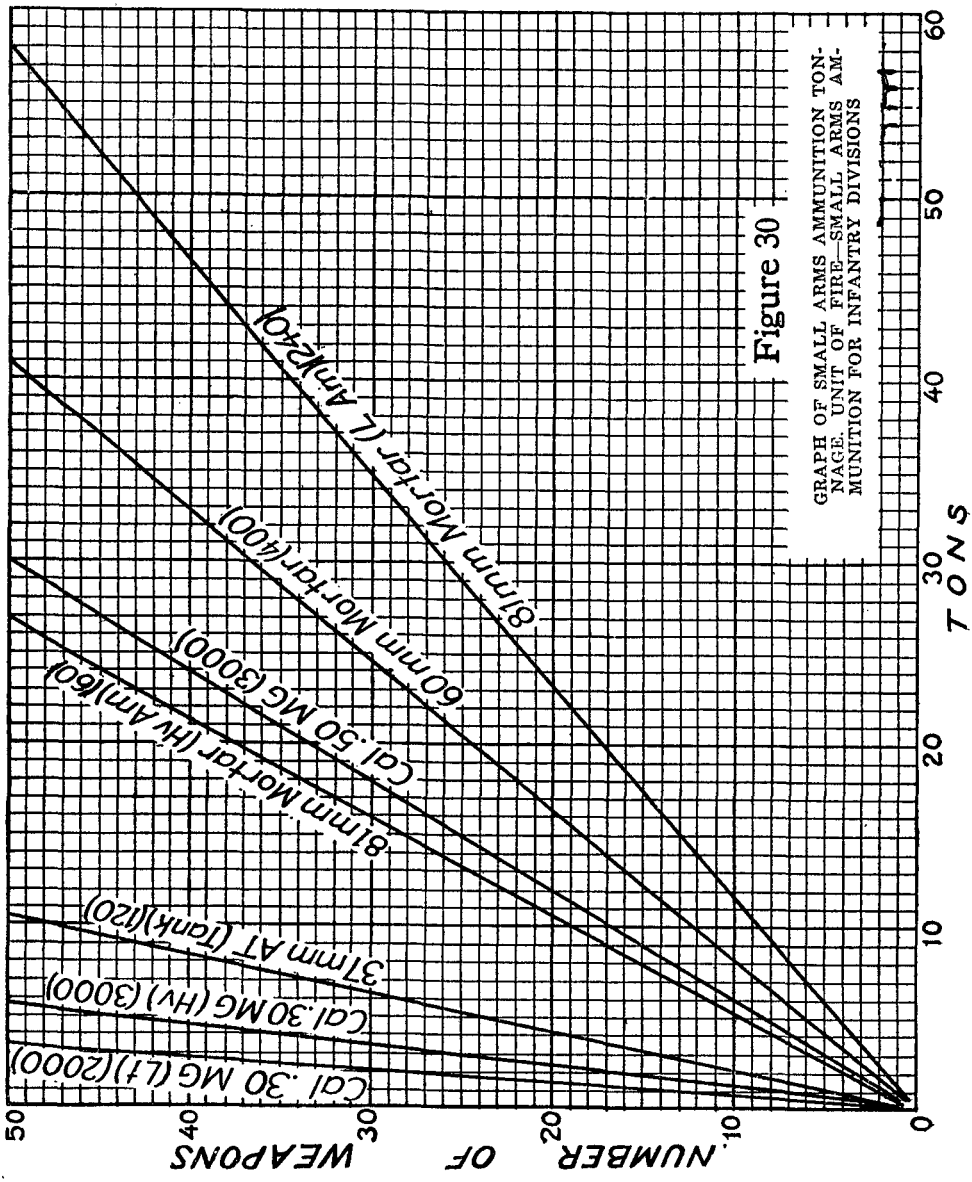


Figure 29

■ 90. UNIT OF FIRE—SMALL ARMS AMMUNITION—FOR INFANTRY DIVISIONS.

a. GRAPH OF SMALL ARMS AMMUNITION TONNAGE.



b. Tonnage per Unit of Fire per 100 Weapons.

(WEIGHT INCLUDES PACKING)

Calibers	*Per weapon*	*Rounds for 100 weapons*	*Boxes*	*Weight per box*	*Total pounds*	*Tons*
.30 cal	LMG (2,000)	200,000	133⅓	114	15,200	7.60
.30 cal	Rifle (150)	15,000	10	114	1,140	.57
.30 cal	Hv MG (3,000)	300,000	200	114	22,800	11.40
.30 cal	Auto rifles (750)	75,000	50	114	5,700	2.85
.45 cal	SMG (200)	20,000	10	110	1,100	.55
.45 cal	Pistol (20)	2,000	1	110	110	.055
.50 cal	MG (3,000)	300,000	1,000	120	120,000	60.00
37-mm	AT (120)	12,000	300	140	42,000	21.00
60-mm	Mortar (400)	40,000	6,666⅔	24.4	162,667	81.33
81-mm	Mortar Hv (60)	6,000	2,000	54	108,000	54.00
	Mortar Lt (240)	24,000	4,000	58	232,000	116.00
4.2-inch	Cml (66)	6,600	3,300	65	214,500	107
.50 cal	AA (7,200)	720,000	2,400	120	288,000	144
37-mm	AA (1,800)	180,000	9,000	85	765,000	382

c. Weight of Unit of Fire—Small-Arms Ammunition—Infantry Regiment.

	Number of weapons	*Tons*
Rifles	2,099	12.0
Pistols	1,181	.7
Auto rifles	125	3.6
.30 cal, MG, Lt	18	1.4
.30 cal MG, Hv	24	2.7
60-mm mortar	27	21.9
81-mm mortar	12	20.4
37-mm gun	12	2.5
.50 cal MG	12	7.2
TOTAL TONS		72.4

■ 91. INFANTRY—AMMUNITION ALLOWANCES FOR MOBILIZATION.—*(Data from table of basic allowances No. 7. Nov. 19, 1940):*

1	2	3	4	5	6	7
	Number of rounds per weapon and echelon in which carried					
Weapon	*On the individual armed*	*With weapon on prime-mover or arm truck*	*On combat train*	*On train of higher unit*	*Total*	*Remarks*
MG, B, cal .30, M1917A1 or M1917:						
Except on scout cars		6,750		1,500	8,250	10% AP 70% Ball 20% Tracer
On scout cars		1,500	1,500	1,500	4,500	10% AP 70% Ball 20% Tracer
MG, B, cal .30, M1919A4		3,000	2,000	1,000	6,000	10% AP 70% Ball 20% Tracer
MG, B, cal .50, M2, Hvy Bar, Flex:						
Except on scout cars		1,200		1,600	2,800	80% AP 20% Tracer
On scout cars		1,050		525	1,575	80% AP 20% Tracer
Gun, 37-mm, M3		160	40	100	300	90% AP 10% HE
Mortar, 81-mm, M1		100	50	150	300	70% M43 10% M56 20% M57
Mortar, 60-mm, M2		60	60	100	220	100% HE
Pistol, auto, cal .45 or revolver, cal .45	21		7		28	100% Ball
Rifle, B, auto, cal .30, M1918A2:						
In rifle squad	① 200		② 820	600	1,620	5% AP 10% Tracer 85% Ball
In auto R Sqd of units equipped with U.S. R, cal .30, M1	③ 320		④ 852	576	1,748	5% AP 10% Tracer 85% Ball
In Auto R Sqd of units equipped with US R M1903M1, M1903, or M1917	③ 320		⑤ 860	540	1,720	5% AP 10% Tracer 85% Ball
Per gun organically assigned to pedestal mount		⑨ 200		200	400	10% AP 20% Tracer 70% Ball
R, US, cal .30, M1 ⑨:						
In the rifle platoon	40		⑥ 192	96	328	10% AP 20% Tracer 70% Ball
In other units	40				40	10% AP 20% Tracer 70% Ball
R, US, cal .30, M1903A1, M1903, M1917:						
In the rifle platoon	40		⑦ 120	60	220	10% AP 20% Tracer 70% Ball
In other units	40				40	10% AP 20% Tracer 70% Ball

① 80 by the automatic rifleman and 120 by the assistant automatic rifleman — all in *20-round magazines.*
② 300 to be issued prior to combat — 100 to the automatic rifleman and 80 to the assistant automatic rifleman in 20-round magazines; 120 to the assistant automatic rifleman in 60-round bandoleers. 520 retained in combat train as a reserve.
③ 80 by each automatic rifleman, 120 by each assistant automatic rifleman and each ammunition carrier — all in 20-round magazines; 40 by each ammunition carrier in 5 or 8-round clips (see ammunition for the rifle).
④ 468 to be issued prior to combat — 100 to each automatic rifleman and 80 to each assistant automatic rifleman in 20-round magazines; 96 to each assistant automatic rifleman in 48-round banddoleers; 192 to each ammunition carrier in 48-round bandoleers (see ammunition for the M1 rifle); 384 retained in combat train as a reserve.
⑤ 500 to be issued prior to combat — 100 to each automatic rifleman, 80 to each assistant automatic rifleman and each ammunition carrier in 20-round magazines; 120 to each assistant automatic rifleman and each ammunition carrier in 60-round bandoleers. 360 retained in combat train as a reserve.
⑥ 96 to be issued prior to combat in 48-round bandoleers. 96 retained in combat train as a reserve. (See ammunition for the Browning automatic rifle, M1918A2.)
⑦ 120 to be issued prior to combat in 60-round bandoleers.
⑧ In mobilization, all ammunition for the U.S. rifle, M1 is packed and issued in 8-round clips in 48-round bandoleers in boxes.
⑨ All in magazines.

■ 92. *a.* UNIT OF FIRE FOR ARTILLERY WEAPONS. (Except for armored artillery. See par 127) (See par. 117).

WEIGHTS BASED ON COMPLETE ROUNDS, INCLUDING PACKING

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
	Unit of fire (rounds per piece)	*Tons per unit of fire per piece*	*4 Pieces*		*12 Pieces*		*48 Pieces*		*144 Pieces*	
			Rounds	*Tons* ①	*Rounds*	*Tons* ①	*Rounds*	*Tons* ①	*Rounds*	*Tons* ①
75-mm gun	300	3.45	1,200	14	3,600	41	14,400	166	43,200	497
75-mm gun, AT	150	1.77	600	7	1,800	21	7,200	85	21,600	256
75-mm howitzer	300	3.45	1,200	14	3,600	41	14,400	166	43,200	497
105-mm howitzer	225	5.62	900	23	2,700	68	10,800	270	32,400	810
155-mm howitzer	150	7.875	600	32	1,800	95	7,200	378	21,600	1,134
155-mm gun	100	7.00	400	28	1,200	84	4,800	336	14,400	1,008
240-mm howitzer	60	12.00	240	48	720	144	2,880	576	8,640	1,728
3-inch gun, AA	300	5.625	1,200	23	3,600	68	14,400	270	43,200	810
90-mm gun, AA	250	7.00	1,000	28	3,000	84	12,000	336	36,000	1,008
105-mm gun, AA	250	12.30	1,000	49	3,000	148	12,000	591	36,000	1,773
8-inch gun	② 96	15.22	384	61	1,152	183	4,608	731	13,824	2,193
12-inch mortar	② 48	20.90	192	84	486	251	1,944	1,003	5,832	3,010
12-inch gun	② 50	28.35	200	113	600	340	2,400	1,361	7,200	4,082
14-inch gun	② 50	46.50	200	186	600	558	2,400	2,232	7,200	6,696

NOTES

① Weights computed to the nearest ton.
② Capacity of ammunition car for railway artillery.

b. PRESCRIBED LOADS SMALL ARMS AMMUNITION PER INFANTRY REGIMENT.

WEIGHTS BASED ON COMPLETE ROUNDS, INCLUDING PACKING

	No. weapons	Within Regt ① (tons)	On QM train ② (tons)	Total tons	Per weapon: Total rounds	Per weapon: Unit of fire (rounds)	Approximate unit of fire in prescribed load ②
Rifle, cal .30	2,099	18	8	26	328	150	2
Auto rifle, cal .30	125	5	3	8	1,748	750	2
MG, Lt, cal .30	18	3	1	4	6,000	2,000	3
MG, Hv, cal .30	24	6	2	8	8,250	3,000	2⅔
MG, cal .50	12	3	4	7	2,800	3,000	1
Mortar, 60-mm	27	6	6	12	220	400	½
Mortar, 81-mm	12	10	10	20	300	300	1
Gun, AT, 37-mm	12	4	2	6	300	120	3
Pistol, cal .45	1,181	1		1	28	20	¾
TOTALS		56	36	92			

① On individual weapon carriers and combat train (Square and triangular divisions).
② For triangular division, see paragraph 118, page 190.

■ 93. ESTIMATED DAILY REQUIREMENTS OF CLASS V SUPPLIES FOR VARIOUS TYPES OF COMBAT. ① ④

AMMUNITION REQUIREMENTS PER DAY OF COMBAT EXPRESSED IN UNITS OF FIRE. ②

1	2	3	4	5	6	7	8	9
	Field artillery			SA (Inf & Cav)	AA artillery			
Type of combat	75-mm gun & 105-mm howitzer	155-mm howitzer	155-mm gun & larger		3-inch & 90-mm guns	37-mm, cal .50 & SA	4.2-inch chemical mortar	AT 37-mm & 75-mm
Covering and security force action	1.0	.5		1.0	1.0	1.0	1.0	1.0
Attack or defense: Meeting engagement	1.5	1.5	1.0	1.0	1.0	1.0	1.5	1.0
Attack of position: First day	2.0	2.0	1.5	1.5	1.5	1.5	2.0	1.0
Succeeding days	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Defense of position: First day	2.0	2.0	1.5	1.5	2.0	3.0	2.0	1.0
Succeeding days	1.0	1.0	1.0	1.0	1.0	1.5	1.0	1.0
Pursuit	1.0	1.0	0.5	0.5	0.5	0.5	1.0	1.0
Retirement or delaying action	1.0	1.0	0.5	0.5	2.0	2.0	1.0	1.0
Inactive situation ③	0.2	0.2	0.2	0.2	1.0	1.0	0.2	1.0

NOTES

① The data, *other than antiaircraft artillery*, given in the above table are based on such statistics as are available from World War sources and serve as a guide for estimating quantities to be shipped to ammunition depots or ammunition supply points for various types of operations. Data given under antiaircraft artillery are based on modern antiaircraft tactics. These data are not to be used for computing ammunition expenditures for short periods of time during an action.
② For number of rounds per unit of fire, see paragraph 90 and 92.
③ Forces in contact but neither side attacking.
④ Data given in this table are suitable for computation of requirements in field exercises.

■ 94. FIELD ARTILLERY AMMUNITION EXPENDITURES.

1	2	3	4	5	6
	Average rate per gun per hour				
Kind of fire or phase of action	75-mm gun or howitzer	155-mm howitzer	155-mm gun	105-mm howitzer	240-mm howitzer
Advance guard action, development, and deployment	50	25		50	
Preparation	170	50	50	120	10
Supporting fires during the attack (including counterbattery):					
First 2 hours	140	50	50	100	10
After 2 hours	80	30	30	60	10
Exploitation, pursuit, delaying action, or delaying enemy development	50	25	25	50	10
Counterpreparation	170	50	50	120	10
Defensive fires against infantry attack (including counterbattery)	140	50	50	100	10

NOTE

These figures are suitable for computing expenditures for periods of time less than 6 hours.

■ 95. *a.* SMALL ARMS AMMUNITION.—PRESCRIBED LOADS.

Division	Where carried	Prescribed loads (tons)	Division	Where carried	Prescribed loads (tons)
Inf (Triangular)	Within Regts	168	Inf (Square)	Within Regts	224
	On QM train	65		On QM train	150
	TOTAL	233		TOTAL	374

b. ANTITANK MINES.—PRESCRIBED LOADS. ①

1	2	3	4	5	6	7	8	9	10
	Unit and number of antitank mines carried								
Division	Armd Bn	Inf Bn	Art Bn	AT Tr or Btry	Engr Regt	Engr Bn or Sq ②	Cav Regt	Total	Tons
Inf (Triangular)		500	500	500		540		8,540	42.7
Inf (Square)		500	500	500	720			11,720	58.6
Cav			500	500		360	1,000	6,360	31.8
Armd	500	500	500	500		420		6,920	34.6

NOTES

① To transport the number of mines shown, except for engineer units, requires attachment of additional trucks to the unit by higher authority.

② Number of mines shown under engineer units are those authorized by T/BA, 1 November, 1940. Number of mines shown for other units are recommended.

③ Antitank mines weigh 10 pounds each:
1½-ton truck-load.....300 mines 2½-ton truck-load.....500 mines

96. ALLOCATION OF AMMUNITION.

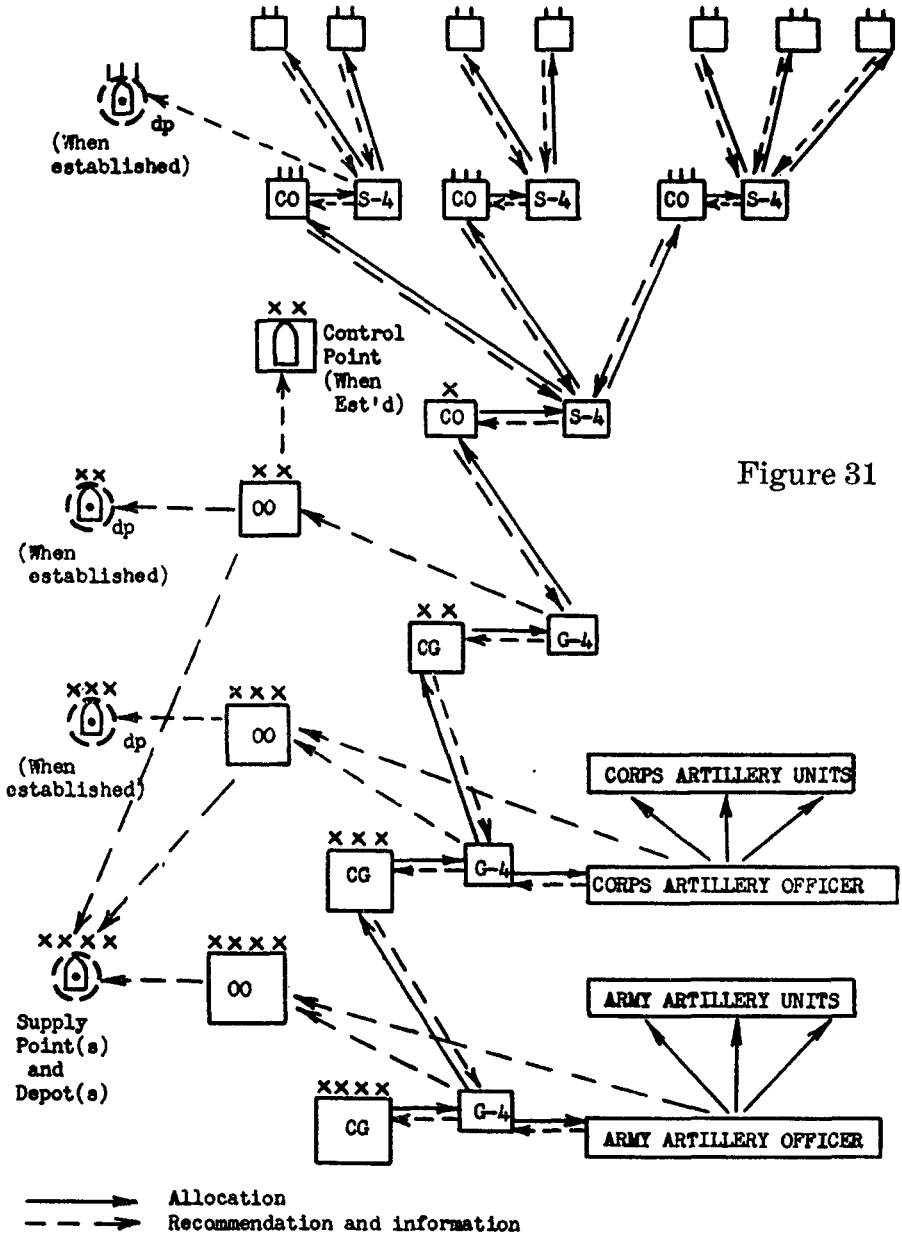


Figure 31

NOTE: The staff procedure illustrated above for the allocation of ammunition is for the Square Infantry Division. However, it is applicable to all divisions. In the Triangular Division the allocation for artillery units is routed direct to S-4 Division Artillery. The allocations for other units is routed direct to regiments and separate units.

■ 97. AMMUNITION REPORTS.

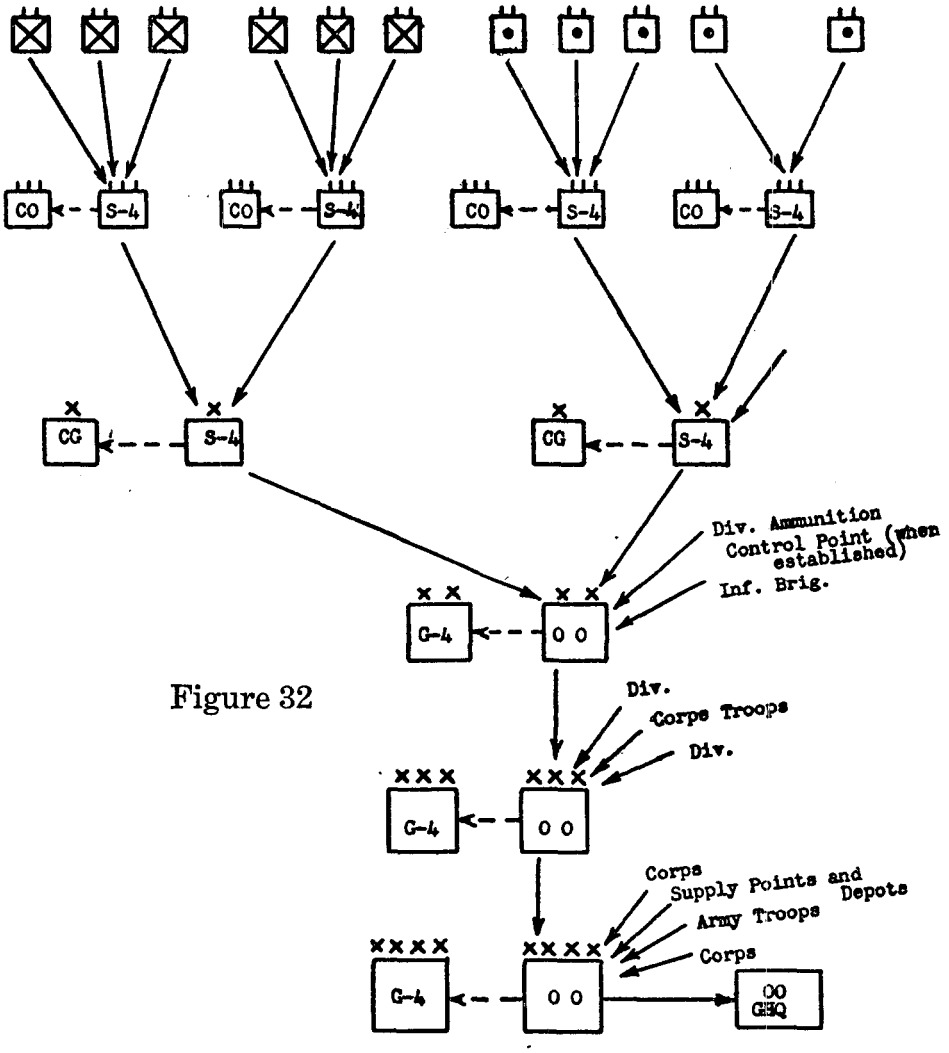


Figure 32

For form of report see par. 98.

NOTE: Ammunition reports are made periodically by the Unit in conformity with instructions of the next higher Commander. In the Triangular Division the reports from Artillery Units are routed from battalion to S-4 Division Artillery. Those from other Units are sent direct from regiments and separate units to the Division Ordnance Officer.

■ 98. AMMUNITION SITUATION REPORT IN _____ DIVISION _____ CORPS _____ ARMY.*

AT ____ O'CLOCK, _____, 19____. PERIOD COVERED: _____ DAYS
(MONTH—DAY) (1 DAY = 24 HOURS)

	Types of ammunition, fuzes, etc. (list each type separately)									
On hand.....o'clock										
Received during this period										
Expended during this period										
TOTAL REMAINING ON HAND ①										
Number guns — planes with organization ②										
Average per serviceable Gun — Plane ②										
Allocated to division; to corps but not yet received										
In (Corps) (Army) depots										

* To be filled out as accurately as circumstances permit.
① Includes stocks in (Corps) (Army) Depots, shown in last line. Corps will report on Corps Depots; Army will report on Army Depots.
② These lines filled out for calibers of 75-mm and above.

INSTRUCTIONS

This is the report on ammunition of all types submitted by ordnance officers of Divisions, Corps and Army to the next higher unit and to G-4. It covers a specified period. The hour at which the report closes is uniform throughout the Army and is designated by Army orders.
It is a summary that shows for the 24 hours (or other period) the activity of the artillery and air force bombing, and the status of ammunition supply of all types. Important items are reported daily. Less important items are reported at longer intervals.
The headings are self-explanatory.
Three or more copies are required: 1 for file; 1 for munitions officer of next higher unit; 1 for artillery commander of next higher unit.

■ 99. GRENADES, HAND.—Hand grenades are issued according to anticipated requirements, usually at the rate of 25 grenades per day per rifle company.

■ 100. LOADING OF MOTOR VEHICLES.—The caution plate attached to each cargo vehicle shows the recommended maximum pay loads on roads and cross country, maximum towable load, and the maximum safe speed of the vehicle. The practices of overloading and the use of excessive speed encroach upon the safety factors placed in the vehicle by design. These practices result in excessive maintenance requirements, in shortening the life of the vehicle, and also may cause immediate breakdown of the vehicle.

Under normal conditions allowable speed to be used should conform to the data contained on caution plates. The normal load of the vehicle should conform to its rated tonnage capacity. However, in the computation of loads the rated tonnage capacity will be considered as in addition to the weight of the driver and assistant driver (200 lbs. each).

■ 101. LABOR.—*a.* For planning purposes labor requirements for handling supplies are computed on the average of ½-ton per man per hour for ten hours each day.

b. The maximum number of men that can be employed advantageously in loading or unloading one freight car is eleven (one foreman and ten laborers).

c. In the field or at a depot, trucks can be loaded or unloaded at the rate of 20 minutes per truck regardless of tonnage if sufficient labor is available. The number of trucks that can be loaded or unloaded simultaneously is dependent upon the amount of labor available and the conditions existing at the loading or unloading point.

SECTION II

INFANTRY DIVISION (SQUARE)

■ 102. METHODS OF SUPPLY.—In the infantry division (square) the general methods of supply are:

a. Supply of regiments and separate units by the division services employing *transportation under division control.* This method of supply frequently requires transfer of loads and the maximum amount of labor and transportation. It is used when army supply points, because of distance or bad roads, are not readily accessible to unit trains. This method is called *unit distribution.*

b. Regiments and separate units draw supplies directly from army supply points using *regimental and separate unit transportation.* This method of supply does not require transfer of loads between trucks, saves time, and reduces labor requirements to a minimum. This method of supply is used when army supply points are readily accessible to unit trains. This is known as *railhead distribution.*

c. Supply by a combination of the above methods as directed by the division commander based on the peculiarities of the situation and the condition and availability of transport in the several units of the division.

■ 103. PROCUREMENT OF SUPPLIES.—In the field, supplies are obtained in the division:

a. Automatically.

b. By daily telegram.

c. By requisition.
d. As the result of establishing a credit.
e. By local exploitation.

■ 104. AUTOMATIC CLASS I SUPPLY.—Automatic supply of Class I supplies results from arrangements made with higher authority for the daily or periodic shipment from supply points to divisions of fixed quantities of supplies determined on the basis of experience as necessary. Requisition, daily telegram, or call is unnecessary on the part of the division but its changes in location must be reported to the army to determine destination of shipment. Overages received by the division are placed in division or railhead (truckhead) reserve. Shortages, when they occur, are made up from this reserve. When periodic shipments are employed, the duration of the period should not be greater than the number of days of supply carried in the division. Supplies so shipped are received by the division quartermaster and distributed to units.

■ 105. DAILY TELEGRAM.—Class I and III supplies are usually obtained by daily telegram (requisition) from the division to the army quartermaster giving strength of the unit in men and animals and the amount of gasoline and oil expended in the preceeding 24 hour period. A copy of the daily telegram should be sent to the railhead officer serving the division for his information.

■ 106. REQUISITION.—All classes of supplies may be obtained by requisition through appropriate special staff officers of the division. Requisitioning is the normal procedure in obtaining Class II and Class IV Supplies. Requisitions within the division are consolidated by the special staff officer concerned. No requisition should include articles issued by two or more services nor should articles of different classes be listed on the same requisition. All requisitions are numbered serially and the serial number is prefixed by an abbreviation indicating the service which issues the supplies. Consilidated requistions are prepared in quadruplicate. One copy is retained by the division and three copies forwarded to the army. When acted upon by the army, two copies are forwarded to the army supply point designated to furnish the supplies and one is retained for file. The army supply point retains one copy as a property record and uses the other copy as a check list in checking the supplies out of stock. When the articles desired are not available in an army supply point, two copies of the requisition are forwarded by the army to the regulating officer, who retains one as a follow-up copy and forwards one to the communication zone depot designated to ship the supplies. No unit should duplicate, on later requisitions, items called for on previous requisitions until they have been notified that such items have been stricken from previous requisitions. Prompt action must therefore be taken on each requisition and the unit notified where and when to send transportation for the supplies, or when and to what point shipment will be made.

■ 107. CREDITS.—A credit is a *definite quantity* of supply placed at the disposal of the commander of an organization for a *prescribed period* of time. In effect, the establishment of a credit is tantamount to prior approval of a requisition and thereby makes supplies available to the designated organization without loss of time incident to administrative action.

Credits may be established for any class of supplies and are generally employed in furnishing Class V supply (ammunition).

In establishing credits for ammunition, the numbers of rounds by caliber and type are prescribed as available for a definite period of time. In theaters of operation where a unit of fire has been adopted that establishes a definite number of rounds per weapon by type of ammunition, the unit of fire is used to express the amount of credit allocated.

In establishing credits for other classes of supply, the articles considered by the theater commander as essential to combat are listed by number. In theaters of operation where a list has been published enumerating articles by number that constitute a *day of supply,* credits are established in terms of days of supply. Articles not considered essenial to combat are placed in a low priority and are obtained by requisition.

The commanding general, theater of operations, on recommendations of the chiefs of services, determines what constitutes a *unit of fire* and a *day of supply* for his theater.

■ 108. PROCUREMENT BY LOCAL EXPLOITATION.—Supplies accumulated by the several processes of exploitation are distributed to troops through the regular supply channels of the services. Exploitation of local resources in hostile territory is effected by purchase, requisition on civil officials or systematic collection by force. The method to be used is a command decision.

■ 109. TRAINS OF THE DIVISION.—The train of a unit is that portion of the unit's transportation with its accompanying personnel which operates under the immediate orders of the unit commander primarily in supply, evacuation, and maintenance. Although certain trucks are assigned prescribed loads, their use is not limited to transporting such loads. Except for vehicles used for the movement of active weapons such as prime movers and weapon carriers, all of the trucks of a unit are considered as a *pool of transportation* to be used as required.

Trains are designated as company (battery), battalion, or regimental, preceded where appropriate by its functional designation.
Examples:

Ammunition train, 1st Infantry.
Kitchen train, 1st Battalion, 1st Infantry.
Medical train, 1st Battalion, 1st Field Artillery.
1st Medical Regiment (Battalion).
1st Quartermaster Regiment (Battalion).
1st Engineer Regiment (Battalion).

110. Shipping and Maintenance Requirements.—Square Division.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
			Personnel			Organizational Equipment							Maintenance items (1 day)							
						Vehicles				Guns with carriage			Gasoline		Oil		Lubricant		Rations	
Unit	T/O	Off WO & Nur	EM	Total	Ship tons *	No.	Total weight in tons		Ship tons *	No.	Gross tons	Ship tons *	Gals	Ship tons *	Gals	Ship tons *	Lbs.	Ship tons *	Tons	Ship tons *
							Empty	Loaded												
Inf Div	7	958	21,314	22,272	83,520	3,077	7,009	10,790	61,898	172	277	1,587	25,240	252.4	631	7.1	1,262	1.6	69	172.6
Div Hq	7-1	30		30	113														.1	.23
Sp Trs	7-3	29	726	755	2,831	160	381	514	2,997				1,410	14.1	35.25	.4	70.5	.09	2.3	5.9
2 Inf Brigs	7-10	456	13,086	13,542	50,783	946	1,859	2,525	15,599	48	8.3	86	8,840	88.4	221.	2.5	442.	.55	42.	105.
FA Brig	6-10	205	4,158	4,363	16,361	933	2,409	3,973	21,904	124	268	1,501	7,400	74.	185.	2.1	370.	.46	13.5	33.8
Engr Regt	5-11	40	908	948	3,555	194	487	716	4,073				1,530	15.3	38.25	.43	76.5	.1	2.9	7.3
Med Regt Incl Div Surg's Off	8-21	71	986	1,057	3,964	198	452	654	3,865				1,600	16.	40.	.45	80.	.1	3.3	8.2
QM Regt	10-27	36	861	897	3,364	541	1,197	2,099	11,536				3,420	34.2	85.5	.96	171.	.21	2.8	7.
Atchd Med		71	589	660	2,475	105	231	315	1,948				1,040	10.4	26.	.3	52.	.07	2.05	5.1
Atchd Ch		20		20	75														.06	.16

*Ship tons = 40 cu. ft.

■ 111. CARGO VEHICLES OF THE INFANTRY REGIMENT, RIFLE USED IN SUPPLY, EVACUATION AND MAINTENANCE. (T/O 7–11 Oct. 1, 1940):

a. Primarily tactical (also used for supply purposes): (1) *Weapon carriers:*

Company or Detachment	*Vehicles*	*Load transported*
Rifle Co (9 per Regt)	2 per Co	One truck carries EM, 3 60-mm mort, and 60-mm mort am. Other truck carries EM, 2 LMG, and cal .30 MG am.
Heavy Weapons Co (3 per Regt)	16 per Co as follows: 4 each cal .30 MG Plat 4 each cal .30 MG Plat 4 each cal .50 MG Plat 4 each 81-mm Mort Plat	 Each carries EM, 1 cal .30 MG, am, and water chests. Same load as above. Each carries EM, 1 cal .50 MG, and am. Each carries EM, 1 81-mm Mort, and am.
AT Co (1 per Regt)	21 per Co	
	Co Hq 3 Wpn carriers	Each carry EM, 37-mm am, and equipment.
	3 Plats, each with 6 Wpn carriers	Each Plat: 4 each carry EM, 37-mm am, and tows one 37-mm gun. 2 each carry EM and 37-mm am.
Hq & Hq Det Bn (3 per Regt)	2 per Bn Det	Each carries EM, and Pioneer and Demolition Equipment

(2) *Communication trucks:*

Company or Detachment	*Vehicles*	*Load transported*
Hq & Hq Co Inf Regt	11 per Co	
	Hq & Co Hq & Band 1 truck, 1½-ton	Carries EM and CP Equipment
	Regtl Sec 4 trks, ½-ton	2 each carry EM and wire equipment; 2 each carry EM and radio equipment.
	Each Bn Sec (3) 2 trucks, ½-ton	One carries EM and wire equipment One carries EM, wire and radio equipment

b. Primarily supply and evacuation: (1) *Ammunition train:*

EACH BN SEC (3 Secs, each 4 Trks)
3 trucks each carries.....EM, cal .30 am for M1 rifle; LMG, cal .30 am; BAR, cal .30 am; 60-mm mort am; cal .45 am
1 truck carries.....EM, 81-mm light and heavy am
AT Co SEC: 1 truck carries.....EM, 37-mm AT am, M1 rifle am, and LMG cal .30 am

(2) *Kitchen and baggage train:*

15 trucks, 1½-ton.....EM, 3–4 units field range, rations, water cans
15 trailers, 1-ton.....Off bed rolls, individual rolls, records & org property
EACH BN SEC (3): 1 truck, 1½-ton.....EM, baggage Bn Hq and Hq Det
Hq Co SEC: 1 truck, 1½-ton.....EM, baggage Hq & Hq Co

(3) *Maintenance section:*

REGTL SERV CO:
- 4 trucks, ½-ton, Wpn carrier — Each carries EM and maint equipment
- 5 trucks, 1½-ton, cargo — One carries 1–O, EM, maint equipment; Four carry EM and maint equipment

(4) *Medical train:*

EACH BN SEC:
- 4 trucks, ½-ton, Wpn carrier — One carries 1–O, EM, Bn set, aid sta equipment (less tent); Three carry EM (including litter bearers)

REGTL SEC: 2 trucks, 1½-ton, cargo — One carries EM, tentage (reserve of medical supplies); One carries EM, Hq set, aid sta equipment

c. Miscellaneous.—Organic vehicles of the regiment not included above:

Passenger car	1
Mtcl, w/s/c/	27
Truck, ½-ton, command, reconnaissance	35
Truck, ½-ton, radio	2
Truck, 1½-ton, Hq Co (band instruments)	2
Trucks, 1½-ton, AT Co (personnel carriers)	3
TOTAL VEHICLES	70

d. Summary:

CARGO VEHICLES USED FOR SUPPLY, EVACUATION, AND MAINTENANCE
(INFANTRY REGIMENT)
(*Summary T/O 7–11, October 1, 1940*)

	Truck (½-ton)	*Trailer (1-ton)*	*Truck (1½-ton)*
PRIMARILY TACTICAL: ①			
Weapon carriers:			
2 per Rifle Company	18		
16 per Heavy Weapons Company	48		
21 Antitank Companies	21		
2 Battalion Headquarters Detachments	6		
Communication trucks:			
2 Battalion Sections, Hq Co, wire, WC	6		
4 Headquarters Sections, Hq Co, wire, WC	4		
1 Headquarters Company, CP equipment			1
PRIMARILY SUPPLY (SERVICE COMPANY):			
Ammunition trucks:			
4 per Battalion			12
1 Antitank Company			1
Kitchen and baggage trucks:			
1 per Company, with trailer		15	15
1 truck per Battalion Headquarters Det			3
1 truck, Headquarters Company			1
Maintenance:			
4 WC, Service Company	4		
5 Trucks, Service Company			5
EVACUATION (ATTACHED):			
4 per Battalion	12		
2 per Regimental Headquarters			2
TOTAL	119	15	40 ②

① Also used for supply purposes. Shown here so that a complete picture may be obtained of all vehicles used for supply, evacuation, and maintenance.

② In addition, 2 trucks, 1½-ton, of Hq Co carry band instruments and 3 trucks, 1½-ton, AT Co are personnel carriers. Total 45 trucks, 1½-ton.

■ 112. PRESCRIBED LOADS, ARTILLERY AMMUNITION, INFANTRY DIVISION (SQUARE).—*a. Consolidated table:*

Unit	Types											
	75-mm Gun (AT)				*105-mm Howitzer*				*155-mm Howitzer*			
	Approx units of fire	*Rounds per piece*	*Rounds per battery*	*Total rounds*	*Approx units of fire*	*Rounds per piece*	*Rounds per battery*	*Total rounds*	*Approx units of fire*	*Rounds per piece*	*Rounds per battery*	*Total rounds*
Battery	1	144	1,152	1,152	.4	98	393	393	.4	60	240	240
Bn Serv Btry					.6	135	540	1,620	.4	66	264	792
Div QM Tn					As prescribed by Div Comdr							
TOTAL DIV	1	144	1,152	2,304	1.0	233	933	11,196	.8	126	504	3,024

b. Battery 105-mm Howitzer, Truck-Drawn:

(AVERAGE PACKED WEIGHT OF ALL TYPES, PER ROUND, 50 POUNDS)

MAXIMUM LOADS ① ADDITIONAL TO PERSONNEL AND EQUIPMENT

Type vehicle and normal assignment	*Number in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
2½-ton, prime mover	4	39	156
2½-ton, executive's truck	1	39	39
2½-ton truck, ammunition	2	60	120
1-ton trailer, ammunition	2	39	78
Total number of rounds normally carried in battery			393

① Resupply loads are same as normal loads for similar type vehicle in Service Battery.

c. Service Battery, 105-mm Howitzer, Truck-Drawn:

Type vehicle	*Number in battery*	*Maximum number of rounds carried*		*Total number of rounds carried*	
		Good roads	*Bad roads cross-country*	*Good roads*	*Bad roads cross-country*
2½-ton truck	12	96	60	1,152	720
1-ton trailers	12	39	39	468	468
Total number of rounds normally carried in battery				1,620	1,188

d. Battery 155-mm Howitzer, Truck-Drawn:

(AVERAGE PACKED WEIGHT ALL TYPES, PER ROUND, 105 POUNDS)

MAXIMUM LOADS ① ADDITIONAL TO NORMAL PERSONNEL AND EQUIPMENT

Type vehicle and normal assignment	*Number in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
4-ton truck, prime-mover	4	30	120
4-ton truck, ammunition	1	40	40
2½-ton truck, ammunition	1	20	20
2½-ton truck, executive's truck	1	20	20
1-ton trailer, ammunition	2	20	40
Total number of rounds normally carried in battery			240

① Resupply loads are same as normal loads for similar type vehicle in Service Battery.

e. Service Battery, 155-mm Howitzer, Truck-Drawn:

Type vehicle	*Number in battery*	*Maximum number of rounds carried*		*Total number of rounds carried*	
		Good roads	*Bad roads cross-country*	*Good roads*	*Badroads cross-country*
2½-ton truck	12	47	30	564	360
1-ton trailer	12	19	19	228	228
Total number of rounds normally carried in battery				780	600

Maximum resupply loads	*¼-ton trucks*	*2½-ton trucks*	*1-ton trailers*
On good roads	75	47	19
On bad roads or cross-country	40	30	19

f. Battery 75-mm Gun, Antitank, Truck-Drawn:

(AVERAGE PACKED WEIGHT OF ALL TYPES, PER ROUND, 23 POUNDS)

MAXIMUM LOADS ADDITIONAL TO PERSONNEL AND EQUIPMENT

Type vehicle and normal assignment	*Number in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
2½-ton truck, prime-mover	8	90	720
2½-ton truck, ammunition	2	129	258
1-ton trailer, ammunition	2	87	174
Total number of rounds normally carried in battery			1,152

■ 113. PRESCRIBED LOAD:

T/BA No. 7, 19 Nov. '40 & T/BA No. 10, 1 Nov. '40)

QUARTERMASTER REGIMENT — INFANTRY DIVISION (SQUARE)

	Trucks, 2½-ton	*Trailers, 1-ton*
a. Cargo capacity (640 tons)	192	160
b. Items of prescribed load:		
(1) Rations (69 tons) ①	20	19
(2) Gasoline (14,000 gallons) ②	(18)	(16)
(3) Water (4,000 gallons) ①	5	5
(4) Small-arms ammunition (150 tons)	44	40
c. Total prescribed load (236.5 tons)	69	64
d. Vehicles without prescribed loads	123	96
e. Total vehicles (sum of *c* and *d*)	192	160

NOTES

① This item is not prescribed by tables of basic allowances.
② Carried by 18 trucks (2½-ton) and 16 trailers (1-ton) provided in gasoline supply platoon in addition to general cargo vehicles. Not included in total tonnage.

SECTION III

INFANTRY DIVISION (TRIANGULAR)

■ 114. METHODS OF SUPPLY.—The methods of supply prescribed for the infantry division (square) in paragraph 102 are applicable to the supply of the triangular division.

■ 115. PROCUREMENT OF CLASS II AND IV SUPPLIES.—Class II and Class IV supplies are obtained in the triangular division by the same methods described in paragraph 106 of the square division.

■ 116. Shipping and Maintenance Requirements—Triangular Division

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
						Organizational equipment							Maintenance items (1 day)							
		Personnel					Vehicles			Guns with carriage			Gasoline		Oil		Lubricants		Rations	
Unit	T/O	O, WO, & Nur	EM	Total	Ship tons *	No.	Total weight in tons		Ship tons *	No.	Gross tons	Ship tons *	Gals	Ship tons *	Gals	Ship tons *	Lbs	Ship tons *	Ton	Ship tons *
							Empty	Loaded												
Inf Div	70	630	14,615	15,245	57,169	1,848	4,160	6,291	36,747	116	176.	977	15,760	157.6	394.	4.4	788.	1.	47.3	118.
Div Hq	70-1	28	74	102	383	10	18	25	155				90	.9	2.25	.03	4.5	.01	.32	.79
Inf Hq & MP Co	70-2	7	123	130	488	21	36	52	314				190	1.9	4.75	.05	9.5	.01	.4	1.
Rcn Tr	2-67	6	141	147	551	41	53	74	487				410	4.1	10.3	.115	20.5	.025	.46	1.14
Sig Co	11-67	8	253	261	979	73	179	254	1,638				630	6.3	15.75	.18	31.5	.049	.81	2.02
3 Inf Regts	7-11	333	9,687	10,020	37,575	681	1,338	1,815	11,217	36	6.3	66	6,360	63.6	159.	1.8	318.	.39	31.2	77.7
Div Arty	6-80	122	2,563	2,685	10,069	584	1,491	2,465	13,679	80	170.	912	4,610	46.1	115.25	1.3	230.5	.29	8.3	20.8
Engr Bn	5-75	18	616	634	2,378	116	278	412	2,460				890	8.9	22.25	.25	44.5	.06	1.96	4.9
Med Bn	8-65	38	482	520	1,950	104	284	399	2,403				930	9.3	23.25	.26	46.5	.06	1.6	4.
QM Bn	10-15	16	296	312	1,170	149	335	590	3,775				960	9.6	24.	.27	48.	.06	.97	2.4
Atchd Med		43	380	423	1,586	69	151	203	1,264				690	6.9	17.25	.19	34.5	.04	1.3	3.3
Atchd Ch		11		11	41														.03	.09

*Ship tons = 40 cu. ft.

■ 117. PRESCRIBED LOADS, ARTILLERY AMMUNITION, INFANTRY DIVISION (TRIANGULAR).—Consolidated Table. ①

Unit	Types											
	75-mm Gun (AT)				105-mm Howitzer				155-mm Howitzer			
	Units of fire	Rounds per piece	Rounds per battery	Total rounds	Units of fire	Rounds per piece	Rounds per battery	Total rounds	Units of fire	Rounds per piece	Rounds per battery	Total rounds
Battery	1	144	1,152	1,152	.4	98	393	393	.4	60	240	240
Bn Serv Btry					.6	135	540	1,620	.4	66	264	792
Div QM Tn					As prescribed by Div Comdr							
TOTAL DIV	1	144	1,152	1,152	1.0	233	933	8,397	.8	125	500	1,512

① Supporting tables same as subparagraph *b* to *f* of paragraph 112, Square Division.

■ 118. PRESCRIBED LOAD (T/BA No. 7, 19 Nov. '40 & T/BA No. 10, Nov. '40)

QUARTERMASTER BATTALION
INFANTRY DIVISION (TRIANGULAR)

	Trucks, 2½-ton	Trailers, 1-ton
a. Cargo Capacity (160 tons)	48	40
b. Items of prescribed load.—		
(1) Rations (48 ton) (1)	14	13
(2) Gasoline (4000 gals)	5	5
(3) Water (4000 gals)	5	5
(4) Small Arms Ammunition (64.5 ton) (2)	19	17
c. Total prescribed load (147 tons)	43	40
d. Vehicles without prescribed load	5	0
e. Total vehicles (Sum of *c* and *d*)	48	40

NOTES

(1) This item is not prescribed by tables of basic allowances.
(2) Tables of basic allowances prescribes a load of 111 tons of small arms ammunition. Only 64.5 tons are carried here in order to carry one days supply of rations for instructional purposes.

SECTION IV

INFANTRY DIVISION TRIANGULAR (MOTORIZED)

■ 119. The methods of supply in an infantry division (triangular, motorized) are the same as the methods of supply in the division (square) or division (triangular).

■ 120. SHIPPING AND MAINTENANCE REQUIREMENTS: TRIANGULAR DIVISION (MOTORIZED)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
						Organizational equipment							*Maintenance items (1 day)*							
		Personnel				*Vehicles*				*Guns with carriage*			*Gasoline*		*Oil*		*Lubricants*		*Rations*	
Unit	*T/O*	*O, WO, & Nur*	*EM*	*Total*	*Ship tons **	*No.*	*Total weight in tons*		*Ship tons **	*No.*	*Gross tons*	*Ship tons **	*Gals*	*Ship tons **	*Gals*	*Ship tons **	*Lbs*	*Ship tons **	*Tons*	*Ship tons **
							Empty	*Loaded*												
Inf Div, Tri Mtz	77	630	15,499	16,129	60,484	2,709	7,724	10,101	52,153	116	176.0	977	24,340	243.4	608.5	6.8	1217.	1.5	50.	125.
Div Hq	70–1	28	74	102	383															
Div Hq & MP Co	70–2	7	131	138	518	37	71	108	632				270	2.7	6.75	.08	13.5	.02	.43	1.1
Rcn Tr	2–67	6	141	147	551	41	55	78	507				410	4.1	10.25	.12	20.5	.03	.46	1.14
Sig Co	11–67	8	253	261	979	73	180	255	1,539				630	6.3	15.75	.18	31.5	.04	.81	2.
3 Inf Regts	7–61	333	10,554	10,887	40,826	1,527	4,852	5,549	26,168	36	6.0	65	14,820	148.2	370.5	4.17	741.	.93	33.7	84.4
Div Arty	6–80	122	2,563	2,685	10,069	584	1,491	2,465	13,680	80	170.0	912	4,610	46.1	115.25	1.3	230.5	.29	8.3	20.8
Engr Bn	5–75	18	616	634	2,378	116	278	412	2,460				930	9.3	23.25	.26	46.5	.06	2.	4.9
Med Bn incl Div Surg's Off	8–65	38	482	520	1,950	104	282	399	2,399				930	9.3	23.25	.26	46.5	.06	1.6	4.
QM Bn	10–15	16	296	312	1,170	149	335	590	3,234				960	9.6	24.	.27	48.	.06	.97	2.4
Atchd Med		43	389	432	1,620	78	184	249	1,557				780	7.8	19.5	.22	39.	.05	1.3	3.3
Atchd Ch		11		11	41														.03	.0

*Ship tons = 40 cu. ft.

SECTION V

ARMORED DIVISION

■ 121. METHODS OF SUPPLY.—An armored division may be supplied by any of the following methods:

a. When the division is located within a reasonable operating radius of army supply points, supply is obtained therefrom by regimental and separate unit transportation.

b. When the division is not located within a reasonable operating radius of the normally established army supply system, arrangements are made with higher authority to establish temporary railheads, truckheads, or dumps near the division area from which regimental and separate unit transportation can obtain required supplies.

c. Supply in special operations, the duration of which will be several days, may be effected by attachment of sufficient cargo transportation to carry the supplies necessary to make the division self contained for that period of time.

d. Supply may be effected by air transport to landing fields in possession of or protected by the division.

e. Supplies may be dropped by parachute from air transports in a marked area near the division.

f. In prolonged operation over wide areas supply may be effected directly to the unit by relays of army motor convoys moving between supply bases and holding and reconsignment points established near the localities in which the units are operating. Each convoy of army motor vehicles operating as a unit carries a type load of approximately one refill for the armored force or major subdivision of the force. Unit convoys are dispatched from the control point to destinations as required.

122. SHIPPING AND MAINTENANCE REQUIREMENTS—ARMORED DIVISION.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
						Organizational equipment							*Maintenance items (1 day)*							
		Personnel				*Vehicles*				*Guns with carriage*			*Gasoline*		*Oil*		*Lubricants*		*Rations*	
Unit	*T/O*	*O, WO, & Nur*	*EM*	*Total*	*Ship tons* *	*No.*	*Total weight in tons*		*Ship tons* *	*No.*	*Gross tons*	*Ship tons* *	*Gals*	*Ship tons* *	*Gals*	*Ship tons* *	*Lbs*	*Ship tons* *	*Tons*	*Ship tons* *
							Empty	*Loaded*												
Armd Div	17	619	12,078	12,697	47,614	3,384	13,179	16,067	67,747	74	122	590	48,750	487.5	3250	36.6	1625	2.	39.4	98.4
Div Hq	17-1	30	78	108	405														.33	.84
Hq Co	17-2	9	208	217	1,114	102	194	268	1,578				1,515	15.15	101	1.1	50.5	.06	.92	2.3
Armd Brig	17-10	314	5,937	6,251	23,441	1,719	8,012	9,219	34,692	32	71	317	25,605	256.05	1707	19.28	53.5	1.1	19.4	48.4
Rcn Bn	17-35	37	753	790	2,963	195	562	639	2,906				2,925	29.25	195	2.2	97.5	.12	2.4	6.1
Engr Bn	5-215	28	729	757	2,839	250	1,249	1,843	6,628				2,070	20.7	51.7	.6	103.5	.13	2.3	5.9
Inf Regt Armd	7-21	88	2,126	2,214	8,303	371	1,134	1,322	6,462	16	3	29	3,710	37.1	92.75	1.	185.5	.23	6.9	17.2
FA Bn	6-165	39	827	866	3,248	214	520	656	3,669	26	48	244	1,980	19.8	49.5	.56	99.	.12	2.7	6.7
Med Bn	8-75	25	333	358	1,343	98	218	315	1,908				950	9.5	23.8	.27	47.5	.06	1.1	2.8
QM Bn	10-35	22	438	460	1,725	187	461	777	4,151				1,310	13.1	32.7	.36	65.5	.08	1.4	3.6
Sig Co	11-57	6	243	249	934	74	140	201	1,194				740	7.4	18.5	.21	37.	.05	.77	1.9
Ord Bn Armd	9-65	21	406	427	1,601	174	689	834	4,518				1,710	17.1	42.8	.48	85.5	.11	1.3	3.3

*Ship tons = 40 cu. ft.

■ 123. Gasoline Requirements, Armored Division for Company or Larger Unit.

	1	2	3	4	5	6	7	8	9	10
		Unit vehicles and vehicle tank capacity in gallons								
1	Unit	Tank (L) (50)	Tank (M) (136)	Car, scout (35)	Car, half-track (60)	Carrier, personnel (60)	Carrier, 81-mm mortar (60)	Ambulance *(25)	Car, light, 5-Pass sedan *(17)	Motorcycle, solo *(3¾)
2	DHQ & Hq Co			12					8	33
3	Sig Co			3						81
4	Total, above units			15					8	51
	Armd Brig									
	Armd Regt (L)									
5	Armd Co (3 Cos) ⑤	13			3					4
6	Bn Hq	3			1					4
7	Total, Armd Bn (L) (3 Bns) ⑤	42			10					16
8	Rcn Co ⑤				18					17
9	MG Co ⑤				18					8
10	Serv Co			1	1				1	10
11	C Trk Sec ③④							3		
12	Ki Trk Sec ⑧									
13	Hq, Hq Co & Band ⑥⑦	3		1	6		6			15
14	Total, Regt (L)	129		2	73		6	3	1	98
	Armd Regt (M)									
15	Armd Co (3 Cos) ⑤		17		6					3
16	Bn Hq		2		3					4
17	Total, Armd Bn (M) (2 Bns) ⑤		53		21					13
18	Serv Co			1	1				1	10
19	C Trk Sec ③④							2		
20	Ki Trk Sec ⑧									
21	Hq & Hq Co ⑥⑦		2	1	5					13
22	Total, Regt (M)		108	2	48			2	1	49
	FA Regt, Armd (105-mm How)									
23	Btry (4 Btrys) ⑤				20					3
24	Am Tn ⑥			2						
25	Serv Btry			1	4				1	3
26	C Trk Sec ③④							2		
27	Ki Trk Sec ⑧									
28	Hq & Hq Btry ⑥⑦			3	18					10
29	Total, FA Regt, Armd			6	102			2	1	25
30	Hq & Hq Co, Brig	2		7					2	14
31	Total, Armd Brig ⑰	260	108	19	296		12	10	6	284
	Inf Regt									
32	R Co (3 Cos) ⑤				5	14				3
33	Hv W Co ⑤				15		4			4
34	Bn Hq & Hq Det				2	2				4
35	Total, Inf Bn (2 Bns) ⑤				32	44	4			17
36	AT Co ⑤				17					4
37	Serv Co			1	2					7
38	C Trk Sec ③④									
39	Ki Trk Sec ⑧									
40	Hq, Hq Co & Band ⑥⑦			2	11	5			1	10
41	Total, Inf Regt			3	94	93	8		1	55

GASOLINE REQUIREMENTS, ARMORED DIVISION FOR COMPANY OR LARGER UNIT. (Continued):

1	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
										Gallons of gasoline per mile per unit echelon (19)					
	Truck, ½-ton (1) command *(25)	Truck, 1½-ton cargo *(25)	Truck, 2½-ton cargo *(40)	Truck, 4-ton, wrecker *(60)	Truck, 10-ton wrecker (65)	Tr, gas & oil 600 gallons*(40)	Truck, radio repair *(30)	Truck, ¼-ton, (2) liaison *(11)	Total, unit vehicles	Combat vehicles	Unit train vehicles	Div train vehicles	Total per unit	Total gasoline tank capacity per unit (refill)	Total gallons to move unit 150 miles
2	22	.....	21	.....	.....	.....	.....	5	101	3.6	(8) 7.1	(9) .6	11.3	2,125	1,694.9
3	24	.....	17	.....	.....	.....	2	10	74	5.7	(10) 2.4	(9) .4	8.5	1,623	1,275.9
4	46	.....	38	.....	.....	.....	2	15	175	9.2	9.6	1.0	19.8	3,747	2,970.8
5	1	.....	1	.....	.....	.....	.....	2	24	10.5	.....	.....	10.5	932	1,572.1
6	.....	.....	.....	.....	.....	.....	.....	1	9	2.6	.....	.....	2.6	236	383.6
7	3	.....	3	.....	.....	.....	.....	7	81	34.0	.....	.....	34.0	3,032	5,100.0
8	1	.....	1	.....	.....	.....	.....	11	48	5.6	.....	.....	5.6	1,330	834.5
9	1	.....	1	.....	.....	.....	.....	3	31	4.8	.....	.....	4.8	1,208	713.7
10	17	.....	(26) 65	.....	2	.....	.....	9	106	.....	9.3	(9) 7.8	17.0	3,404	2,554.2
11	4	3	18	.....	.....	.....	.....	.....	28	.....	4.9	.....	4.9	970	727.5
12	.....	.....	15	.....	.....	.....	.....	.....	15	.....	3.0	.....	3.0	600	450.0
13	3	.....	2	.....	.....	.....	.....	7	43	6.7	.....	.....	6.7	1,193	1,007.0
14	35	3	111	.....	2	.....	.....	51	514	119.1	17.1	7.8	143.9	17,801	21,590.9
15	1	.....	1	.....	.....	.....	.....	2	30	17.3	.....	.....	17.3	2,770	2,595.0
16	.....	.....	.....	.....	.....	.....	.....	1	10	2.7	.....	.....	2.7	478	403.1
17	3	.....	3	.....	.....	.....	.....	7	100	54.7	.....	.....	54.7	8,789	8,207.9
18	13	.....	(26) 97	.....	3	.....	.....	9	135	.....	10.0	(9) 13.2	23.2	4,649	3,478.2
19	3	2	11	.....	.....	.....	.....	.....	18	.....	3.1	.....	3.1	615	461.3
20	.....	.....	7	.....	.....	.....	.....	.....	7	.....	1.4	.....	1.4	280	210.0
21	3	.....	2	.....	.....	.....	.....	3	29	4.6	.....	.....	4.6	844	683.0
22	25	2	123	.....	3	.....	.....	26	389	114.0	14.5	13.2	141.7	23,965	21,248.1
23	1	.....	.....	.....	.....	.....	.....	3	27	4.8	.....	.....	4.8	1,269	722.0
24	1	.....	34	.....	.....	.....	.....	7	44	.....	7.7	.....	7.7	1,532	1,150.7
25	5	.....	19	.....	1	.....	.....	4	38	.....	3.9	(9) 2.0	5.9	1,297	892.4
26	3	2	8	.....	.....	.....	.....	.....	15	.....	2.5	.....	2.5	495	371.3
27	.....	.....	7	.....	.....	.....	.....	.....	7	.....	1.4	.....	1.4	280	210.0
28	1	.....	.....	.....	.....	.....	.....	3	35	5.2	.....	.....	5.2	1,281	784.8
29	14	2	68	.....	1	.....	.....	26	247	24.5	15.6	2.0	42.0	9,962	6,306.9
30	5	.....	7	.....	.....	.....	.....	6	43	4.6	.8	(9) .4	5.8	903	876.2
31	114	10	420	.....	8	.....	.....	160	1,707	381.4	65.1	31.2	477.7	70,430	71,613.0
32	.....	.....	1	.....	.....	.....	.....	1	24	4.6	.....	.....	4.6	1,202	682.5
33	1	.....	1	.....	.....	.....	.....	1	26	4.7	.....	.....	4.7	1,231	706.8
34	.....	.....	.....	.....	.....	.....	.....	4	12	1.3	.....	.....	1.3	299	189.6
35	1	.....	4	.....	.....	.....	.....	8	110	19.6	.....	.....	19.6	5,137	2,943.9
36	1	.....	1	.....	.....	.....	.....	1	24	4.3	.....	.....	4.3	1,111	640.8
37	6	.....	20	2	.....	.....	.....	11	49	.....	5.1	(9) 1.8	6.9	1,372	1,034.7
38	10	2	12	.....	.....	.....	.....	.....	24	.....	3.9	.....	3.9	780	585.0
39	.....	.....	16	.....	.....	.....	.....	.....	16	.....	3.2	.....	3.2	640	480.0
40	.....	.....	1	.....	.....	.....	.....	8	38	5.0	.....	.....	5.0	1,213	753.6
41	19	2	58	2	.....	.....	.....	36	371	48.6	12.2	1.8	62.5	15,389	9,301.9

GASOLINE REQUIREMENTS, ARMORED DIVISION FOR COMPANY OR LARGER UNIT. (Continued):

1	1	2	3	4	5	6	7	8	9	10
		Unit vehicles and vehicle tank capacity in gallons								
1	Unit	Tank (L) (50)	Tank (M) (136)	Car, scout (35)	Car, half-track (60)	Carrier, personnel (60)	Carrier, 81-mm mortar (60)	Ambulance*(25)	Car, light, 5-Pass sedan *(17)	Motorcycle, solo *(3¾)
	FA Bn									
42	Btry (105-mm How) (3 Btrys) ⑤				17					3
43	AT Btry ⑤				19					5
44	Serv and Am Btry				5				1	3
45	C Trk Co ③④							1		
46	Ki Trk Sec ③									
47	Hq & Hq Btry ⑤			3	14					10
48	Total, FA Bn			3	89			1	1	27
	Engr Bn (combat)									
49	Engr Co (3 Cos) ⑤⑪⑫				⑮ 3	11				2
50	Bdg Co									4
51	Hq & Hq Co ⑤⑪			3	3	5			1	4
52	C Trk Sec ③④							1		
53	Ki Trk Sec ③									
54	Total, Engr Bn			3	⑮12	38		1	1	14
	Rcn Bn									
55	Rcn Co (2 Cos) ⑤			22						19
56	R Co ⑤				5	14				3
57	Armd Co (L) ⑤	13			3					4
58	Hq & Hq Det			4	1				1	6
59	C Trk Sec ③④							3		
60	Ki Trk Sec ③									
61	Total, Rcn Bn	13		48	9	14		3	1	51
	Ord Bn, Maint									
62	Maint Co (2 Cos) ⑭			2						5
63	Hq & Hq Co ⑱			2					2	2
64	Total, Ord Bn, Maint			6					2	12
	Med Bn									
65	Coll Co							30		14
66	Clr Co									4
67	Hq & Hq Det								1	2
68	Total, Med Bn							30	1	20
	QM Bn									
69	Trk Co									
70	L Maint Co									
71	Hq & Hq Co ⑱								1	6
72	Total, QM Bn								1	6
73	TOTAL, ARMD DIV	273	108	97	500	145	20	45	22	502

GASOLINE REQUIREMENTS, ARMORED DIVISION FOR COMPANY OR LARGER UNIT. (Continued):

	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
										Gallons of gasoline per mile per unit echelon (19)					
	Truck, ½-ton W command *(25)	Truck, 1½-ton cargo *(25)	Truck, 2½-ton cargo *(40)	Truck, ¼-ton wrecker *(60)	Truck, 10-ton wrecker (65)	Tr, gas & oil 600 gallons *(40)	Truck, radio repair *(30)	Truck, ¼-ton, W liaison *(11)	Total, unit vehicles	Combat vehicles	Unit train vehicles	Div train vehicles	Total per unit	Total gasoline tank capacity per unit (refill)	Total gallons to move unit 150 miles
42	1							3	24	4.2			4.2	1,089	623.0
43	1							7	32	4.9			4.9	1,261	735.5
44	3		29		1			5	47		6.4	(9) 1.6	8.0	1,683	1,200.5
45	2		6						9		1.6		1.6	315	236.3
46			6						6		1.2		1.2	240	180.0
47	1							4	32	4.4			4.4	1,052	661.7
48	10		41		1			25	198	21.8	9.2	1.6	32.6	7,818	4,882.7
49	4		(2) 2					1	23	4.1			4.1	1,039	614.0
50	7		(2) 15	(20)42	(21) 4			4	76			13.6	13.6	3,614	2,033.9
51	7		(2) 15						38	5.2		(9) 1.2	6.4	1,392	966.8
52	2	1	13						17		3.1		3.1	620	465.0
53			4						4		.8		.8	160	120.0
54	28	1	(2) 53	(20)42	(21) 4			7	204	17.5	3.9	14.8	36.2	(25) 9,148	5,527.5
55	1		1					11	54	6.6			6.6	1,027	977.6
56			1					1	24	4.6			4.6	1,202	682.5
57	1		1					2	24	10.5			10.5	932	1,572.2
58	1		9					1	23	1.7		(9) 1.6	3.3	636	493.2
59	1		5						9		1.5		1.5	300	225.0
60			7						7		1.4		1.4	280	210.0
61	5		25					26	195	29.8	2.9	1.6	34.3	5,404	5,138.0
62	15		(23) 26		4			2	54		8.8		8.8	1,786	1,322.7
63	6	1	(23) 44		1	3		2	63		(14)10.7	(9) .6	11.3	2,254	1,687.7
64	36	1	(23) 96		9	3		6	171		28.3	.6	28.9	5,825	4,333.1
65	5		4						53			5.7	5.7	1,088	854.0
66	5		18						27			4.4	4.4	860	656.0
67	4		5					3	15			1.8	1.8	358	272.0
68	14		27					3	95			11.9	11.9	2,305	1,781.9
69	4		52					3	59			11.1	11.1	2,213	1,661.6
70	6		23	4				4	37			6.8	6.8	1,354	1,017.9
71	10	1	12					5	35			4.4	4.4	850	653.1
72	20	1	87	4				12	131			22.3	22.3	4,417	3,332.6
73	292	15	845	48	22	3	2	290	3,247	508.5	131.2	86.7	726.4	124,483 (25)	108,961.5 332.33 tons

GASOLINE REQUIREMENTS, ARMORED DIVISION ⑱
FOR COMPANY OR LARGER UNIT

* Tank capacities of 1941 models.
① Includes Trks: ½-ton, pick-up; ½-ton, Rad; ½-ton, w/carrier; 1½-ton, panel delivery; and emergency repair.
② Includes Sp Engr vehicles.
③ The assembled C and Ki Trks of Cos (Btrys) normally march with the Sup (T) element of Serv (Hq) Cos (Btrys).
④ Includes Co (Btry) C Trks, Atchd Med vehicles, and other Sp equipped Trks as shown on T/O's.
⑤ Less C and Ki Trks. (See note ③).
⑥ Less Ki Trk. (See note ③.)
⑦ Less band Trks. (See note ④.)
⑧ Includes one Trk, ¼-ton, Ln, and seven Mtcls.
⑨ Trks for second days' Sup of gasoline and/or Am.
⑩ Includes one pick-up, nine C Trks, two Ki Trks, and two tricycles.
⑪ Less W Sup equipment Trk. (See note ④.)
⑫ Less gasoline and oil truck. (See note ④.)
⑬ Based on T/O's dated November 15, 1940.
⑭ Less 600 gallon gasoline and oil Trks.
⑮ Includes Trks, 4-ton, cargo.
⑯ Mtcls and tricycles march with C vehicles unless otherwise noted.
⑰ Includes two Armd Regts (L), one Armd Regt (M), and one FA Regt (105-mm How).
⑱ Includes Atchd Med vehicles.
⑲ Oil and grease consumption is eight per cent of gasoline consumption.
⑳ Includes Trks, 4-ton, Trac.
㉑ Includes Trks, crane.
㉒ Gasoline tank capacity in gallons.
㉓ Includes Sp Ord vehicles.
㉔ If replaced by tricycles, gasoline consumption will be changed accordingly.
㉕ Addition of 246 gallons for one day's supply of Sp Engr equipment.
㉖ T/BA provides one truck, 2½-ton, office, not shown on this table.

■ 124. DATA REQUIRED IN RESUPPLY OF ARMORED UNITS.

Periodic Vehicle Report *a*
for
TANK (LIGHT) MEDIUM) (HEAVY) *b*

Items Carried	*Prescribed Load Per T/B A c*	*Amount on Hand*	*Amount Required to Refill*
Gasoline			
Oil			
Grease			
Am. Caliber			
.30			
.45			
.50			
37-mm			
75-mm			
105-mm			
Other authorized items			

NOTES

a Suggested form to be used by unit commanders as a basis for the consolidated report.
b Similar form can be used for other organic vehicles.
c Prescribed load should be entered by the unit commander for each type of vehicle in his unit.

■ 125. CONSOLIDATED REPORTS ON STATUS OF SUPPLY.—Periodic vehicle reports are consolidated by the unit commanders. The consolidated reports show the totals of Class III and Class V supplies on hand and the amount of each required to complete the load of the vehicles of the unit.

The final consolidation of expenditure reports shows the total amount of supplies on hand and the total amount required to reestablish the prescribed loads of the force.

■ 126. PRESCRIBED LOAD

(T/BA No. 17, 29 Nov. '40 & T/BA No. 10, 1 Nov. '40)

QUARTERMASTER BATTALION

ARMORED DIVISION

	Trucks, 2½-ton	*Trailer, 1-ton*
a. Cargo Capacity (160 ton)	48	40
b. Items of prescribed load.—None*		
c. Total prescribed load.—None		
d. Vehicles without prescribed load	48	40
e. Total vehicles	48	40

*As directed by the division commander.

■ 127. UNIT OF FIRE, EXPRESSED IN ROUNDS, ARMORED FORCE UNITS ②

1 *Weapon or vehicle*	*Calibers*							
	*.30*④	*.45*⑤	*.50*④	*37-mm*	*60-mm*	*75-mm*	*81-mm*	*105-mm*
2 Pistol		10.5						
3 Rifle, M-1	160							
4 Rifle, auto	500							
5 Machine gun ③	500		150					
6 Inf Weap Plat, MG	2,000							
7 Sub-MG		85						
8 Tank (L)	4,135	250		⑧51.5				
9 Tank (M), M-3	4,000	500		⑧75		⑨25		
10 Scout-car	4,000	275	375					
11 Car, half-track	①4,000	275	375					
12 Carrier, personnel	2,000	275						
13 Carrier, 81-mm	2,000	275	375					
14 Mortar, 81-mm							⑩126	
15 Mortar, 60-mm					200			
16 37-mm, AT⑥				150				
17 Grenade①	Shown in paragraph 128 ①							
18 75-mm, AT⑦						150		
19 105-mm								225

[AFB April, 1941]

① 6,000 for MG Plats, Inf Regt and Armd Regt (L). 2,000 in AT Plat, Inf Regt.
② Based on T/BA dated November 1940.
③ Train defense weapon.
④ Machine-gun ammunition, caliber .30 and .50 — 75% AP and 25% tracer.
⑤ 75% Ball and 25% Tracer.
⑥ 90% AP and 10% HE.
⑦ 80% AP and 20% HE.
⑧ 64% HE, 30% AP and 6% Cannister.
⑨ 70% HE and 30% AP.
⑩ 80% M-57 and 20% M-45.

■ 128. PRESCRIBED ALLOWANCE OF GRENADES, CARRIED ON VEHICLE.

(Data to be supplied later.)

■ 129. BATTERY, REGIMENT, 105-MM HOWITZER, ARMORED DIV (T/O 6-127) (Average packed weight, all types, per round = 50 lbs.)
MAXIMUM LOADS ADDITIONAL TO NORMAL PERSONNEL AND EQUIPMENT.

Type vehicle and normal assignment	*No. in Battery*	*Rounds carried on each vehicle*	*Total rounds carried*
Cars, half track, prime mover	6	30	180
Cars, half track, other than prime mover	6	15	90
Cars, half track, 1st Sergeant	1	30	30
Cars, half track, ammunition	3	60	180
Trailers, ammunition	3	39	117
Total No. of rounds normally carried in battery			597
Total No. of rounds carried in 4 batteries			2388

■ 130. FIELD ARTILLERY TRAIN, AMMUNITION, TRUCK-DRAWN, REGIMENT, 105-MM HOWITZER, ARMORED DIVISION (T/O 6-129).

Type vehicle	*No. for 105-mm AM*	*Max. No. of rds. carried*		*Total No. of rds carried*	
		Good roads	*Bad roads cross-country*	*Good roads*	*Bad roads cross-country*
2½-ton, truck, cargo, combat	28	90	No Change	2520	No Change
Total No. of rounds in Regiment:				4920	

■ 131. BATTERY, BATTALION, 105-MM HOWITZER, ARMORED DIVISION (T/O 6-167) MAXIMUM LOADS ADDITIONAL TO NORMAL PERSONNEL AND EQUIPMENT.

Type vehicle and normal assignment	*No in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
Car, half track, prime mover	4	30	120
Car, half track* exec.	1	30	30
Car, half track, ammunition	4	30	120
Trailer, ammunition	4	39	156
Total No. of rounds normally carried in battery			426
Total No. of rounds carried in 3 batteries			1278

*This car is shown by T/O assigned to 1st Section

■ 132. BATTERY, 75-MM GUN, ANTITANK, ARMORED DIVISION (T/O 6-168) MAXIMUM LOADS ADDITIONAL TO NORMAL PERSONNEL AND EQUIPMENT.

Type vehicle and normal assignment	*No. in battery*	*Rounds carried on each vehicle*	*Total rounds*
Car, half track, prime movers	8	48	384
Car, half track, other than prime movers	4	48	192
Car, half track, ammunition	4	48	192
Trailer, ammunition	4	87	348
Total No. of rounds normally carried in Battery			1116

■ 133. SERVICE BATTERY, BATTALION, 105-MM HOWITZER, ARMORED DIVISION (T/O 6-169).

Type vehicle	*No. for 105-mm*	*Max. No. of rds carried*		*Total No. of rds. carried*	
		Good roads	*Bad roads cross-country*	*Good roads*	*Bad roads cross-country*
2½-ton truck 12 trucks in train	12	81	No Change	972	No Change
		Total No. of rounds in battalion			2262

SECTION VI

CAVALRY DIVISION (HORSE)

■ 134. METHODS OF SUPPLY.—The methods of supply used by the cavalry division are based upon the characteristics and missions of cavalry which require the division to operate over broad fronts at a considerable distance from a railhead, and which require great mobility. The following methods or combinations of methods are used:

a. When army supply points are within normal operating radius of regimental trains.—By drawing supplies from army supply points using regimental and separate unit transportation, see paragraph 102.

b. When army supply points are beyond normal operating radius of regimental trains.—Three methods are available in this case. They are:

(1) Supply of regiments and separate units by the division services employing transportation under division control. This method (unit distribution) is similar to that described in *a*, except as to the transportation used and should be used only when army supply points are sufficiently close to permit it. An alternate method is to use the division transportation to establish truck heads for the service of the regiments and separate units.

(2) Establishment of advanced supply points (all classes of supply) by army, then supply by either of the methods described in (1) above.

(3) Attachment by the army of sufficient cargo transportation to insure supply in special operations, the duration of which will be several days, in order to make the division self sustaining for that period of time.

c. Special Methods.—In special cases supply may be effected by air transport, either from landing fields in possession of the unit, or by dropping in a marked area.

■ 135. BASIC DOCTRINE.—Any method of effecting supply of the cavalry division should recognize the following basic doctrine.

a. Supplies must be placed within reach of unit trains.

b. Supplies must be kept mobile.

c. The transportation available to separate regiments and units of the cavalry division will provide one day's supply only. All units must be supplied daily.

d. Supply, especially of Class III and V, must be adequate.

e. The method of supply adopted must be flexible to meet unexpected situations.

136. Shipping and Maintenance Requirements—Cavalry Division

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
		Personnel				Animals		Organization equipment							Maintenance items (1 day)									
								Vehicles			Guns with carriage				Gasoline		Oil		Lubricants		Rations		Forage	
Unit	T/O	Off, WO, & Nur	EM	Total	Ship tons *	No	Ship tons *	No	Total weight in tons		Ship tons *	No	Gross tons	Ship tons *	Gals	Ship tons *	Gals	Ship tons *	Lbs	Ship tons *	Tons	Ship tons *	Tons	Ship tons *
									Empty	Load'd														
Cav Div	2	552	11,122	11,676	43,785	7,994	39,970	1555	3,732	5,558	29,462	196	133	1,023	13,180	131.8	329.5	3.7	659.	.82	36.2	90.5	95.9	240.
Hq	2-1	22	62	84	315																.26	.65		
Hq Tr	2-2	5	117	122	690	26	130	34	83	119	786				340	3.4	8.5	.1	17.	.02	.37	.9	.31	.78
Cav Brig	2-10	156	3,257	3,413	12,799	3,225	16,125	202	445	605	3,379	12	2	22	2,020	20.2	50.5	.57	101.	.13	10.6	26.5	38.7	96.8
Cav Brig		156	3,257	3,413	12,799	3,225	16,125	202	445	605	3,379	12	2	22	2,020	20.2	50.5	.57	101.	.13	10.6	26.5	38.7	96 8.
Div Arty	6-110	99	1,971	2,070	7,763	1,194	5,970	298	666	1,084	6,242	160	127	958	2,150	21.5	53.7	.6	107.5	.13	6.4	16.	14.3	35.8
Rcn Sq	2-25	33	657	690	2,588			224	460	524	2,418				2,240	22.4	56.	.63	112.	.14	2.1	5.3		
Engr Sq	5-115	16	451	467	1,751			97	240	352	2,047				770	7.7	19.3	.22	38.5	.05	1.4	3.6		
Med Sq	8-85	28	336	364	1,365	16	80	88	220	302	1,871				760	7.6	19.	.21	38.	.05	1.1	2.8	.19	.48
QM Sq	10-115	23	545	568	2,130	308	1,540	278	771	1,464	7,481				1,680	16.8	42.	.47	84.	.1	1.8	4.4	3.7	9.25
AT Tr	2-37	4	152	156	585			37	93	106	549	12	2	22	370	3.7	9.25	.1	18.5	.02	.48	1.2		
Sig Tr	11-48	6	177	183	686			57	133	191	1,240				470	4.7	11.8	.13	23.5	.03	.56	1.4		
Ord Co	9-7	6	140	146	548			38	141	188	1,011				290	2.9	7.3	.08	14.5	.02	.45	1.1		

*Ship tons = 40 cu. ft.

■ **137. PRESCRIBED LOADS CAVALRY REGIMENT, HORSE.**—*a. Class I Supply.*—Rations, forage.

Carried by (or for)	*Field ration A or B*	*Field ration C*	*Field ration D*	*Grain* ①	*Fuel, oil, or wood*
Each troop for its own use	1 ②		1	1 ③	1
Division (for entire division) on train of quartermaster squadron	1	1 ④		1	1
TOTAL IN DIVISION	2	1	1	2	2

① For all animals.
② Part may be carried on individual and part on unit trains.
③ Part of all of unconsumed portion may be carried on animals; a part may be carried on unit train.
④ May be carried either in units or in quartermaster squadron at direction of division commander; within units, part may be carried on individuals and part or all on unit trains as directed by unit commanders.

b. Class III Supply.—Motor fuel and lubricants.

Unit	*Where carried*	
Each vehicle (except Mtcl & Tricycle)	1 day in fuel tank plus one 10-gallon container	1 day in Div Tn for next day issue
Each Mtcl or Tricycle — three 10-gallon containers for resupply on Regtl Tn	1 day in fuel tank	1 day in Div Tn

c. Class V Supply.—Ammunition in regiment.

Type of ammunition	*Hq & Serv*	*R Sq*	*R Tr*	*MG Tr*	*Sp W Tr*	*Regt*
Rifle, M-1, cal .30	11,440	66,528	21,648	13,728	10,736	168,960
Pistol, cal .45	5,768	13,216	4,228	4,452	3,967	41,608
LMG, cal .30 (pack)		56,700	18,900			75,600
LMG, cal .30 (Tn Def)	13,500					13,500
MG, cal .30 (pack)				75,000		75,000
MG, cal .30 (Sct-c)	42,000					42,000
MG, cal .50 (HB) (pack)					10,080	10,080
MG, cal .50 (HB) (Sct-c)	7,350					7,350
MG, cal .50 (HB) (Tn Def)	1,800					1,800
Sub-MG, cal .45 (Mtcl)	8,700					8,700
Sub-MG, cal .45 (Sct-c)	4,900					4,900
Mortar, 81-mm					288	288

REGIMENTAL TOTALS — TYPES AND WEIGHTS OF COMPONENTS

Kind	*Number of rounds*	*Pounds*	*Tons*
Caliber .30	375,060	31,255	15.628
Caliber .45	55,028	3,036	1.518
Caliber .50	19,230	4,866	2.433
81-mm	288	2,596	1.298
TOTAL			20.877

■ 138. PRESCRIBED LOADS, CAVALRY REGIMENT, HORSE AND MECHANIZED.
—*a. Class I Supply.*—Ration and forage.

Carried in	*Field ration A or B*	*Field ration C*	*Field ration D*	*Grain*	*Fuel, oil, or wood*
Regiment	2	1	1	2	2

b. Class III Supply.—Motor fuel and lubricants.

Unit	*Where carried*		*Replacement*			*Unit*
	On vehicle	*Gas and Oil Section Mecz Sq & Trans Plat*	*No. vehicles*	*Gal gas*	*Gal oil*	*Mile*
Motorcycle and tricycle	Full tank	One 10-gallon container per 5 Mtcls or Tris	177	1,327	88.5	8.85
Scout cars and all trucks	Full tank plus one 10-gallon container	1 day supply in 10-gallon containers	147	2,940	196	29.40
Truck tractor with semi-trailer	Full tank plus one 10-gallon container	1 day supply in 10-gallon containers	77	2,541	170	25.41
		TOTALS	401	6,808	454.5	43.66

Gasoline Replacement Basis: 150 miles.....motorcycle.....at 20 miles per gallon
100 miles.....scout-car & truck.....at 5 miles per gallon
100 miles.....truck tractor.....at 3 miles per gallon
Oil replacement basis: 1 gallon oil to 15 gallons gasoline.
Only actual expenditures are replaced.
Unit mile: amount of gasoline to move all vehicles of regiment 1 mile.

c. Class V Supply.—Ammunition in regiment.

Type of ammunition	*Reg Hq & Band*	*Hq Tr*	*Hq 1st Sq*	*3 R Trs*	*Hq 2d Sq*	*2 Recn Trs*	*Mtcl Tr*	*Serv Tr*	*Regt total*
Pistol, cal .45	1,008	4,928	2,156	12,684	560	9,240	6,048	6,216	42,840
Rifle, M-1, cal .30		1,760	2,992	64,944		10,912	13,024		93,632
Sub-MG, cal .45 (Sct-c)		11,900			1,400	28,000	4,200	2,100	47,600
Sub-MG, cal .45 (Mtcl)		6,300			900	13,800	22,200	9,300	52,500
LMG, cal .30 (Tr Def)		3,750				4,500	2,250	58,500	69,000
LMG, cal .30 (pack)				56,700					56,700
MG, Hv, cal .30 (Sct-c)		102,000			12,000	240,000	36,000	18,000	408,000
MG (HB), cal .50 (pack)			4,940						4,940
MG (HB), cal .50 (Sct-c)		17,850			2,100	42,000	6,300	3,150	71,400
MG (HB), cal .50 (Tr Def)		750				1,500	750	17,250	20,250
AT, 37-mm		600							600

REGIMENTAL TOTALS — TYPES AND WEIGHTS OF COMPONENT

Kind	*Number of rounds*	*Pounds*	*Tons*
Caliber .45	142,500	7,837.5	3.969
Caliber .30	627,332	52,277.6	26.139
Caliber .50	96,590	33,484.9	16.742
37-mm AT	600	1,710.0	.855
TOTAL			47.705

d. Normal loads. Pack, horse squadron.

Pack	*Loads*	*Weight in pounds*
Kitchen Pack — Trs A, B & C	Cooking outfit	186
Ration pack — Trs A, B & C	1/6 ration in ration box	234 (approx)
Ammunition Pack (LMG)	1,800 rounds cal .30 ammunition	203
Am pack, cal .50 Plat, 1st Sq Hq	400 rounds cal .50 ammunition	196
Gun, pack, LMG	Gun & Tripod — 1,050 rounds cal .30 Am.	194
Gun, pack, cal .50 Plat, 1st Sq Hq	Gun & Tripod — 40 rounds cal .50 Am.	216
Radio, pack (Com Sec, 1st Sq Hq)	Radio Set SCR-203	214

■ 139. PRESCRIBED LOAD (T/BA No. 2, 1 Nov. '40 & T/BA No. 10, 1 Nov. '40) QUARTERMASTER SQUADRON

CAVALRY DIVISION (HORSE)

	Vehicles			
	4-ton Semi-trailers	*2½-ton Stock Rack*	*2½-ton Cargo Gasoline*	*1-ton Cargo Trailer*
a. Cargo Capacity (352-tons)	48	48	10	50
b. Items of prescribed load.—				
(1) Rations (35-ton) (1)		12		5
(2) Grain (40-ton)	10(1)			
(3) Gasoline (8000 gals) (2)			10	10
(4) Water (4000 gals)		5(1)		5
(5) Small arms ammunition (104-ton)		30		29
c. Total prescribed load (196.5-tons)	10	47	10	49
d. Vehicles without prescribed loads	38	1		1
e. Total vehicles	48	48	10	50

NOTES

(1) These items not prescribed by table of basic allowances.
(2) Organic gasoline supply vehicles consisting of 10 trucks and 10 trailers not included in total cargo capacity.
(3) If field ration C is also carried, additional trucks and trailers will be utilized.

■ 140. PRESCRIBED AMMUNITION LOADS, ORGANIC ARTILLERY, CAVALRY DIVISION.—*a.* Consolidated table.

Unit	*Units of Fire*	*Rounds per Piece*	*Rounds per Battery*	*Total Rounds*
	75-MM FIELD HOWITZER			
Battery (horse)	.4	133	532	532
Service Battery	.5	151	606	1,818
Quartermaster Squadron	As prescribed by the division commander			
TOTAL, TWO BATTALIONS	1	284	1,138	6,828
	105-MM HOWITZER			
Battery, truck-drawn	.4	100	400	400
Service Battery	.6	140	560	1,680
Quartermaster Squadron	As prescribed by the division commander			
TOTAL, BATTALION	1.0	240	960	2,880

b. Battery 75-mm field howitzer (horse) (Cav Div):

MAXIMUM LOADS ADDITIONAL TO PERSONNEL AND EQUIPMENT
(AVERAGE PACKED WEIGHT OF ALL TYPES, PER ROUND, 23 POUNDS)

Type vehicle and normal assignment	*Number in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
Caissons	6	52	312
Limbers	10	22	220
Total number of rounds normally carried in battery			532

c. Service battery, 75-mm gun, horse-drawn or 75-mm field howitzer (horse).

Type vehicle	*Number in battery*	*Maximum number of rounds carried*		*Total number of rounds carried*	
		Good roads	*Bad roads cross-country*	*Good roads*	*Bad roads cross-country*
2½-ton truck	6	216	129	1,296	774
1-ton trailer	6	87	87	522	522
Total number of rounds normally carried in battery				1,818	1,296

SECTION VII

ARMY CORPS

■ 141. METHODS OF SUPPLY.—The divsions of a corps are supplied direct from army supply points as described in Section II of this chapter. Corps troops are supplied by the same methods as those prescribed for the supply of a division. The corps commander and his staff perform the same functions in the supply of corps troops that a division commander and his staff perform in the supply of a division.

■ 142. TRAINS OF THE CORPS.—The trains of the corps carry no reserve supplies for its divisions and have no prescribed load therefor. The corps commander prescribes loads for his trains by item and amount as required.

■ 143. PRESCRIBED AMMUNITION LOADS, ORGANIC CORPS ARTILLERY BRIGADE.

Unit	*Types*							
	155-mm Howitzer				*155-mm Gun*			
	Units of fire	*Rounds per piece*	*Rounds per battery*	*Total rounds*	*Units of fire*	*Rounds per piece*	*Rounds per battery*	*Total rounds*
Battery	.4	60	240	240	.5	50	199	199
Service battery	.4	66	264	792	.5	50	196	588
TOTAL IN BRIGADE	.8	126	504	6,048	1	105	395	2,370

■ 144. PRESCRIBED AMMUNITION LOADS, ORGANIC CORPS ANTIAIRCRAFT ARTILLERY (Regiment with 37-mm gun battalion. attached). ①

Unit	Unit of fire ④	Number of rounds: Per piece	Per Btry	Total	Vehicles used ⑤	Unit of fire ④	Number of rounds: Per piece	Per Btry	Total	Vehicles used ⑤
GUN BATTALION ②										
	3-inch antiaircraft guns ⑥					*Caliber .50 antiaircraft machine guns ⑥*				
Btry	9/10	272	1,088	1,088	8 trucks, 120 rounds each 4 trucks (prime movers), 32 rounds each	5/6	3,000	12,000	12,000	2 trucks, 6,000 rounds each
Bn Am Tn	1/10	28	112	336	3 trucks, 112 rounds each	1/6	600	2,400	7,200	1 truck, 7,200 rounds
TOTAL	1	300	1,200	3,600	24 trucks, 120 rounds each 12 trucks (prime movers), 32 rounds each 3 trucks, 112 rounds each	1	3,600	14,400	43,200	1 truck, 7,200 rounds 6 trucks, 6,000 rounds each
AUTOMATIC WEAPONS BATTALION ③										
	37-mm antiaircraft guns					*Caliber .50 antiaircraft machine guns*				
Btry	½	900	7,200	7,200	8 trucks, 900 rounds each	½	3,600	43,200	43,200	12 trucks, 3,600 rounds each
TOTAL	½	900	7,200	21,600	24 trucks, 900 rounds each	½	3,600	43,200	43,200	12 trucks, 3,600 rounds each
SEPARATE BATTALION 37-MM GUNS (ATTACHED) ⑦										
Btry	½	900	7,200	7,200	8 trucks, 900 rounds each					
TOTAL	½	900	7,200	28,800	32 trucks, 900 rounds each					

NOTES

① Based on T/O published November 1, 1940.
② Three gun batteries of four 3-inch AA guns each. Each battery is also provided with four caliber .50 AA machine guns for its own protection.
③ Three 37-mm AA gun batteries of eight guns (four platoons) each and one MG battery of twelve caliber .50 AA machine guns (three platoons).
④ Unit of fire per piece: 3-inch AA gun, 300 rounds; 37-mm AA gun, 1,800 rounds; caliber .50 AA machine gun, per machine gun in gun batteries: 3,600 rounds; and, per machine gun in the machine-gun battery: 7,200 rounds.
⑤ All ammunition-carrying trucks (except prime movers and machine-gun battery vehicles) are 2½-ton.
⑥ Pending publication of *Tables of Organization* and *Tables of Allowances* for 90-mm AA guns, prescribed loads for these guns may be taken tentatively as four-fifths of 3-inch AA gun loads; caliber .50 AA machine-gun loads may be taken to be the same as for the 3-inch gun battalion.
⑦ Four 37-mm gun batteries of 8 guns (4 platoons) each.

■ 145. CORPS QUARTERMASTER SERVICE.

a. Cargo transportation.

2 Cos Truck—2½-ton trucks & 1-ton trailers.
Trucks per company available for cargo—48
Trailers per company available for cargo—40
Total trucks=96
Total trailers=80
Total truck tonnage=240
Total trailer tonnage=80

Total combined tonnage 320

b. Labor.

1 Service Company (Administrative personnel excluded)

Unit	*Number of men*	*Capacity in tons per 24 hours*
Squad	10	50
Section	40	200
Platoon	80	400
Company	160	800

c. Gasoline Supply Company.

Capacity—15,700 gallons gasoline
— 300 gallons oil.
(All in 5 or 10 gallon containers)

d. Quartermaster Company, light maintenance, has no general cargo transportation.

SECTION VIII

ARMY

■ 146. METHODS OF SUPPLY.—Army troops are supplied by the same methods as those prescribed for corps troops. (See Section VII, Chapter 3.)

■ 147. ARMY TRAINS.—Army trains carry no reserve supplies for lower units. Normal loads are prescribed for army trains by the army commander whenever required.

148. PRESCRIBED AMMUNITION LOADS, ANTIAIRCRAFT ARTILLERY BRIGAADE. (1)

Unit	Unit of fire (4)	Number of rounds: Per piece	Per Btry	Total	Vehicles used (5)	Unit of fire (4)	Number of rounds: Per piece	Per Btry	Total	Vehicles used
GUN BATTALION (2)										
	3-inch antiaircraft guns (6)					*Caliber .50 antiaircraft machine guns (6)*				
Btry	9/10	272	1,088	1,088	8 trucks, 120 rounds each 4 trucks (prime movers), 32 rounds each	5/6	3,000	12,000	12,000	2 trucks, 6,000 rounds each
Bn Am Tn	1/10	28	112	336	3 trucks, 112 rounds each	1/6	600	2,400	7,200	1 truck, 7,200 rounds
TOTAL IN BRIG (3 Regts)	1	300	1,200	10,800	72 trucks, 120 rounds each 32 trucks (prime movers), 32 rounds each 9 trucks, 112 rounds each	1	3,600	14,400	129,600	3 trucks, 7,200 rounds each 18 trucks, 6,000 rounds each
AUTOMATIC WEAPONS BATTALION (3)										
	37-mm antiaircraft guns					*Caliber .50 antiaircraft machine guns*				
Btry	½	900	7,200	7,200	8 trucks, 900 rounds each	½	3,600	43,200	43,200	12 trucks, 3,600 rounds each
TOTAL IN BRIG (3 Regts)	½	900	7,200	64,800	24 trucks, 900 rounds each	½	3,600	43,200	129,600	36 trucks, 3,600 rounds each

NOTES

(1) Based on T/O published November 1, 1940.
(2) Three gun batteries of four 3-inch AA guns each. Each battery is also provided with four caliber .50 AA machine guns for its own protection.
(3) Three 37-mm AA gun batteries of eight guns (four platoons) each and one MG battery of twelve caliber .50 AA machine guns (three platoons).
(4) Unit of fire per piece: 3-inch AA gun, 300 rounds; 37-mm AA gun, 1,800 rounds; caliber .50 AA machine gun, per machine gun in gun batteries: 3,600 rounds; and, per machine gun in the machine-gun battery: 7,200 rounds.
(5) All ammunition-carrying trucks except prime movers and machine-gun battery vehicles are 2½-ton.
(6) Pending publication of *Tables of Organization* and *Tables of Allowances* for 90-mm AA guns, prescribed loads for these guns may be taken tentatively as four-fifths of 3-inch AA gun loads; caliber .50 AA machine-gun loads may be taken to be the same as for the 3-inch gun battalion.

149. ARMY QUARTERMASTER SERVICE.

a. Cargo transportation.

1 Regiment, truck.
Equipment 2½-ton trucks and 1-ton trailers.

Capacity (Administrative vehicles are excluded)

Unit	*No. of trucks*	*No. of trailers*	*Combined tonnage*
Company	48	40	160
Bn (4 Cos)	192	160	640
Total 3 Bns	576	480	1920

b. Labor.

6 Battalions, Service.

Capacity (Administrative and foremen personnel excluded)

Unit	*Number of men*	*Tons per 24 hours*
Company	160	800
Bn (4 Cos)	640	3200
Total 6 Bns	3840	19200

c. Gasoline Supply Battalion.

Capacity (Gasoline and oil carried in containers)

Unit	*Gasoline (gallons)*	*Oil (gallons)*
Company	15,700	300
Battalion (4 Cos)	62,800	1,200

d. Passenger Transportation.

1 Company, car.

Vehicles Available (Administrative vehicles are excluded)

Unit	*5 passenger cars (light)*	*Command trucks*	*Mtcls w/s/c*
Platoon	6	7	7
Co (4 platoons)	24	28	28

e. 3 Quartermaster Battalions, light maintenance.

1 Quartermaster Company, depot
1 Quartermaster Company, depot (M.T.)
1 Quartermaster Company, sterilization and bath

These units have no general cargo or passenger transportation.

SECTION IX

GHQ RESERVE UNITS

■ 150. LOADING DATA FOR FIELD ARTILLERY AMMUNITION

a. Battery 75-mm Gun, Truck drawn (GHQ)
(Average packed weight of all types, per round, = 23 lbs.)

Maximum loads *(1)* additional to personnel and equipment

Type vehicle and normal assignment	*No. in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
2½-ton truck, prime mover	4	90	360
2½-ton truck, executive's truck	1	90	90
2½-ton truck, ammunition	2	130	260
1-ton trailer, ammunition	2	87	174
Total No. of rounds normally carried in battery			884

(1) Resupply loads are same as normal loads for similar type vehicle in service battery.

b. Battery 75-mm Gun, Horse Drawn
(Average packed weight of all types, per round, = 23 lbs .)

Maximum loads additional to personnel and equipment

Type vehicle and normal assignment	*No. in battery*	*Rounds carried on each vehicle*	*Total rounds carried*
Caissons	6	72	432
Limbers	10	35	350
Total No. of rounds normally carried in battery			782

c. Service Battery, 75-mm Gun, Truck-drawn (GHQ)

Table 1-A

	No. in battery	*Maximum No. of rds carried*		*Total No. of rds carried*	
		Good roads	*Bad roads Cross country*	*Good roads*	*Bad roads Cross country*
2½-ton truck	12	216	129	2592	1549
1-ton trailer	12	87	87	1044	1044
Total No. of rounds normally carried in battery				3636	2592

d. Battery 155-mm Gun, Motorized.
(Average packed weight of all types, per round, 140 lbs.)

MAXIMUM LOADS *(1)* ADDITIONAL TO NORMAL PERSONNEL AND EQUIPMENT

Type Vehicle and Normal Assignment	*No. in battery*	*Rounds carried in ea. vehicle*	*Total rounds carried*
2½-ton truck, cannoneer	4	10	40
2½-ton truck, executive	1	25	25
2½-ton truck, ammunition	2	25	50
1-ton trailer, ammunition	6	14	84
Total No. of rounds normally carried in battery			199

(1) Resupply loads are same as normal loads for similar type vehicles in Service Battery.

e. Service Battery, 155-mm Gun, Motorized.

Type Vehicle	*No. in battery*	*Max No. of Rds. Carried*		*Total rds. carried*	
		good roads	*bad roads or cross country*	*good roads*	*bad roads or cross country*
2½-ton truck	12	35	20	420	240
1-ton trailer	12	14	14	168	168
Total No. of rounds normally carried in battery				588	408

f. Battery 240-mm Howitzer, Motorized.
(Average packed weight of all types, per round, 400 lbs.)

MAXIMUM LOADS *(1)* ADDITIONAL TO NORMAL PERSONNEL AND EQUIPMENT

Type Vehicle and Normal Assignment	*No. in battery*	*Rounds carried in ea. vehicle*	*Total rounds carried.*
2½-ton trucks, ammunition	6	10	60
1-ton trailer, ammunition	8	5	40
Total No. of rounds normally carried in battery			100

(1) Resupply loads are same as normal loads for similar type vehicles in Service Battery.

g. Service Battery, 240-mm Howitzer, Motorized.

Type Vehicle	*No. in battery*	*Max. No. of Rds, carried*		*Total No. of Rds. carried*	
		good roads	*bad roads or cross country*	*good roads*	*bad roads or cross country*
2½-ton truck	12	12	8	144	96
1-ton trailer	12	5	5	60	60
Total No. of rounds normally carried in battery.				204	156

h. Prescribed Ammunition Loads, Field Artillery Brigade, GHQ Reserve.

155-mm GUN				
Unit	*u/f*	*Rounds per Piece*	*Rounds per Battery*	*Total Rounds*
Battery	.5	50	199	199
Service Battery	.5	49	196	588
Total per Regiment	1	99	395	2370

240-mm HOWITZER

Unit	*u/f*	*Rounds per Piece*	*Rounds per Battery*	*Rounds Total*
Battery	.8	50	100	100
Service Battery	.5	34	68	204
Total per Regiment	1.3	84	168	1008

151. PRESCRIBED AMMUNITION LOADS, CHEMICAL REGIMENT *a b*.

GHQ Reserve

Unit	4.2-inch Chemical Mortar				
	Unit of Fire	*Rounds per Piece*	*Rounds per Company*	*Total Rounds*	*Vehicles Used*
Ammunition Train Bn Hq and Hq Co	.22	22	540	2080	16 trucks, 1½-ton, 90 rounds each 16 trailers, 1-ton, 40 rds. ea.
Chemical Regt.	.22	22	540	6240	48 trucks, 1½-ton, 90 rounds ea. 48 trailers,1-ton, 40 rds. ea.

NOTES

a. Based on T/O published 1 Nov., 1940.
b. The load of ammunition vehicles will be prescribed to meet the anticipated action.

152. GASOLINE REQUIREMENTS—GHQ RESERVE TANK GROUP UNITS (7)

1	Organization	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Unit vehicles and vehicle tank capacity in gallons													Gallons of gasoline per mile per unit echelon				Total gas tank capacity per unit (refill)	Total gals to move unit 150 miles
		Tk (L) (50)	Tk (M) (136)	Car, S (35)	Car, half-track (60)	Amb (25) (11)	Car, light, 5-pas sedan (17) (11)	Mtcl, solo (3¾) (11)	Trk, ½-ton, Comd (25) (1) (11)	Trk, 2½-ton, cargo (40) (11)	Trk, 10-ton wrecker (65)	Trk, gas & oil 600 gals (40) (11)	Trk, ¼-T liaison (11) (10)	Total unit vehicles	Combat vehicles (8)	Unit train vehicles	Tank group train vehicles	Total per unit		
2	Armd Co, L (3 Cos) (5)	17			3			4	1	1			2	28	13.3			13.3	1,132	1,998
3	Bn Hq & Hq Co, L (5)	3			10		1	14	7	16	1		7	59	6.7		(6) 3.0	9.7	1,777	1,449
4	C Trk Sec (3) (4)					1			(8) 2	9				12		2.2		2.2	435	326
5	Ki Trk Sec (3)									5				5		1.0		1.0	200	150
6	TOTAL, TK BN, L	54			19	1	1	26	12	33	1		13	160	46.7	3.2	3.0	52.8	5,808	7,919
7	Armd Co, M (3 Cos) (5)		17		6			3	1	1			2	30	17.4			17.4	2,770	2,602
8	Bn Hq & Hq Co, M (5)		3		7		1	13	7	33	1		6	71	6.5		(6) 6.4	12.9	2,520	1,932
9	C Trk Sec (3) (4)					1			2	17				20		3.8		3.8	755	566
10	Ki Trk Sec (3)									5				5		1.0		1.0	200	150
11	TOTAL, TK BN, M		54		25	1	1	22	12	58	1		12	186	58.6	4.8	(6) 6.4	69.7	11,786	10,453
12	Ord Co Hv Maint (Atchd)							(2) 4	10	(9) 32		2		48		8.2		8.2	1,625	1,230
13	Hq & Hq Co, Tk Gp		2	4	8		2	15	6	7			6	50	(5) 6.3	(3) .8	(6) .4	7.6	1,478	1,033

(1) Includes ½-ton, pick-up, and emergency repair trucks.
(2) One with side car.
(3) The assembled C and Ki trucks of companies normally march with the Transportation Platoon of Headquarters Company.
(4) Includes company C trucks and attached medical vehicles.
(5) Less C and Ki Trucks (see note (3)).
(6) Trucks for second day's supply of gasoline and/or ammunition.
(7) Based on T/O's dated November 15, 1940.
(8) Motorcycles and trucks, ¼-ton liaison, march with C vehicles unless otherwise noted.
(9) Includes special ordnance vehicles.
(10) If replaced by tricycles, gasoline consumption will be changed accordingly.
(11) Based on tank capacity of 1941 model vehicles.

[AFB April, 1941]

■ 153. For shipping and Maintenance Requirements of GHQ tank units see Section V, Armored Division.

SECTION X

AIR FORCE UNITS

(Data to be issued later)

Chapter 4
EVACUATION, REPLACEMENTS, AND PRISONERS OF WAR

		PARAGRAPHS
SECTION I.	Evacuation	154–162
II.	Replacements	163–168
III.	Prisoners of war	169–170

SECTION I
EVACUATION

■ 154. CASUALTY ESTIMATES—GENERAL.—*a. Classification.*—All casualties are classified as follows:

(1) *By nature of disability,* into the *sick,* the *gassed,* the *wounded,* and the *dead.* The *sick* are further classified as *communicable* or *noncommunicable.*

(2) *By severity of disability,* into *walking* and *litter* patients.

(3) *By suitability for evacuation,* into *transportable* and *nontransportable.*

(4) *By type of accommodations required for evacuation,* into *recumbent* and *sitting.*

b. Sick casualties.—(1) Casualties from sickness and nonbattle injuries among front-line troops of a seasoned command in campaign, except in a particularly unhealthful region, cause an average daily increment of sick of about six-tenths of one per cent (0.6%). This *average* rate may be expected at certain seasons of the year, *without epidemics,* to reach one and five-tenths per cent (1.5%) or even more. Of these, two-thirds *may* remain under treatment in their own organization (at aid stations) or in division clearing stations *if there be no interference with the primary mission of reception, treatment, and evacuation of battle casualties.* In any event, the other one-third will be evacuated from the division area, half of them recumbent and half of them sitting.

(2) The daily admission rate to the hospitals for an entire field force, made up of seasoned troops and serving in a temperate climate, for sick and nonbattle injuries will be approximately .165 per cent. After some months, this will cause a constant noneffective rate of about 4.5 per cent. However, for *unseasoned* troops, in the same climatic conditions, the noneffective rate will reach 6 per cent, and even higher under unfavorable conditions of climate and location.

(3) Of the sick admitted to hospitals in the theater of operations about 1.5 per cent die, 3 per cent will be invalided home, and 95.5 per cent will be returned to duty eventually. The average stay in the hospital is 27 days.

c. Battle casualties.—(1) The following table has been developed from American experience in active operations of the World War:

BATTLE CASUALTIES,
INCLUDING KILLED, IN PER CENT OF THE UNIT STRENGTH

1	2	3	4
Unit	*Average for all days in line*	*Severe battle day*	*Maximum battle day*
Infantry regiment	2.5 per cent	12–15 per cent	35 per cent
Division	1.0 per cent	6–8 per cent	12 per cent
Corps	0.5 per cent	2–3 per cent	5 per cent
Army	0.35 per cent ①	0.7–1.5 per cent	2 per cent

NOTE

① As this is for sustained active operations, the average for one or several armies over a long period of time would be less, and may be taken as 0.2 per cent.

(2) In estimating battle casualties in an army, an estimate based on front-line divisions engaged will usually be more accurate than if based on a rate for corps or the army as a whole.

(3) The battle casualties of an entire expeditionary force or theater of operations can best be estimated by using the rates incurred in the component divisions or armies, as the relative proportion of front-line troops to the total force will vary widely in each situation.

(4) The following data relative to battle casualties are approximately accurate for a severe engagement and can be used as the basis for calculations:

(a) In temperate and tropical zones, the ratio of killed to wounded is as follows:

Open operations.....about 1:5
Trench operations.....about 1:4

Hence, it may be expected that from 16 2/3 per cent to 20 per cent of all battle casualties will be classed as killed. In the arctic zone, the ratio of killed to wounded will be considerably higher due to death of the wounded from exposure to cold.

(b) The transportation requirements for battle casualties of a division are as follows:

	Per cent
Dead	20
Able to walk to the collecting station but requiring transportation (sitting) farther to the rear	40
Require transportation (recumbent)	40
Of all casualties, about 1 per cent are nontransportable beyond the surgical hospital, except by air	
TOTAL	100

(c) Of gunshot wounded about—

8.12 per cent die in hospital.
12 per cent recover in 15 days.

12.86 per cent recover in 15 to 30 days.
21.29 per cent recover in 30 to 60 days.
9.56 per cent recover in 60 to 90 days.
16.17 per cent recover after 90 days.
20 per cent are of no further military value.

The average stay in hospital for all gunshot wounded is about 90 days.

(d) Of gas casualties—

1.73 per cent die in hospital.
25 per cent recover in 15 days.
26.81 per cent recover in from 15 to 30 days.
24.44 per cent recover in from 30 to 60 days.
16.02 per cent recover after 60 days.
6 per cent are of no further military value.

■ 155. FORMULA FOR COMPUTING NUMBER OF BEDS REQUIRED.—The number of beds (in fixed hospitals) required in the theater of operation after several months accumulation equals strength×daily admission rate×average days in hospital.

Example (when all cases that will eventually be returned to duty are retained in the theater):

Strength of force: 2,000,000.
Strength of troops in combat zone: 1,000,000.
Daily admission rate for sick and injured: 0.165 per cent.
Daily admission rate for wounded on basis of troops in combat zone: 0.2 per cent.
Average days in hospital for sickness and nonbattle injuries: 27.
Average days in hospital for wounded: 90.

Solution:

Beds required in the theater of operation after several months:

For nonbattle casualties,	
2,000,000×0.00165×27	89,100
For battle casualties of troops in combat zone,	
1,000,000×0.002×90	180,000
Total beds required	269,100
Per cent of the total force	13.45

■ 156. MAXIMUM CAPACITY OF MEANS OF TRANSPORTATION FOR CASUALTIES:

1	2	3	4	5
Vehicle	*Men*			*Animals*
	Sitting	*Recumbent*	*Average*	
Ambulance, air	16	10	13	
Ambulance, animal-drawn	8	4	6	
Ambulance, motor, field	10	4	6	
Ambulance, cross-country	6	4	5	
Truck, 1½-ton	10	4	5	
Truck, 2½-ton	16	6	7	
Railway car, coach	88			
Pullman car — 12 section	48	24	36	
16 section	64	32	48	
Hospital train	700	300	500	
Ambulance, veterinary—				
Trailer, 2-horse van				2
Truck, 2½-ton, stock rack body				6
Stock car				18
Box car				18
Veterinary lead line				20

■ 157. TIME ELEMENT OF EVACUATION:

a. Personnel:

For round trip evacuation (including loading and unloading):

Litter squads: 1,000 yards each way in one hour

Wheeled litters: 1,250 yards each way in one hour

Ambulance, animal-drawn: 2 miles in one hour

Ambulance, motor, during combat in division area: 5 miles each way in one hour.

b. Animals:

For round trip evacuation (including tying and untying):

Lead line: 2,000 yards each way in one hour.

c. To calculate the time required for evacuation of casualties from the field, or the number of ambulances required to evacuate casualties in a given time, use the following formulae:

W = number of casualties

t = time required for round trip

M = number of vehicles or litters

N = number of patients per load

T = time required or allowed

$$T = \frac{W \times t}{M \times N} \qquad M = \frac{W \times t}{T \times N}$$

■ 158. DIAGRAM OF MEDICAL SERVICE OF A SQUARE DIVISION.

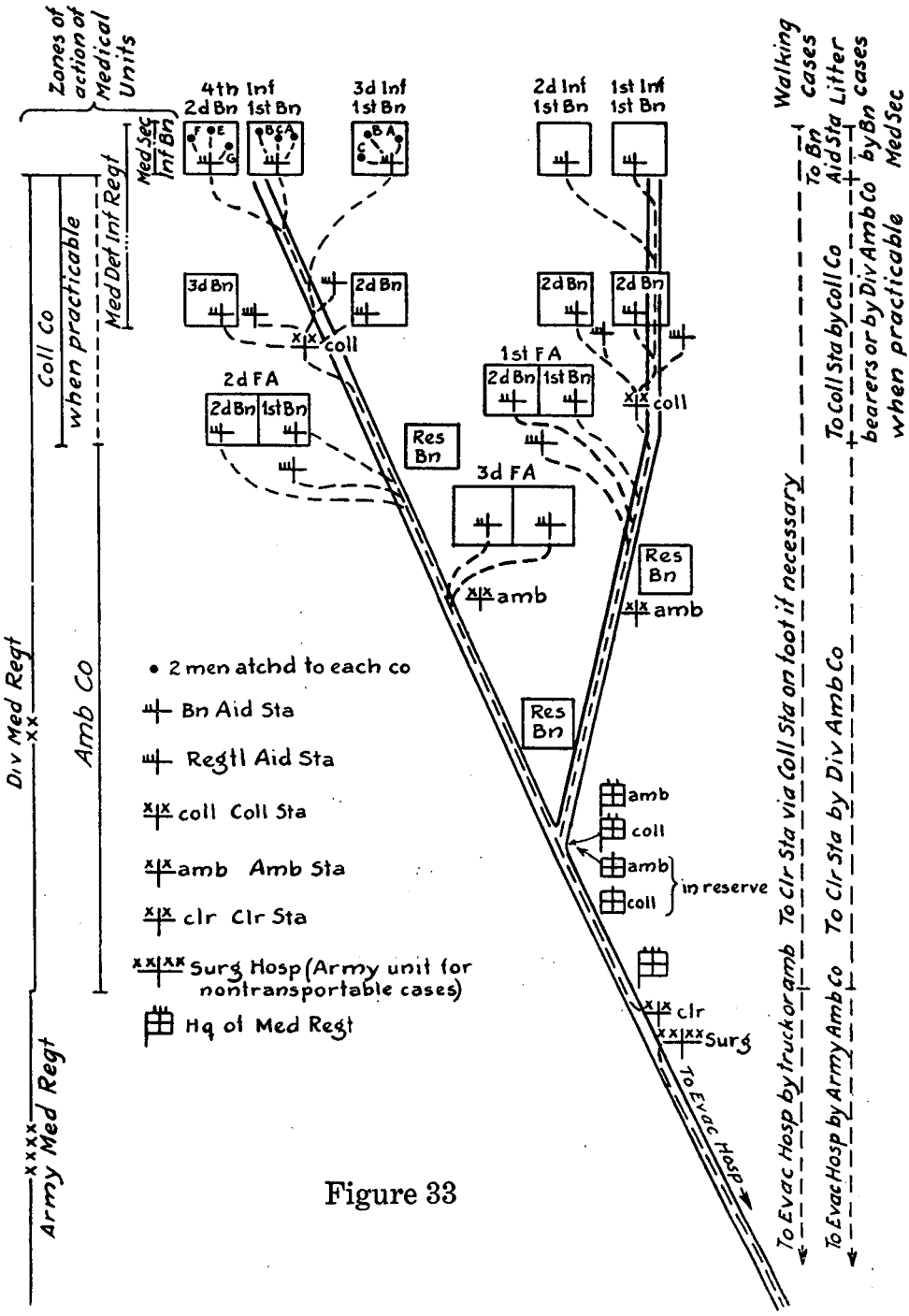


Figure 33

■ 159. DIAGRAM OF MEDICAL SERVICE OF A TRIANGULAR DIVISION.

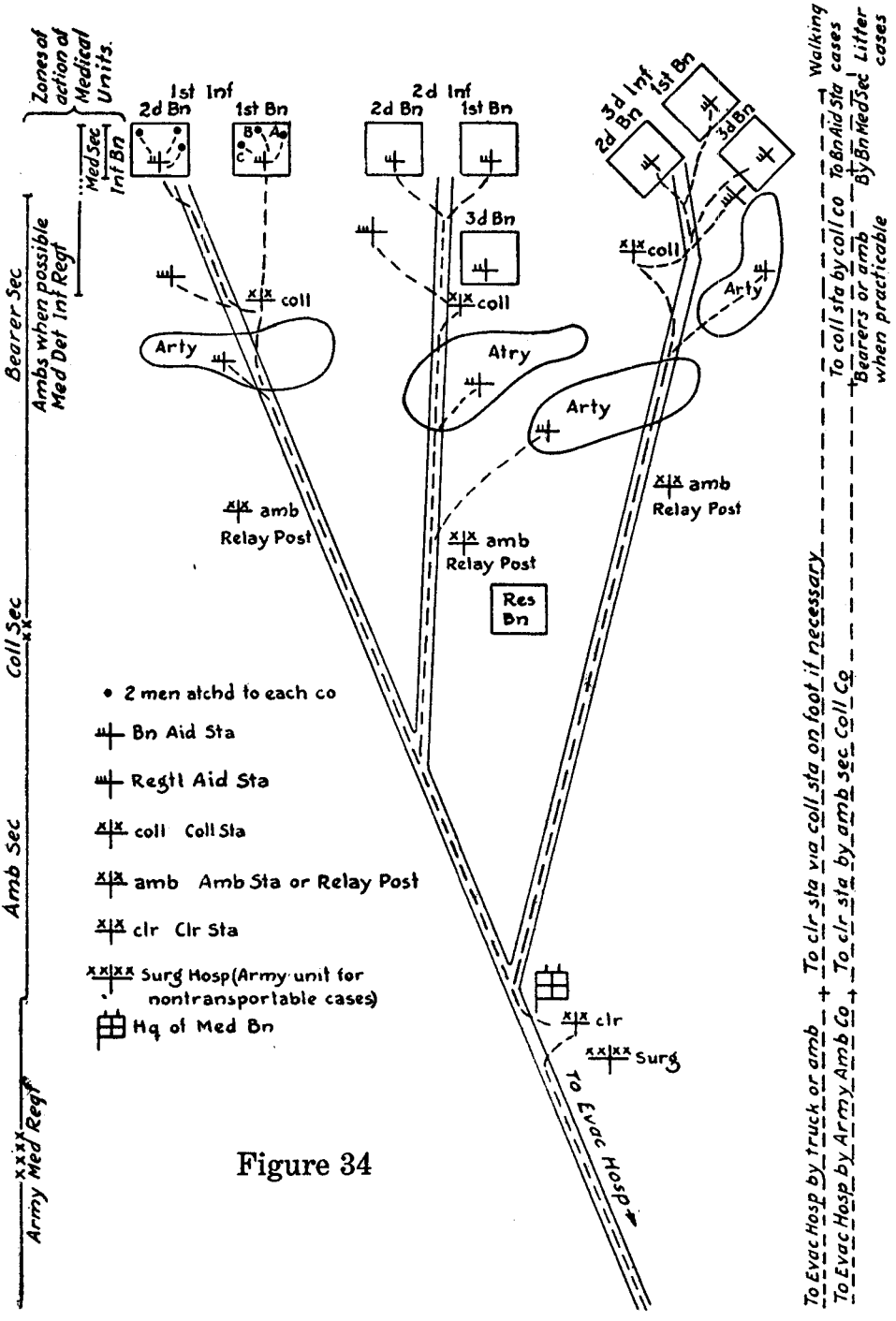
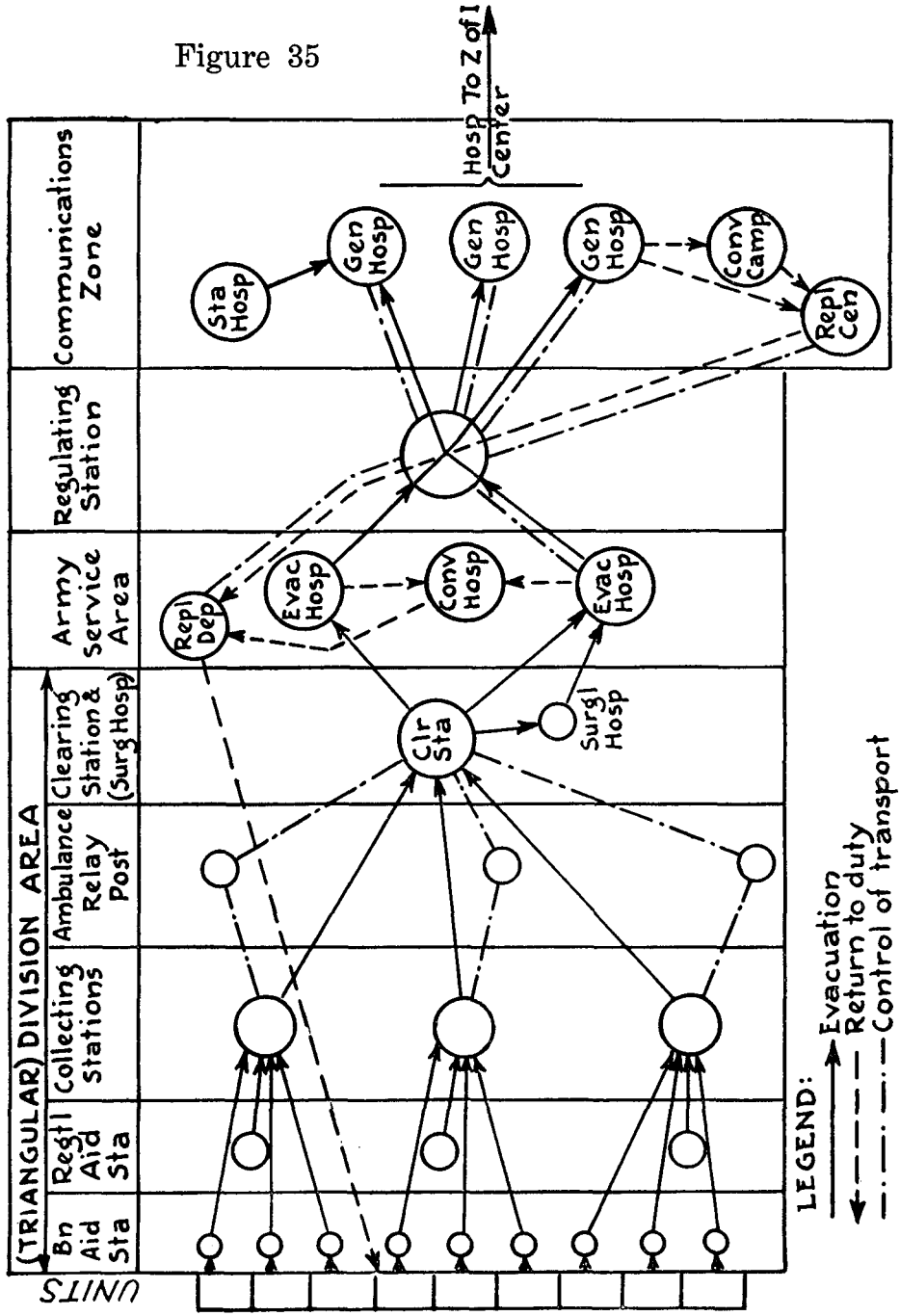


Figure 34

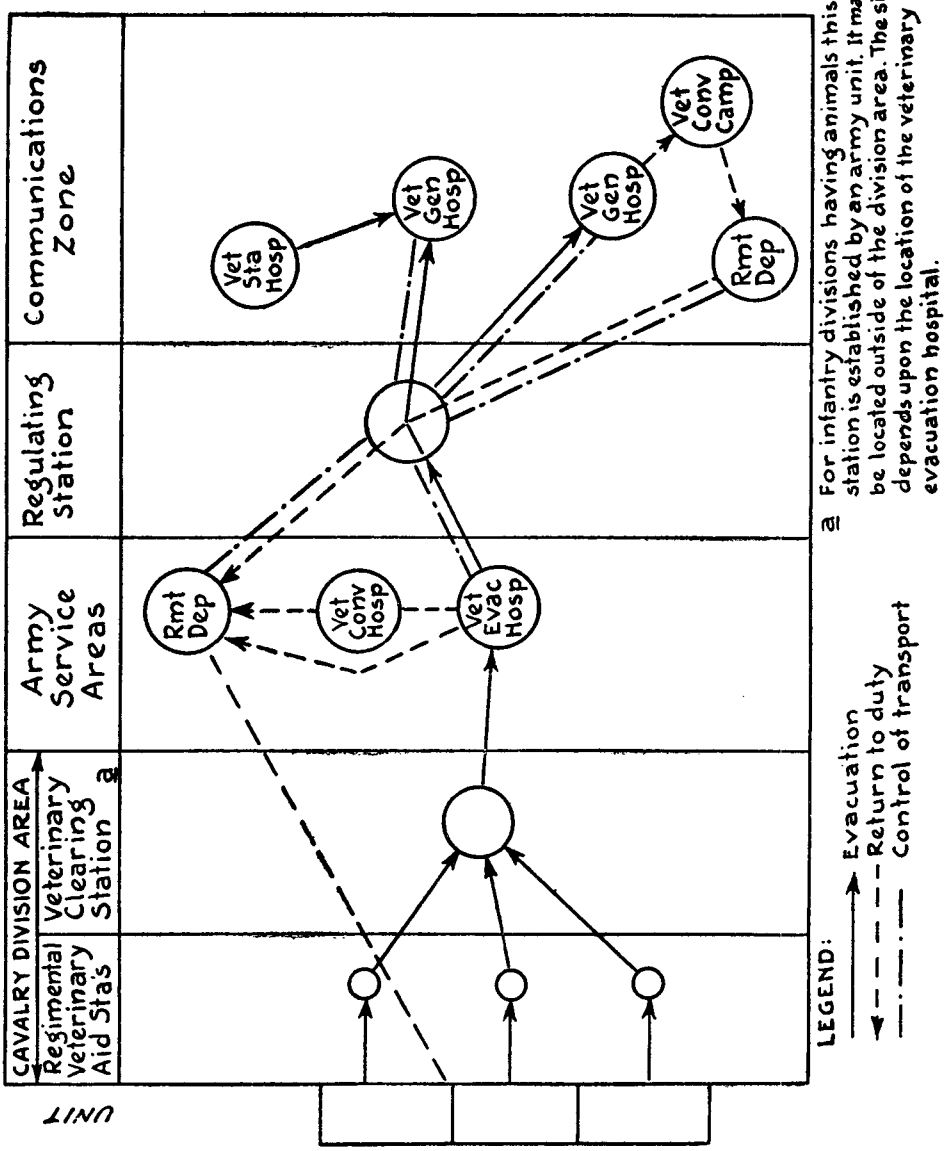
■ 160. DIAGRAM OF EVACUATION AND HOSPITALIZATION OF PERSONNEL.

Figure 35



161. Diagram of Evacuation and Hospitalization of Animals.

Figure 36



■ 162. Estimated Daily Losses in Campaign of Personnel and Animals, Dead and Evacuated, per 1,000 of Actual Strength: ③

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	Men														Animals				
	Infantry regiment		Front-line division			Corps and army troops (except cavalry)			Combat troops in corps and army reserve			Attached cavalry including reinforcements			Artillery regiment (horse-drawn)		Attached cavalry including reinforcements		
General type of operations for the forces as a whole	Dead	To Clr Sta	Dead	To Evac Hosp	To Gen Hosp ①	Dead	To Evac Hosp	To Gen Hosp ①	Dead	To Evac Hosp	To Gen Hosp ①	Dead	To Evac Hosp	To Gen Hosp ①	Dead	To Vet Aid Sta	Dead	To Evac Hosp	To Gen Hosp ①
Covering and security force action	6.0	30.0	2.0	12.0	10.0	0.2	6.2	4.3	0.1	5.6	3.9	0.4	12.5	8.5	6.0	7.0	1.5	12.0	2.0
Attack																			
Meeting engagement	16.0	80.0	6.0	32.0	27.0	0.6	8.0	5.6	0.3	6.5	4.5	1.2	16.0	11.0	16.0	20.0	5.0	16.0	2.0
of a Position — First day	25.0	125.0	10.0	50.0	42.0	1.0	10.0	7.0	0.5	7.5	5.3	2.0	20.0	14.0	25.0	31.0	8.0	20.0	3.0
Succeeding days	12.0	62.0	5.0	25.0	21.0	0.5	7.5	5.2	0.3	6.3	4.4	1.0	15.0	10.4	12.0	15.0	4.0	15.0	2.0
of a Zone — First day	42.0	210.0	17.0	84.0	70.0	1.6	13.4	9.4	0.8	9.2	6.4	3.2	27.0	19.0	42.0	55.0	13.0	27.0	4.0
Succeeding days	21.0	105.0	8.0	42.0	35.0	0.8	9.0	6.3	0.4	7.0	4.9	1.6	18.0	12.5	21.0	26.0	7.0	18.0	3.0
Defense																			
Meeting engagement	10.0	50.0	4.0	20.0	17.0	0.4	6.2	4.3	0.2	5.6	3.9	0.8	12.5	8.5	10.0	12.0	3.0	12.0	2.0
of a Position — First day	15.0	60.0	6.0	24.0	23.0	0.5	7.5	5.2	0.3	6.3	4.4	1.0	15.0	10.0	15.0	15.0	4.0	15.0	2.0
Succeeding days	7.5	30.0	3.0	12.0	11.5	0.3	5.7	3.9	0.15	4.8	3.3	0.6	11.0	8.0	7.0	7.0	2.0	11.0	2.0
of a Zone — First day	25.0	100.0	10.0	40.0	36.0	1.0	9.0	6.3	0.5	7.0	4.9	2.0	18.0	12.5	25.0	25.0	8.0	18.0	3.0
Succeeding days	12.5	50.0	5.0	20.0	18.0	0.5	6.6	4.8	0.25	5.3	3.6	1.0	13.0	9.5	12.0	12.0	4.0	13.0	2.0
Inactive situations ②	5.0	20.0	2.0	8.0	7.0	0.2	6.0	4.2	0.1	5.5	3.9	0.4	12.0	8.5	5.0	5.0	1.5	12.0	2.0
Pursuit	8.0	42.0	3.0	17.0	14.0	0.3	6.5	4.5	0.2	5.8	4.1	0.6	13.0	9.0	8.0	10.0	2.5	13.0	2.0
Retirement and delaying action	4.0	20.0	2.0	8.0	7.0	0.2	6.0	4.2	0.1	5.5	3.9	0.4	12.0	8.5	4.0	5.0	1.5	12.0	2.0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Under all other conditions of campaign	Under conditions of campaign not enumerated above, casualty rates for men will be approximately the same for all troops. The following rates will be assumed: Dead, negligible; evacuation from clearing stations to evacuation hospitals, 2.5 per 1,000; from evacuation hospitals to general hospitals, 1.5 per 1,000. ① For animals: Dead, negligible; evacuation from veterinary aid stations to evacuation hospitals, 1.25 per 1,000; from evacuation hospitals to general hospitals, 0.1 per 1,000. ①																		

NOTES

① For the independent corps: disregard columns headed "To Gen Hosp" and assume all patients in evacuation hospitals must be evacuated to general hospitals.
② Forces in contact, neither side attacking.
③ This table is intended primarily for use in school work and in field exercises.

SECTION II
REPLACEMENTS

■ 163. GENERAL.—Replacements are classified as loss and filler. Filler replacements are those required to bring units initially to authorized strength, i.e., to fill a vacancy not previously occupied. A loss replacement is a replacement to fill a vacancy which has been occupied and thereafter vacated. Plans for the number of replacements required, both loss and filler, is a function of the zone of the interior. The commander of a theater of operations makes representations when necessary as to replacement needs of the theater.

a. Replacements like supplies are echeloned in depth. The replacement system is snown diagrammatically in paragraph 168.

b. Daily loss rates are shown in paragraph 164. The cumulative loss for any period may be determined by selecting one of the listed daily loss rates or any other daily loss rate determined to be correct and applying the selected rate in accordance with footnotes to the table in paragraph 165 and the example in paragraph 166. The expected accumulated losses in manpower, thus determined, may be used by the theater commander as a basis of requisitions on the zone of the interior for loss replacements.

■ 164. RATES OF LOSSES.—*a. Daily loss rate per 1,000, theater of operations (except Air Corps).*—

(1) Disease and nonbattle injuries:

(a) Temperate and arctic zones, favorable conditions	1.92
(b) Temperate and arctic zones, unfavorable conditions	2.49
(c) Tropical zone, favorable conditions	2.11
(d) Tropical zone, unfavorable conditions	2.69

(2) Gas injuries:

(a) Major warfare	.24
(b) Minor warfare	.00

(3) Gunshot injuries:

(a) Major warfare	.53
(b) Minor warfare	.31

(4) Captured and missing:

(a) Major warfare	.08
(b) Minor warfare	.03

b. Daily loss rate per 1,000 Air Corps, theater of operations: Disease and nonbattle; gas, and gunshot injuries same as for ground forces.

c. Flying losses, theater of operations: 1% per day of the combat crews in the theater.

d. Daily loss rate per 1,000, zone of the interior:

(1) Disease and nonbattle injuries..... 2.15
(2) Flying losses, pilots and crews, Air Corps..... .33

NOTES

The casualty rates stated above are only a general guide and where possible the casualty rates should be determined for each specific theater of operations.

Troops in the theater of operations are considered seasoned troops, while those in the zone of the interior are both seasoned and unseasoned.

■ 165. FACTORS FOR USE IN CALCULATING LOSSES (less Air Corps training wastage and flying losses) ①.—*a.* When the duration of hospital treatment in theater of operations is 120 days, 2.63% of disease and nonbattle, 5.4% of gas, and 27.4% of gunshot admissions to hospital are returned to the zone of the interior from the theater of operations:

ACCUMULATED LOSSES IN MANPOWER, USING A CASUALTY RATE OF 1 PER 1000 PER DAY

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
THEATER OF OPERATIONS													
Category	*M*	*30M*	*60M*	*90M*	*120M*	*150M*	*180M*	*210M*	*240M*	*270M*	*300M*	*330M*	*360M*
1. Disease and nonbattle injuries, including hospital cases, deaths, and 2.63% of admissions sent to the zone of the interior	1.00	17.40	24.12	27.85	30.19	31.94	33.38	34.72	35.97	37.22	38.44	39.65	40.87
2. Poison gas injuries, including hospital cases, killed in action, died in hospital, and 5.4% of admissions sent to the zone of the interior	1.00	23.49	35.63	42.77	47.53	51.07	54.13	56.92	59.58	62.17	64.73	67.19	69.84
3. Gunshot injuries, including hospital cases, killed in action, died in hospital, and 27.4% of admissions sent to the zone of the interior	1.00	36.71	67.76	95.19	119.97	142.79	164.23	184.60	204.25	223.38	242.09	260.52	278.74
4. Captured and missing. Use 60% of total killed in action by poison gas and gunshot missile ②													
ZONE OF THE INTERIOR													
5. Disease and nonbattle injuries, deaths, and discharges in hospital for physical disability	1.00	13.88	18.21	20.97	23.08	24.85	26.44	27.95	29.39	30.83	32.24	33.63	35.03

b. When the duration of hospital treatment in theater of operations is 90 days, 5.70% of disease and nonbattle, 10.85% of gas, and 35.15% of gunshot admissions are returned to the zone of the interior from the theater of operations:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
	THEATER OF OPERATIONS												
Category	*M*	*30M*	*60M*	*90M*	*120M*	*150M*	*180M*	*210M*	*240M*	*270M*	*300M*	*330M*	*360M*
1. Same as 1, paragraph .... *a* (1)	1.00	17.81	25.23	29.75	32.94	35.52	37.84	40.04	42.16	44.26	46.36	48.44	50.52
2. Same as 2, paragraph .... *a* (1)	1.00	23.85	38.05	45.79	52.07	57.28	61.96	66.42	70.76	75.03	79.20	83.50	87.73
3. Same as 3, paragraph .... *a* (1)	1.00	37.05	68.99	97.69	124.05	148.66	172.03	194.45	216.23	237.55	258.60	279.18	299.69
4. Same as 4, paragraph .... *a* (2)													

c. When the duration of hospital treatment in theater of operations is 60 days, 12.39% of disease and nonbattle, 21.96% of gas, and 45% of gunshot admissions are returned to the zone of the interior from the theater of operations:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Category	*M*	*30M*	*60M*	*90M*	*120M*	*150M*	*180M*	*210M*	*240M*	*270M*	*300M*	*330M*	*360M*
1. Same as 1, paragraph .... *a* (1)	1.00	18.72	27.70	34.01	39.05	43.53	47.76	51.90	55.93	59.98	64.06	68.00	72.12
2. Same as 2, paragraph .... *a* (1)	1.00	24.91	41.24	51.62	61.11	69.53	77.45	85.24	92.90	100.49	108.05	115.60	123.15
3. Same as 3, paragraph .... *a* (1)	1.00	37.47	70.53	100.83	129.18	156.03	181.85	206.38	231.28	255.41	279.21	302.75	326.01
4. Same as 4, paragraph .... *a* (2)													

d. When the duration of hospital treatment in theater of operations is 30 days, 28.26% of disease and nonbattle, 46.50% of gas, and 66% of gunshot admissions are returned to the zone of the interior from the theater of operations:

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
Category	*M*	*30M*	*60M*	*90M*	*120M*	*150M*	*180M*	*210M*	*240M*	*270M*	*300M*	*330M*	*360M*
1. Same as 1, paragraph .... *a* ①	1.00	20.89	33.58	44.11	53.55	62.50	71.30	80.06	88.63	97.28	105.87	114.54	123.27
2. Same as 2, paragraph .... *a* ①	1.00	27.04	48.28	65.02	81.16	96.69	111.81	126.96	141.98	156.93	171.85	186.77	201.68
3. Same as 3, paragraph .... *a* ①	1.00	38.37	73.82	107.58	140.15	171.82	202.87	233.35	263.54	293.51	323.27	352.89	382.42
4. Same as 4, paragraph .... *a* ②													

NOTES

① The tabulations set forth are for a daily loss rate of 1 per thousand per day in each type of loss. With the tables, thus based on units, as a guide, the losses to be expected in any operation may be computed as follows:

(1) Select the daily loss rate per thousand per day for disease and nonbattle, gunshot, and gas casualties. For example, those in the AEF were 1.65, .53, and .24, respectively. Using the selected rate, enter the table and select the cumulative loss for the type of casualty under consideration for the period desired. Multiply the figure so obtained by the selected loss rate and obtain the cumulative losses for the desired period under the type of loss being considered.

(2) In estimating the replacements for a particular category for the first 30 days when, for example, the troops do not reach the theater of operations until 120M, the factor for "accumulated losses — theater of operations" under 30M should be used and not the corresponding factor under 150M.

② Captured and missing. — Losses due to this cause are computed on a constant daily percentage of the killed in battle. They will, therefore, vary as the battle losses. Experiences of three combatants in the World War (not including the AEF) indicate that captured and missing totalled above 60% of the number killed in action, which, in turn, was 16% of the total battle casualties. The daily number of captured and missing is therefore .10 × the sum of the loss rates due to gunshot and gas casualties. It is a constant rate, occurring daily. In any situation, to obtain the predicted daily losses due to captured and missing, multiply the sum of the gunshot and gas daily rates per thousand by .10 and by the number of thousands in the force under consideration.

■ 166. AN EXAMPLE OF COMPUTATION OF LOSSES.—The number of replacements required to replace losses for 30 days for a force consisting of 500,000 (including 10,000 Air Corps with 1,500 in combat crews) initially operating in a major theater of operations in the temperate zone, favorable conditions (duration of hospital treatment in the theater of operations is 120 days):

a. Losses except Air Corps:

(1) Disease and nonbattle injuries: 1.92×17.40×490	16,370
(2) Gas injuries: .24×23.49×490	2,763
(3) Gunshot injuries: .53×36.71×490	9,534
(4) Captured and missing: .08×30×490	1,176
Total	29,843

b. Losses, Air Corps:

(1) Disease and nonbattle injuries: 1.92×17.40×10	335
(2) Gas injuries: .24×23.49×10	57
(3) Gunshot injuries: .53×36.71×10	195
(4) Flying losses: .01×30×1,500	450
Total	1,037

NOTES

The total monthly loss (30,880) is about 6.2% of the total force. In order that sufficient replacements will be available in the theater of operations at all times, an initial pool of at least 20% of the strength of the force should be provided for.

In computing replacements for combat crews, Air Corps, for any month, consideration must be given to the number of aircraft available to replace those destroyed.

■ 167. DISTRIBUTION OF BATTLE LOSSES—THEATER OF OPERATIONS (except Air Corps):

Arm or Service	*Per cent*
Infantry	88.16
Field Artillery	4.90
Engineers	3.29
Cavalry	1.00
Coast Artillery Corps	.34
Quartermaster Corps	.08
Medical Department	1.46
Signal Corps	.77
Ordnance Department	.00
Total	100.00

NOTES

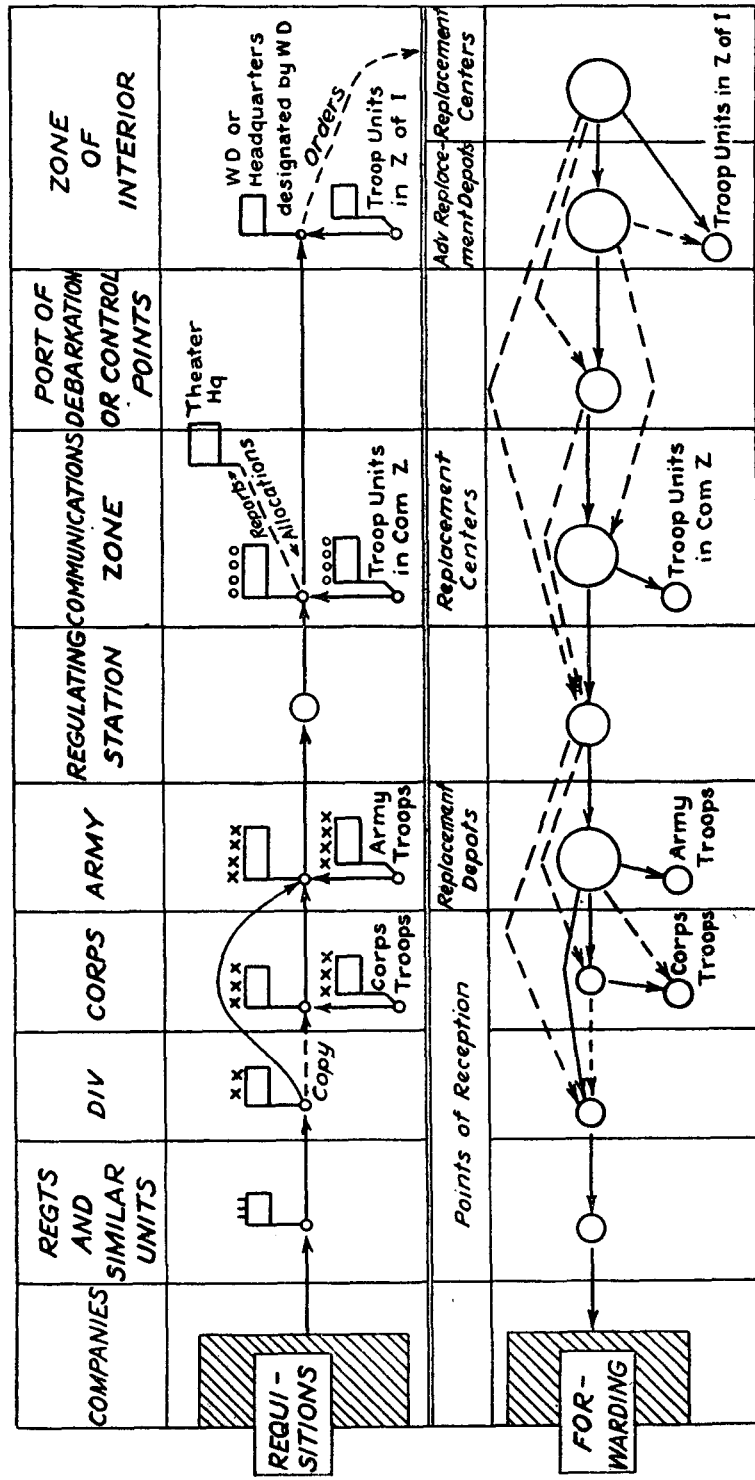
The distribution set forth above is based on AEF experience. The percentages must be modified in accordance with the strength and composition of our own and the enemy's forces; nature and location of the theater of operations; nature of the warfare, open or stabilized; degree of training; and morale.

Distribution of losses (other than battle) are in direct proportion to percentage strength of each branch.

Five per cent of the loss replacements are officers.

■ 168. DIAGRAM OF PERSONNEL REPLACEMENT SYSTEM.

Figure 37



SECTION III
PRISONERS OF WAR

■ 169. ESTIMATE OF PRISONERS OF WAR.—In order that the necessary arrangements may be made for the care, reception and disposition of prisoners of war, it will be necessary to estimate the number of prisoners that will probably be captured over a period of time. Knowing the approximate strength of the enemy's forces and the daily loss rates for gunshot injuries and gas injuries, the approximate number of prisoners of war can be estimated. For an enemy force in a major war, if the average daily loss rate per 1,000 is estimated to be .53 for gunshot and .24 for gas injuries, the average daily rate for captured and missing will be 10% of the gunshot and gas injuries or approximately .08 per 1,000. Hence for an enemy force of 1,000,000, the average daily number of prisoners captured will be 80. As prisoners are not received at a uniform rate, special preparations must be made for the reception of unusual numbers when important engagements are anticipated. As a factor of safety, facilities for three or four times the estimated numbers per month should be available.

■ 170. DIAGRAM OF EVACUATION OF PRISONERS OF WAR.

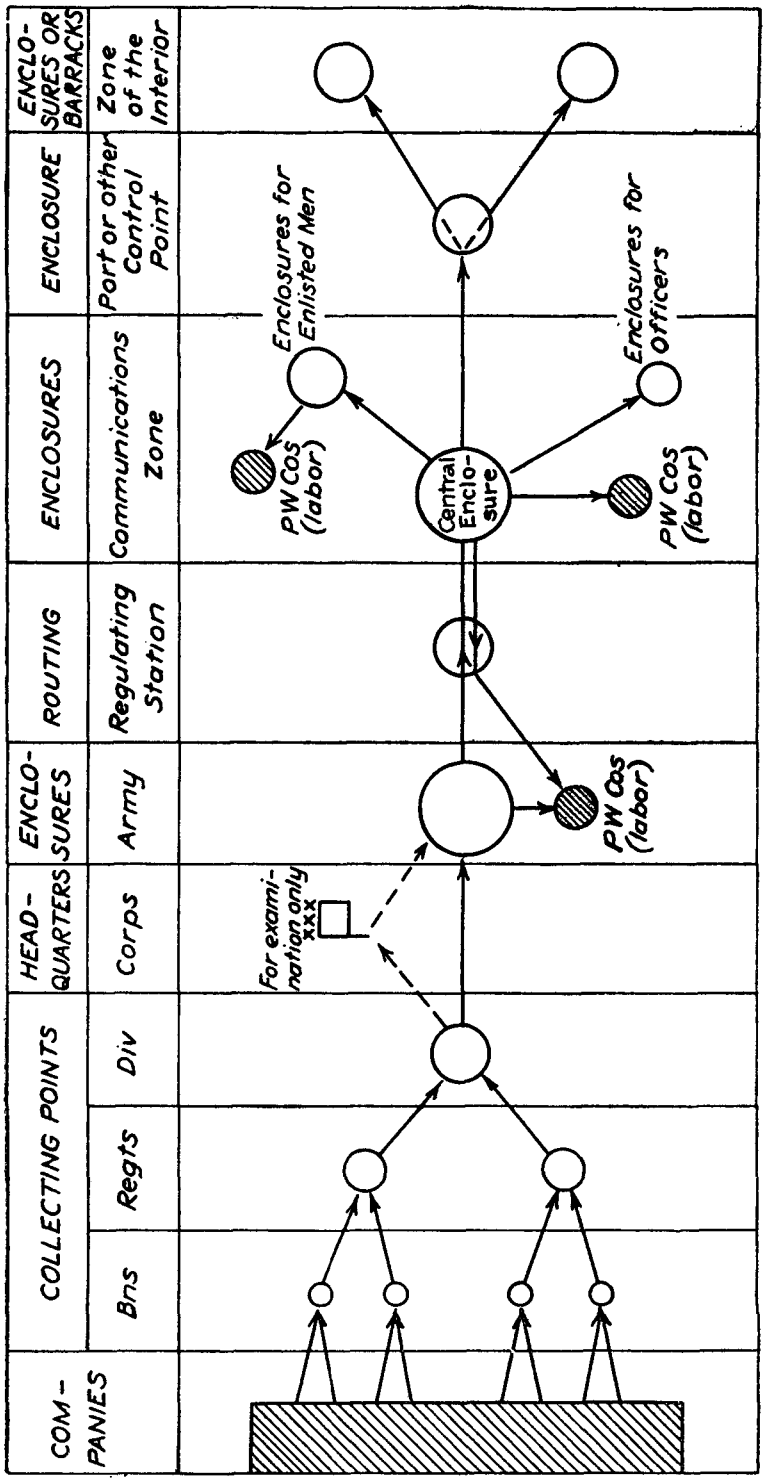


Figure 38

Chapter 5

MILITARY MAPS

171. Responsibility for Maps and Mapping:

Individual or agency	*Duties*
Commander of unit	Advance planning, which is necessary if mapping situation is to keep ahead of the tactical situation. Good maps will seldom be on hand without special command effort.
G-2 in divisions and larger units	Preparation of plans and policies and supervision of all activities concerning military topographic surveys and maps, including their acquisition, reproduction, and distribution.
Corps of Engineers	Prosecution of surveys, photogrammetric processes or compilations for the production or revision of maps required for military purposes. Map reproduction, supply, and distribution.
Air Corps	Aerial photographic work for: Military mapping operations in accordance with specifications prepared by Corps of Engineers, and Photography to meet intelligence needs of combat troops.

172. Classification of Maps.—*a. General:*

(1) *Standard*—ordinarily made in time of peace as an element of preparedness or for the economic development of the country.
(2) *Special*—especially made for military use.

b. According to scale:

(1) *Small scale*—1:1,000,000 to 1:7,000,000.
(2) *Intermediate scale*—1:200,000 to 1:500,000.
(3) *Medium scale*—1:50,000 to 1:125,000.
(4) *Large scale*—normally not greater than 1:20,000.

c. According to use:

(1) *General (geographic)*—maps of small scale, covering the States and United States, for general planning and strategical studies.
(2) *Strategic*—maps of intermediate scale, covering extensive areas, for strategical and logistical studies.
(3) *Tactical*—maps of medium scale, covering extensive areas, for tactical and logistical studies.
(4) *Battle*—maps, prepared normally by photogrammetric means and at a scale of 1:20,000, covering limited areas, for tactical and technical uses.
(5) *Aeronautical charts*—maps of small and intermediate scale, covering extensive areas and with air facilities data denoted thereon, primarily for aerial navigation.

(6) *Map substitutes*—sketches, provisional maps, and various types of aerial photographs and mosaics of various scales, covering such areas as may be required, for detailed studies or temporary use.

d. According to methods of reproduction:

(1) *Lithograph*—reproduced by lithography in one or more colors.
(2) *Fluid duplicator*—reproduced by dye printing process in one or more colors.
(3) *Contact prints*—reproduced by photographic methods. Includes black and white, blue, and brown prints.
(4) *Mimeograph*—reproduced by mimeograph or similar means in one color.
(5) *Hectograph*—reproduced by hectograph or similar means in one or more colors.

173. Types of Maps and Photomaps for Theater of Operations:

1	2	3	4	5	6	7	8	9	10
Kind of map	*Scale*	*Contour interval (feet)*	*Sheet size (inches)*	*Size of area*	*Purpose*	*Natural features and works of man shown*	*Originals and limited number of copies prepared by —*	*Reproduced in quantity by —*	*Probable time or conditions when available* ②
Vertical aerial photographs	1:5,000 to 1:40,000 (12 inches = 1 mile to 1½ inches = 1 mile)		Varies	Varies, depending on scale	Target location. Detailed reconnaissance. Intelligence. Minor tactics. Mosaics, preparation of stereo-pairs and triplets	Varies	Air Corps, Civilian agencies	Army topographic battalions, Corps topographic companies	Limited numbers: 3 to 5 hours after photography. Quantities: 48 hours after photography ③
Oblique aerial photographs	Varies		Varies	Varies depending on scale	Target location. Detailed reconnaissance. Intelligence. Minor tactics.	Varies	Air Corps, Civilian agencies	Army topographic battalions, Corps topographic companies	Limited numbers: 3 to 5 hours after photography. Quantities: 48 hours after photography ③
Battle map, uncontoured	1:20,000 (3 inches = 1 mile)		22 by 28	10,000 to 15,000 yards square	General field uses. Horizontal control for unobserved fires by artillery	Stream lines and vegetation Railroads, roads, towns, air fields, etc.	GHQ and army topographic battalions	GHQ and army topographic battalions	For limited areas: 7 days or more after photography
Battle map, contoured	1:20,000 (3 inches = 1 mile)	20	22 by 28	10,000 to 15,000 yards square	Used by all arms. Horizontal and vertical control for unobserved fires by artillery. Suitable for tactical and technical uses	Stream lines, vegetation, and ground forms Railroads, roads, towns, air fields, etc.	GHQ and army topographic battalions	GHQ and army topographic battalions	For limited areas: 2 weeks or more after photography

TYPES OF MAPS AND PHOTOMAPS FOR THEATER OF OPERATIONS (Continued):

1	2	3	4	5	6	7	8	9	10
Kind of map	*Scale*	*Contour interval (feet)*	*Sheet size (inches)*	*Size of area*	*Purpose*	*Natural features and works of man shown*	*Originals and limited number of copies prepared by —*	*Reproduced in quantity by —*	*Probable time or conditions when available* ②
Composite photograph	As taken 1:20,000 to 1:60,000 (3 inches = 1 mile to 1 inch = 1 mile)		17 by 19 to 22 by 28 depending on organization printing	Varies, depending on scale	Photogrammetry by topographic engineers. Copies of early availability for general field uses. Approximate horizontal control for limited unobserved fires by artillery	Varies	GHQ and army topographic battalions	GHQ and army topographic battalions, Corps topographic companies	24 to 48 hours after photography
Mosaic, controlled	As taken, enlarged, or reduced		17 by 19 to 22 by 28 depending on organization printing	Varies, depending on scale	Firing map for infantry. Horizontal control for unobserved fires by artillery	Varies	Army topographic battalions, Corps topographic companies, Civilian agencies	Army topographic battalions, Corps topographic companies	24 to 72 hours after photography, depending on amount of control used
Mosaic, uncontrolled	As taken, enlarged, or reduced		17 by 19 to 22 by 28 depending on organization printing	Varies, depending on scale	General field uses	Varies	Army topographic battalions, Corps topographic companies, Civilian agencies, Air Corps units up to ten prints, when directed by proper authority	Army topographic battalions, Corps topographic companies	24 to 48 hours after photography

TYPES OF MAPS AND PHOTOMAPS FOR THEATER OF OPERATIONS (Continued):

1	2	3	4	5	6	7	8	9	10
Strip mosaic	As taken, enlarged, or reduced		Depends on number of photographs	Varies, depending on scale	Firing map for infantry. Approximate horizontal control for limited unobserved fires by artillery. General field uses	Varies	Air Corps, Corps topographic companies, Civilian agencies	Corps topographic companies	24 hours after photography
Provisional map	1:20,000 to 1:60,000 (3 inches = 1 mile to 1 inch = 1 mile)	Standard, if contoured	17 by 19 to 22 by 28 depending on organization printing	Varies, depending on scale	Map of early availability for field uses. Approximate horizontal control for limited unobserved fires by artillery	Stream lines and vegetation Varies, normally principal features only	Army topographic battalion, Corps topographic companies	Army topographic battalions Corps topographic companies	Tracing of planimetric details: 24 to 48 hours after photographs. With form lines added: 48 to 72 hours. Roughly contoured in color: 3 to 5 days
Strategic map	1:500,000 (1 inch = 8 miles)	100–1,000 (contours seldom shown)		4° latitude and longitude (215 by 280 miles)	Strategy and logistics	Drainage systems, water, and mountain ranges Cities, rail lines and terminals, maintained water and airways and terminals, and roads of military importance	Corps of Engineers	GHQ and army topographic battalions	Limited quantities on M-day. Reproductions: 24 hours
Topographic map, contoured ④	1:62,500 (1 inch = 1 mile)	20	Maximum 19 by 22 (maximum impression 18 by 21)	15′ latitude and longitude (25,000 by 30,000 yards)	General field uses. Tactical and logistical studies by units from corps to regiment	Drainage systems, water, relief, and forested areas Railroads, roads, bridges, dams, towns, buildings, etc.	Geological survey ① Corps of Engineers ①	Geological survey, GHQ and army topographic battalions	Limited quantities on M-day. Reproductions: 24 to 48 hours (very limited areas of U.S.)

TYPES OF MAPS AND PHOTOMAPS FOR THEATER OF OPERATIONS (Continued):

1	2	3	4	5	6	7	8	9	10
Kind of map	*Scale*	*Contour interval (feet)*	*Sheet size (inches)*	*Size of area*	*Purpose*	*Natural features and works of man shown*	*Originals and limited number of copies prepared by —*	*Reproduced in quantity by —*	*Probable time or conditions when available* ②
Topographic map, contoured	1:125,000 (1 inch = 2 miles)	50	17 by 19	30′ latitude and longitude	Substitute for 1:62,500 topographic map	Stream lines, vegetation, and ground forms Railroads, roads, towns, air fields, etc.	Geological survey ① Corps of Engineers ①	Geological survey GHQ and army topographic battalions	Limited quantities on M-day. Reproductions: 24 to 48 hours (limited areas of U.S.)
Topographic map, scale smaller than 1:125,000	1:125,000 or smaller	Varies	17 by 19	Varies, depending on scale	Strategy and logistics	Stream lines, vegetation, and ground forms Railroads, roads, towns, air fields, etc.	Corps of Engineers Other Government agencies	GHQ and army topographic battalions	Limited quantities on M-day. Reproductions: 24 hours or more
Coast charts and harbor charts	Miscellaneous		Varies	Varies, depending on scale	Coast artillery in harbor defense. All arms in coastal frontier defense	Hydrography, stream lines, coast line Harbor, docks, aids to navigation, railroads, roads, towns, air fields, etc.	Coast and Geodetic Survey, U.S. Hydrographic Office, U.S. Lake Survey Office ①	Coast and Geodetic Survey GHQ and army topographic battalions	Limited quantities on M-day. Reproductions: 24 to 48 hours
Miscellaneous maps	Miscellaneous	Contours seldom shown	Varies	Varies	Logistics, maintenance, and operation of communication	Drainage systems, water, etc.	Federal, State, railroad, and other civilian agencies	Civilian agencies GHQ and army topographic battalions, Corps topographic companies	Limited quantities on M-day. Reproductions: 24 hours or more

TYPES OF MAPS AND PHOTOMAPS FOR THEATER OF OPERATIONS (Continued):

1	2	3	4	5	6	7	8	9	10
Road maps	Miscellaneous		Varies	Varies	Logistics. Concentration of mechanized units. Maintenance and operation of communication	Drainage systems, water, etc.	Civilian agencies (1)	American Automobile Association, oil companies, etc. (1)	Limited quantities on M-day. Reproductions: 24 to 48 hours
Aeronautical charts, sectional	1:500,000 (1 inch = 8 miles)	Elevations shown by color gradients	Varies	Varies	Aerial navigation and as strategical map substitute	Stream lines and ground forms Railroads, roads, towns, air fields, and aids to aerial navigation	Coast and Geodetic Survey, U.S. Hydrographic Office (1) Corps of Engineers (1)	Coast and Geodetic Survey, U.S. Hydrographic Office Corps of Engineers	Limited quantities for U.S. on M-day. Reproductions: 24 to 48 hours
Aeronautical charts, regional	1:1,000,000 (1 inch = 16 miles)	Elevations shown by color gradients	Varies	Varies	Aerial navigation and as strategical map substitute	Stream lines and ground forms Railroads, roads, towns, air fields, and aids to aerial navigation	Coast and Geodetic Survey, U.S. Hydrographic Office (1) Corps of Engineers (1)	Coast and Geodetic Survey, U.S. Hydrographic Office Corps of Engineers	Limited quantities for U.S. on M-day. Reproductions: 24 to 48 hours

NOTES

(1) The data as to existing maps contained in this table concern primarily the continental United States. Appropriate modifications are necessary in order to conform to conditions in other theaters of operations.

(2) Time estimates are predicated upon adequately organized, equipped, and trained mapping (Air Corps, Engineer) and reproduction (Engineer) troops. Under less favorable conditions more delay must be expected.

(3) Under most favorable conditions, a single wet-print can be dropped within 30 minutes after photography, when the rapid type of photography is used, in which case no negative is available.

(4) 5,000-yard grid lines overprinted, or shown by tick marks at edge of map.

174. ENGINEER MAPPING TROOPS:

1	2	3	4	5
Unit	*Maps reproduced*	*Methods of reproduction*	*Sheet size (inches)*	*Remarks*
Engineer battalion, topographic, GHQ	Maps in large quantities Maps of permanent utility Special sketches and drawings Various types of provisional and photomaps	Lithography in 1 or more colors	24 by 34 (impression 22 by 28)	Battalion is prepared to take over and operate presses of larger sizes.
		Contact prints (black and white, blue, and brown)		
		Duplicator (hectograph and similar means)		
Engineer battalion, topographic, army	Battle maps of unmapped areas for tactical and fire-control use Sketches and drawings	Lithography in 1 or more colors	24 by 34 (impression) 22 by 28)	Battalion organized for quantity reproduction to meet the more local reproduction needs of the army. Battalion equipped to provide maps to a depth of about 30 miles into hostile terrain. First sheets should appear about 2 weeks after receipt of aerial photographs; subsequent sheets should be published at a rate of about 100 square miles per day.
		Contact prints (black and white, blue, and brown)		
		Duplicator (hectograph and similar means)		
Engineer company, topographic, corps	Provisional and photomaps Mosaics Maps of limited areas Overprints, overlays, and sketches	Lithography in 1 color	Impression 17 by 19	Multicolor reproduction possible in cases where exactness in matching color plates is not essential and time is available.
		Contact prints (very limited numbers only)		
		Duplicator (hectograph and similar means)		
Division engineers	Simple sketches, overprints, and overlays	Duplicator (hectograph and similar means)	14 by 18	Lithographic reproduction not possible in time of war except in certain square (infantry) and other divisions.

175. AIR CORPS PHOTOGRAPHIC TROOPS.—*a. General:*

1	*2*	*3*
Unit	*Photographs furnished*	*Remarks*
Reconnaissance aviation with GHQ	Various types incident to its reconnaissance missions (large scale vertical and oblique photographs)	
Army reconnaissance aviation	Specialized photography needed by topographic battalions for photogrammetry (multiple-lens or wide-angle single-lens type) Large-scale vertical and oblique photographs and mosaics for intelligence purposes	Such photography ordinarily not suitable for intelligence purposes because of small scale and lack of detail. May contain important information, however, and prints should be made available to military intelligence officers for study.
Corps aviation	Wide-coverage small-scale photographs required by corps topographic company for preparation of map substitutes Large-scale photographs needed for intelligence or combat purposes (single photographs, vertical and oblique, stereo-pairs and triplets, night photographs, and rapid production photographs)	Can produce but limited quantities of contact prints and can lay small mosaics of less than ten prints. Laying of mosaics of a large number of prints or quantity reproduction of mosaics is the responsibility of engineer troops.

b. Capabilities of aviation units.—The GHQ reconnaissance squadrons and army and corps observation squadrons are provided with trailer laboratory facilities. Working at maximum speed under favorable conditions, a trained photographic section is capable of the following photographic production:

Photographs	*Time required to produce (hours)*		*Remarks*
	From trailer laboratory	*From trailer laboratory and other facilities*	
Negatives:			
15 (5 prints each)	2	1½	Prints partially dried; titled but not interpreted
50 (5 prints each)	4	3	Prints partially dried; titled but not interpreted
100 (5 prints each)	5	4	Prints partially dried; titled but not interpreted
Prints:			
1,500–2,000	24		Prints partially dried; titled but not interpreted
3,000–5,000		24	Prints partially dried; titled but not interpreted

■ 176. MAP DISTRIBUTION IN THE FIELD:

1	2	3
Organization or unit	*Agency responsible for securing and issuing maps* ③	*Agency from which maps are secured*
GHQ and GHQ troops	Engineer—GHQ ②	War Department, GHQ topographic battalion ②, and base plants ②
Army	Army engineer ②	Army topograpic battalion ②, and engineer—GHQ ②
Corps	Corps engineer ②	Corps topographic company ②, and army engineer ②
Division	Division engineer ②	Corps engineer ②
Regiment	Regimental S-2	Division engineer ②
Battalion ①	Battalion S-2	Regimental S-2
Company ①	Company commander	Battalion S-2

NOTES

① Applies similarly to squadrons, troops, or batteries.
② These agencies only are authorized to maintain stocks of maps. Maps are issued to G-2 for headquarters distribution.
③ The distribution of confidential or secret maps will be governed by the provisions of AR 330–5.

■ 177. INITIAL ALLOWANCE OF MAPS.—*a.* Map allowances are based on the principle that each individual or organization should have an adequate supply of maps of areas in which they are currently operating, or in which they have an immediate prospective interest. Units should not be burdened with maps of areas outside their zone of operations, but should have adequate maps of regions of their present operations and of their immediate future operations. Difficulties of production and distribution, as well as the considerable weights involved, necessitate economy in map issues. Sectors assigned and operations contemplated are the basis for map distribution. The allowances prescribed herein are sufficient for minimum needs only; intervening organizations not specifically authorized to stock maps will not retain copies, but will distribute those received with the object in view of furnishing front-line units with maps needed by them for operations. Proper economy dictates that the only large-scale maps furnished shall be those of the areas of immediate importance to the individual or unit. The initial allowance of military maps will normally be as follows:

	Small scale: Normally 1:1,000,000 to 1:7,000,000	*Intermediate scale: Normally 1:200,000 to 1:500,000* ①	*Medium scale: Normally 1:50,000 to 1:125,000*	*Large scale*	*Aeronautical Charts*
(1) HEADQUARTERS:					
GHQ	100	100	50	10	50
Army	25	75	50	10	25
Corps	15	40	75	10	25
Division	5	25	55	20	10
Regiment	1	7	7	14	.....
Battalion ①	.....	1	6	6	.....
Company	.....	1 ②	1	1	.....
(2) FOR INDIVIDUAL USE IN ORGANIZATIONS ADDITION TO ABOVE ALLOWANCE (on basis of commissioned strength)	.....	1 ②	1 ③	1 ④	.....
(3) ARMY AIR FORCES:					
Air Force Combat Command	25	15	15	.....	50
Air Force	5	15	15	.....	100
Wing headquarters	5	7	7	.....	10
Group headquarters	5	7	7	.....	10
Squadron headquarters	1	7	7	.....	4
Airplane	.....	.....	1	1 ⑤	4

NOTES

① Allowance for separate battalions, Cavalry, Armored Force, and Motorized Infantry will be increased 50 percent.
② For Cavalry, Armored Force, Motorized Infantry, and attached troops only.
③ Except for officers of Army Air Forces. (Allowances for artillery observation missions prescribed in note ⑤ below.)
④ Except Army Air Forces, see note ⑤ below. (Use by Cavalry and Armored Force will be exceptional.)
⑤ Observation squadrons only. Airplanes observing artillery fire will be issued same scale maps used by artillery firing batteries.

b. (1) If maps of any of the scale groupings in *a* above are not available, substitution is authorized of maps of the scale nearest to that desired, and in quantities provided above for the map replaced.

(2) Special maps and road maps will be issued as directed by the commanding officer.

■ 178. MISCELLANEOUS.—*a. Grid coordinates:*

(1) *Size of military grid.*—The military grid is formed by lines spaced 1,000 yards apart on maps of 1:20,000 scale, and 5,000 yards apart on maps of 1:62,500 scale.

(2) *Atlas grid.*—(a) The military grid is not applicable to map substitutes due to inherent distortions, variations in scale, and the resultant difficulty of accurately locating the military grid lines thereon. A suitable atlas grid will therefore be applied to photographs, photomaps, provisional maps, and to maps whose accuracy does not warrant the use of the military grid. In applying the atlas grid to the map, the grid lines will be *lettered* from left to right and *numbered* from bottom to top. The purpose of the atlas grid is to facilitate description and identification of points of interest. The grid lines will be equally spaced and

approximately 1.8 inches apart. Starting at the left edge of the sheet, the vertical grid lines will be assigned letters A, B, C, D, etc., and from the bottom of the sheet the horizontal grid lines will be numbered 1, 2, 3,.4, etc. Important features within the grid squares may be designated by abbreviated title and decimal coordinates, such as RJ–C.5–7.2.

(b) On single verticals used for map substitutes, the grid numbers and letters with ticks only will be applied. On controlled mosaics, the approved military grid system will be applied as accurately as possible.

(3) *Expressing grid coordinates.*—Regardless of grid spacing, grid coordinates are expressed by stating the reading east along the X (horizontal) coordinate, followed by a dash and the reading along the Y (vertical) coordinate, the whole being enclosed within parentheses. *Example:* (350.7-754.6)

b. Relation between scale and contour interval of maps:

Scale	*Contour interval (feet)*
1:62,500	20
1:20,000	20
1:10,000	10
1:5,000	5

■ 179. REFERENCES.—Further details pertaining to military maps and mapping will be found in the following publications:

AR 300–15, Maps and Mapping.
FM 21–25, Map and Aerial Photograph Reading.
FM 21-26, Advanced Map and Aerial Photograph Reading.
FM 21–30, Conventional Signs, Military Symbols, and Abbreviations.
FM 30–20, Military Intelligence, Military Maps.

180. Characteristics of Infantry and Cavalry Weapons:

1	2	3	4	5	6	7	8	9	10
Weapon	Weight in firing position (pounds)	Method of operation	Type of feed	Maximum rate of fire (rounds per minute) ①	Practical rate of fire for prolonged periods (rounds per minute)	Projectiles: Weight per round (pounds)	Projectiles: Maximum range (yards)	Projectiles: Maximum effective range (yards)	Projectiles: Effective radius of burst—fragmentation (yards)
Grenade, hand, Mk II, fragmentation Box of 24 — 38 pounds	1.25	Manual				1.25	50	35	30
Gun, machine, M1917, cal .30 (heavy)	31.50	Recoil, automatic	250-round fabric belt	525	125	250-round belt 15.25	3,450 ③ 5,500 ④	1,800 ⑤ 3,000 ③⑥ 4,000 ④⑥	
Gun and tripod M1917A1, with water	91.75								
Gun and tripod, without water	84.50								
Chest with filled belt	20.50								
Spare parts chest with contents	25.63								
Chest 15.50									
Contents 5.50									
Accessories 4.63									
Water chest, full	22.50								
Water chest, empty	9.00								
Gun, machine, M1919A4, cal .30 (light)	45.36	Recoil, automatic	50, 100, 150-round fabric belts	550 Maximum useable rate: 150	60	(100 rounds loaded in belt: 6.13)	3,450 ③ 5,500 ④	1,800 ⑤ 3,000 ③⑥ 4,000 ④⑥	
Ammunition chest, empty	2.43								
Ammunition chest, loaded (Capacity: three 100-round belts)	20.80								
Spare parts chest with contents	20.64								
Gun, machine, M2, cal .50 (flexible)	84	Recoil, semi-automatic & automatic	Metallic disintegrating link belt	500	Rapid 125 ⑦ Slow 40	(100 rounds 30 pounds)	7,200	500 ③ 1,800 ⑤ 4,000 ⑥	
Gun with tripod M3, 45″ barrel	129.38								
Gun with tripod M3, 36″ barrel	119.00								
Accessories and spare parts chest	31.5								
Ammunition chest, empty	5 to 6								
Ammunition chest, 100 cart AP(SNL A39)	35.87								

CHARACTERISTICS OF INFANTRY AND CAVALRY WEAPONS (Continued):

1	2	3	4	5	6	7	8	9	10
Gun, submachine, M1928A1, cal .45		Recoil, semi-automatic & automatic	20-round box magazine 50-round drum magazine	700	40 (9) 100 (10)		1,600	300	
Gun without magazine	10.75								
20-round magazine, empty	.38								
20-round magazine, filled	1.31								
50-round magazine, empty	2.63								
50-round magazine, filled	4.95								
Gun, 37-mm, M1916 (11)		Manual, single shot	Hand, breech loading	25	15	HE.....1.57 LE.....1.44	4,300	1,800 (5)	10
Gun on tripod	174.00								
Gun on wheels	342.00								
Ammunition chest, 16-round, empty	8.00								
Ammunition chest, full (HE shell)	33.12								
Ammunition chest, full (LE shell)	31.04								
Gun, 37-mm, M3 (antitank)		Manual, single shot	Hand, breech loading	25	20	HE.....1.23 AP.....1.92	7,500	1,000 (13) 1,800 (5)	10 (HE)
Gun and carriage, M4	912.0								
One 20-round box Am M51, shot fixed AP	100.0								
Mortar, 60-mm, M2	38.30	Manual, single shot	Hand, muzzle loading	35	18	2.96	1,935	(14)	15
One 6-round carton shell, HE, M49A1	24.40								
Mortar, 81-mm, M1, & mount	136.00	Manual, single shot	Hand, muzzle loading	35	18	HE.... 6.87	100 to 3,290		Light....25
One 6-round bundle shell, HE-M43	59.00					10.75	300 to 2,655		Heavy..35
One 3-round bundle shell, HE-M45	57.00					15.05	100 to 1,275		
One 3-round bundle shell, smoke, WP-M57	45.00					11.40	300 to 2,470		
Pistol, automatic, cal .45		Recoil, semi-automatic	7-round box magazine	(21 rounds in 12 seconds)	10	(Carton of 20 rounds: 1.1)	1,600	50	
Pistol with loaded magazine	2.76								
Pistol with empty magazine	2.44								

CHARACTERISTICS OF INFANTRY AND CAVALRY WEAPONS (Continued):

1	2	3	4	5	6	7	8	9	10
						Projectiles			
Weapon	Weight in firing position (pounds)	Method of operation	Type of feed	Maximum rate of fire (rounds per minute) ①	Practical rate of fire for prolonged periods (rounds per minute)	Weight per round (pounds)	Maximum range (yards)	Maximum effective range (yards)	Effective radius of burst —fragmentation (yards)
Rifle, automatic, cal .30, Browning, M1918		Gas, semi-automatic & automatic	20-round box magazine	60 ⑨	40		3,450 ③ 5,500 ④	600	
Rifle with filled magazine	16.93								
Magazine, filled	1.43								
Magazine, empty	7 ounces								
Rifle, automatic, cal .30, Browning, M1918A1		Gas, semi-automatic & automatic	20-round box magazine	60 ⑨ 150 ⑩	40		3,450 ③ 5,500 ④	600	
Rifle with bipod, hinged butt plate, stock rest, speed regulator, sling, and loaded magazine	23.50								
Rifle, US, cal .30, M1903		Manual	5-round clip	10 to 15	10		3,450 ③ 5,500 ④	600	
Rifle without bayonet	8.69								
Rifle with bayonet	9.69								
Rifle, US, cal .30, M1		Gas, semi-automatic	8-round clip	16 to 24	16		3,450 ③ 5,500 ④	600	
Rifle without bayonet	9.62								
Rifle with bayonet	10.62								

NOTES

① For other than automatic weapons, personal proficiency is a controlling factor. The construction of the weapon, heating, and other conditions influence sustained or prolonged performance.
② Fragments may fly over 200 yards.
③ M2 ammunition.
④ M1 ammunition.
⑤ Observed fire, distance varying with visibility.
⑥ Indirect fire.
⑦ With a cool gun, a single burst of 100 to 150 rounds can be fired.
⑧ Penetrates 5/8-inch armor plate at 500 yards, normal impact.
⑨ Semi-automatic fire.
⑩ Automatic fire.
⑪ All-over width of vehicle with trails closed: 39.25 inches.
⑫ Aimed fire.
⑬ Penetrates 1½-inch armor plate at 1,000 yards, 20 degrees of incidence.
⑭ Within limits of maximum range, observation is a controlling factor.
⑮ Fragments may fly as far as 400 yards.
⑯ All-over width over hub caps 63.5 inches.

■ 181. CHARACTERISTICS OF FIELD ARTILLERY:

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Type and caliber (the model designation refers to the carriage)	*Weight of piece, carriage (and limber) in traveling position with normal load except personnel (pounds — approximate)*	*Piece transportation*	*Weight of prime mover with normal load (pounds — approximate)*	*Normal overall width traveling position (inches)*		*Time to emplace or change from firing to traveling position*	*Traverse (degrees)*	*Normal rate of fire (rounds per minute)*		*Maximum effective range (yards) (85% extreme range, using standard ammunition)*	*Approximate weight of ammunition (pounds)* ②		*Unit of fire (rounds per piece)*
				Piece	*Prime mover*			*Short bursts*	*Prolonged*		*Projectile fused*	*Complete round packed*	
Howitzer, 75-mm, M1 (pack)	Gross.....2,050 Net pay load....1,390	6 pack mules ③		48		3 minutes	5	6	3	8,100	14.6	22	300
Howitzer, 75-mm, M3A1 (field)	HD.....3,340① Mecz.....2,090	HD.....6-horse team Mecz.....Trk, 1½-ton, half-track	Mecz 11,500 ④	68	Mecz 86	3 minutes	45	6	3	8,100	14.6	22	300
Gun, 75-mm, M2A2	HD.....5,800① Mtz.....3,800	HD.....6-horse team Mtz....Trk, 1½-ton, 4x4 Trk, 2½-ton, 6x6	Mtz 10,000 15,000	81	86	3 minutes	85	6	3	11,500	14.6	23	300
Gun, 75-mm, M2A3, AT	HD.....5,400① Mtz.....3,460	HD.....6-horse team Mtz.....Trk, 1½-ton, 4x4 Trk, 2½-ton, 6x6	Mtz 10,000 15,000	81	86	3 minutes	60	6	3	*11,500	14.6	23	150
Howitzer, 105-mm, M2	4,300	Truck, 2½-ton, 6x6	15,000	81	86	3 minutes	45	4	2	10,300	32.7	51	225

CHARACTERISTICS OF FIELD ARTILLERY (Continued):

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Type and caliber (the model designation refers to the carriage)	*Weight of piece, carriage (and limber) in traveling position with normal load except personnel (pounds — approximate)*	*Piece transportation*	*Weight of prime mover with normal load (pounds—approximate)*	*Normal overall width traveling position (inches)*		*Time to emplace or change from firing to traveling position*	*Traverse (degrees)*	*Normal rate of fire (rounds per minute)*		*Maximum effective range (yards) (85% extreme range, using standard ammunition)*	*Approximate weight of ammunition (pounds) ②*		*Unit of fire (rounds per piece)*
				Piece	*Prime mover*			*Short bursts*	*Prolonged*		*Projectile fused*	*Complete round packed*	
Howitzer, 155-mm, M1918A3	9,120	Truck, 4-ton, 6x6	24,000	90	96	5 minutes	6	3	1	10,500	95	106	150
Gun, 155-mm, M1918A1 (mdf–GPF)	30,000	Tractor, hvy, 10-ton Truck, 7½-ton, 6x6	27,500 34,000	106	84 96	1 to 6 hours	60	3	1	15,200	95	135	100
Gun, 155-mm, M1	30,740	Tractor, hvy, 10-ton Truck, 7½-ton, 6x6	27,500 34,000	93	84 96	½ to 1 hour	60	3	1	22,100	95	142	100
Howitzer, 8-inch, M1	30,200	Tractor, hvy, 10-ton Truck, 7½-ton, 6x6	27,500 34,000	99	84	½ to 1 hour	60	½	¼	15,900	200	243	80
Howitzer, 240-M1918	58,600 ⑤	5 Tractors, hvy, 10-ton ⑥	27,500	102	84	3 to 12 hours	20	½	¼	13,900	345	400	60

NOTES

① A limber is provided with this weapon.
② 8-inch and 240-mm howitzers fire high explosive shell only. The other types may also fire smoke and persistent gas shell.
③ Maximum weight on a single animal: 354 pounds. Maximum pay load: 248 pounds.
④ 15,000 pounds, if armored.
⑤ Transported in four loads. Weight of maximum load: 16,230 pounds.
⑥ Four howitzer loads. One accessories load.

■ 182. CHARACTERISTICS OF COAST ARTILLERY (MOBILE):

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
										Ammunition transport			Marches	
	Caliber and type	Total weight piece and carriage (tons — approximate)	Approximate weight of ammunition, complete round, packed (pounds) ②	Range (yards)	Traverse (degrees permitted by carriage)	Rate of fire (rounds per piece per minute)	Unit of fire (rounds per piece)	Time to emplace in firing position or change from firing to traveling position	Piece transport	Kind	Rounds per vehicle	Width of track (inches)	Average rate of march (miles per hour)	Average day's march (miles)
Railway	Gun, 8-inch	113	340	33,850 ③	360	1/3	96	3 hours	Railway	Railway car	96	56½	20	200
Railway	Mortar, 12-inch	88	763	14,650 ③	360	2/3	48	3 hours	Railway	Railway car	48	56½	20	200 ⑮
Railway	Gun, 14-inch	341	1,860	48,200 ③	7 ⑦ 360 ⑧	½	50	8 hours ⑩ 10 days ⑪	Railway	Railway car	24	56½	15–20	200 ⑮
Tractor-drawn	Gun, 155-mm	12	148	17,400 ③	60	3	100	1 to 6 hours	Towing tractor	2½-ton truck	35	90	3½	30
Anti-aircraft ①	Gun, 3-inch	8	150 pounds per box of 4 rounds	6,000 ④	360	25	300	20 minutes day 30 minutes night ⑫	Towing truck ⑯	2½-ton truck	120	66	10–25	175
Anti-aircraft ①	Gun, 90-mm	9	225 pounds per box of 4 rounds	8,000 ⑤	360	17	250	20 minutes day 30 minutes night ⑬	Towing truck ⑯	2½-ton truck	88	88½	10–25	175

CHARACTERISTICS OF COAST ARTILLERY (MOBILE) (Continued):

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Antiaircraft (cont) ①	Gun, 37-mm	2½	85 pounds per box of 20 rounds	2,500 ⑥	360	120	1,800	5 minutes	Towing truck	2½-ton truck	900	58	10-25	175
	Machine gun, cal .50	Gun and mount (3 loads): 485 pounds Gun: 94 pounds	120 pounds per 300 rounds	1,850	360	500	7,200 ⑨	5 minutes ⑭	Truck	1½-ton truck	3,600		10-25	175

NOTES

① Data pertaining to antiaircraft searchlights:
Average effective range of illumination: 6,000 yards.
Traverse: 360 degrees.
Average time required to emplace: 20 minutes.
② Includes separate powder charge for railway and tractor-drawn artillery ammunition.
③ Maximum horizontal range.
④ For powder train fuze. Maximum effective horizontal range at altitude of 17,100 feet. Range increases at lower altitudes to a maximum horizontal range of 7,550 yards.
⑤ Maximum effective horizontal range at 25,800 feet. Range increases at lower altitudes to a maximum horizontal range of 12,600 yards.
⑥ Maximum effective horizontal range. At lower altitudes the range increases to a maximum horizontal range of 3,500 yards.
⑦ Total traverse on carriage when gun is put in position on track without base ring.
⑧ 360 degrees traverse when gun is mounted on prepared emplacement with base ring.
⑨ Unit of fire for machine guns in 3-inch *gun* batteries is 3,600 rounds.
⑩ 8 hours required for position indicated in ⑦.
⑪ Includes construction of concrete emplacement for all-around fire.
⑫ For slopes not exceeding 5 degrees. More time is required for slopes exceeding 5 degrees, as digging is necessary.
⑬ For slopes not exceeding 4 degrees. More time is required for slopes exceeding 4 degrees, as digging is necessary.
⑭ The gun can be fired effectively from truck.
⑮ Routings restricted to certain railway lines by requirements of curvature, clearance and bridge capacities.
⑯ Weight loaded 17 tons.

■ 183. CHARACTERISTICS OF ARMORED VEHICLES: ①

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Type of vehicle	*Weight (tons) (gross—equipped with crew)*	*Armament*	*Main armor (inches)*	*Crew*	*Maximum speed on roads (miles per hour)* ②	*Spanning capacity (feet)*	*Slope climbing ability (degrees)*	*Safe fording depth (inches)*	*Fuel capacity (gallons)*	*Mileage on one fill (miles)*	*Height (inches)*	*Length (inches)*	*Width (inches)*
Car, half-track, M2	8.5	2 MG, cal .30 1 MG, sub, cal .45 1 MG, cal .50	Front ½ Body ¼	10	45		30	30	60	250	88	231½	77¼
Car, scout, M3A1	5.5	2 MG, cal .30 1 MG, sub, cal .45 1 MG, cal .50	Front ½ Body ¼	8	55		30	28	30	250	78	221	77¼
Carrier, personnel, half-track, M3	8.25	1 MG, cal .30 1 MG, sub, cal .45	Front ½ Body ¼	13	45		30	30	60	250	88	242½	77¼
Carrier, 81-mm, mortar, half-track, M4	8.25	1 MG, cal .30 1 MG, sub, cal .45 1 MG, cal .50 1 Mortar, 81-mm	Front ½ Body ¼	6	45		30	30	60	250	88	235½	77¼
Combat car (The old single turret light tank. The old infantry light tank with 2 turrets has similar characteristics.)	9.5	3 MG, cal .30 1 MG, sub, cal .45 1 MG, cal .50		4	45	6	35	42	60	125	84	163	93
Mortar, SPM, 4.2-inch mortar (old type)	5	1 MG, cal .30 1 Mortar, 4.2-inch		4	58		30	30	26	150	81	122	78

CHARACTERISTICS OF ARMORED VEHICLES (Continued):

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Tank, light, M3	13.5	4 MG, cal .30 1 Gun, 37-mm	1½	4	37	6	30	36	55	125	98¼	192¾	102
Tank, medium, M2	18	8 MG, cal .30 1 Gun, 37-mm		5	32	9	23	53	130	195	109	209	103
Tank, medium, M3	28	4 MG, cal .30 2 MG, sub, cal .45 1 Gun, 37-mm 1 Gun, 75-mm	2	6	25	7.4	30	42	200	175	122	223	108
Tank, heavy, T1	55	3 MG, cal .30 2 MG, sub, cal .45 3 MG, cal .50 1 Gun, 37-mm 1 Gun, 3-inch	3	6	25	11	30	48	425	125	122 3/8	277	123

NOTES

① These characteristics pertain to the latest type (as of June 1, 1941) vehicles approved for, or already in production. However, since several earlier models of each type vehicle listed are still in use, the data contained in this table must be considered as approximate only.

② The cross-country speed of the vehicles listed will vary from 5 to 25 miles per hour, depending on the nature of the terrain, whether employed during day or night, and, if employed at night, whether with or without lights.

■ 184. CHARACTERISTICS OF AIR CORPS UNITS:

1	2	3	4	5	6	7	8	9
Classes of aviation	*Total airplanes in squadron*	*Probable maximum operating strength of squadron* ①	*Bomb load* *N = Normal* *M = Maximum*	*Practical operating range (miles)*	*Tactical operating radius of action*	*Operating speed per hour (miles)*	*Climb* *Time to/feet*	*Take off and land over 50′ obstacle* *Take off/Land*
Bombardment, light, 2-engine (A-20B)	13	10	N—1,000 M—2,400	650 650	325 325	275 275		2,510′/2,163′
Bombardment, medium, 2-engine (B-26)	13	10	N—2,400 M—6,200	1,150	575	180	5.9/10,000	2,500′/2,200′
Bombardment, heavy, 4-engine (B-24C)	8	7	N—2,400 M—8,800 ③	2,000	1,000	220		2,400′/1,950′
Pursuit, single-engine (P-40F)	25	18	N— M—120	1,040 770	520 385	300 300	6.9/15,000	2,300′/1,800′
Pursuit, 2-engine (P-38E)	25	18	N— M—	650	325	330	6.9/20,000	2,550′/2,500′
Observation, single-engine (O-52) (Corps and Division)	13	10	N— M—	624	312	192		910′/920′
Observation, 2-engine (O-53) (Corps and Division)	13	10	N—1,000 M—	603	300	325		2,392′/2,205′
Reconnaissance, medium range, 2-engine (B-26) ②	13	10	N— M—	2,760	1,380	200		2,500′/2,200′
Reconnaissance, long range, 4-engine (B-24A) ②	8	7	N— M—	4,100	2,050	194		2,140′/1,810′
Transport, 2-engine (C-47)			21 passengers	1,190	595	170	10/10,000	1,880′/1,900′

NOTES

① The actual operating strength will vary and should be determined accurately by communication with the unit.
② Bombardment airplanes used for reconnaissance have greater ranges due to the substitution of fuel for bomb load.
③ Eight 1,100-pound bombs.

■ 185. CHARACTERISTICS OF CHEMICAL WEAPONS:

1	2	3	4	5	6	7	8	9	10
Weapon	*Weight (pounds)*	*Rate of fire (rounds per minute)*		*Time to emplace*		*Effective range (yards)*	*Ammunition load (complete rounds)*		
		Short bursts	*Prolonged*	*Day*	*Night*		*Trucks (1½-ton)*	*Trailer (1-ton)*	*Man*
4.2-inch chemical mortar M1A1 ①		20	5	5 minutes	10 minutes	2,400	90 ② 117 ③	60 ②	2 ③
Barrel, CM, M1A1	91								
Baseplate, CM, MII	150								
Standard, CM, MI	53								
Shell, CM, 4.2-inch, loose	25								
Shell, CM, 4.2-inch, 2 rounds in box	65								
Hand cart, loaded with chemical mortar complete	491								
Hand cart, loaded with 20 rounds in boxes	479								
Livens projector, 8-inch		Fired but once. One round per projector per installation fired simultaneously by electricity		100 per platoon in 2½ hours	100 per platoon in 5 hours	1,450	15 ④	10 ④	1/3 ④
Barrel	110								
Baseplate	28								
Shell, loose	61								
Shell, boxed, 1 round	83								
Livens charge, loose	9								
4 Livens charges, boxed	56								
Livens projector complete with ammunition ready to fire	213								

NOTES

① Overall width of hand cart: 3 feet 6 inches.
② Boxed.
③ Loose.
④ Livens projector, complete with ammunition ready to fire.

186. CHARACTERISTICS OF CHEMICAL AGENTS:

1	2	3	4	5	6	7	8	9	10
Agent (common name)	*CWS Symbol*	*Marking on munition*	*Odor in air*	*Persistency*		*Tactical Classification*	*Physiological Classification*	*Physiological action*	*Munitions suitable for use*
				Summer	*Winter*				
Adamsite	DM	1 red band DM GAS	No pronounced odor	5 minutes (from candles)	Same as summer	Harassing agent	Sternutator irritant smoke (1)	Headache, nausea, violent sneezing, followed by temporary debility	Candle, burning type munitions, air bombs
Brombenzylcyanide	CA	1 red band CA GAS	Like sour fruit	Several days	Several weeks	Harassing agent	Lacrimator (2)	Severe lacrimation (2) and nose irritation	75-mm artillery shell, airplane spray
Chloracetophenone	CN	1 red band CN GAS	Like apple blossoms	Solid form: several days Burning mixture: 5 minutes	Solid form: several weeks Burning mixture: 10 minutes	Harassing agent	Lacrimator (2)	Eye and skin irritation	Grenades, artillery and chemical mortar shell, bombs
Chloracetophenone solution	CNS	1 red band CNS GAS	Like fly paper	1 hour (3) 2 hours (4)	6 hours (3) 1 week (4)	Harassing agent (training)	Lacrimator (2)	Violent eye irriation, vomiting, and mild skin itching	75-mm, 155-mm, and chemical mortar shells, small air bombs, airplane spray, and hand grenades
Chlorine	Cl	1 green band Cl GAS	Pungent	5 minutes (3) 20 minutes (4)	Same as summer	Casualty agent	Lung irritant	Burns upper respiratory tracts	Mixed with CG and PS in cylinders and Livens projector shells

CHARACTERISTICS OF CHEMICAL AGENTS (Continued):

1	2	3	4	5	6	7	8	9	10
Agent (common name)	*CWS Symbol*	*Marking on munition*	*Odor in air*	*Persistency*		*Tactical Classification*	*Physiological Classification*	*Physiological action*	*Munitions suitable for use*
				Summer	*Winter*				
Chlorpicrin	PS	2 green bands PS GAS	Sweetish, like fly paper	1 hour ③ 4 hours ④	12 hours ③ 1 week ④	Harassing and casualty agent	Lung irritant and lacrimator ②	Lacrimates ②, irritates nose and throat, produces nausea and lung irritation in order as concentration increases	Mixed with CN in 75-mm and chemical mortar shells, airplane spray, and air bombs. Mixed with CG in Livens projector shells
Diphenychlorasine (German: blue cross)	DA	1 red band DA GAS	Like shoe polish	HE detonation: 5 minutes Candle dissemination: 10 minutes	Same as summer	Harassing agent	Sternutator ①, irritant smoke	Sneezing, vomiting, headache	Burning type munitions
Ethyldichlorarsine (German: Dick)	ED	2 green bands ED GAS	Biting, irritant	1 to 2 hours ③ 2 to 6 hours ④	2 to 4 hours ③ 12 hours ④	Casualty and harassing agent	Vesicant ⑤ and sternutator ①	Vesicant ⑤ 1/6 as powerful as HS. A powerful sternutator ①. Causes paralysis of the fingers	Artillery and chemical mortar shells and airplane spray
HC mixture	HC	1 yellow band HC SMOKE	Acrid, suffocating when very dense	Only while burning	Only while burning	Screening smoke	None	None from solid. Slightly suffocating action by heavy smoke	Burning type munitions only: grenades, candles, smoke floats, special air bombs

CHARACTERISTICS OF CHEMICAL AGENTS (Continued):

1	2	3	4	5	6	7	8	9	10
Agent (common name)	*CWS Symbol*	*Marking on munition*	*Odor in air*	*Persistency*		*Tactical Classification*	*Physiological Classification*	*Physiological action*	*Munitions suitable for use*
				Summer	*Winter*				
Lewisite	M1	2 green bands M1 GAS	Like geraniums, then biting	24 hour ③ 2 to 3 days ④	1 week or more	Casualty agent	Vesicant ⑤	Is absorbed in skin and lung tissue, then burns and liberates M1 oxide which poisons body	75-mm gun, 155-mm howitzers, and chemical mortar shells, airplane spray, and air bombs
Mustard	HS	2 green bands HS GAS	Like garlic or horseradish	3 to 4 days ③ 1 week ④	Several weeks	Casualty agent (harassing agent)	Vesicant ⑤	Is absorbed in skin and lung tissue, then produces burns	75-mm gun, 155-mm howitzer, 155-mm gun, and chemical mortar shells, airplane spray, air bombs, land mines
Phosgene	CG	1 green band CG GAS	Like ensilage, freshcut hay	5 minutes ③ 10 minutes ④	10 minutes ③ 30 minutes ④	Casualty agent (harassing agent)	Lung irritant	Burns lower respiratory tracts, causes accumulation of serous fluid in lungs	Livens projector shells, cylinders, and chemical mortar shells
Sulfur trioxide solution (or FS)	FS	1 yellow band FS SMOKE	Acid or acrid	While container is operating	Same as summer	Screening agent	None	Liquid burns like strong acid. Smoke causes prickling sensation on skin	From cylinders under gas pressure, airplane spray tanks, explosive shells
Thermite	TH	1 purple band TH INCEND				Incendiary (harassing agent)			
FM (titanium tetrachloride)	FM	1 yellow band FM SMOKE	Acrid	10 minutes ③	10 minutes ③	Screening agent	None	Liquid burns like strong acid. Vapor and smoke irritating to throat	Artillery and chemical mortar shells, airplane spray, air bombs, special munitions

CHARACTERISTICS OF CHEMICAL AGENTS (Continued):

1	2	3	4	5	6	7	8	9	10
Agent (common name)	*CWS Symbol*	*Marking on munition*	*Odor Odor in air*	*Persistency*		*Tactical Classification*	*Physiological Classification*	*Physiological action*	*Munitions suitable for use*
				Summer	*Winter*				
White phosphorus	WP	1 yellow band WP SMOKE	Like matches	Usually 10 minutes or less ③	Same as summer	Screening agent (casualty, incendiary)	None	Solid particles burn flesh. Smoke relatively harmless	Grenades, artillery and chemical mortar shells, air bombs

NOTES

① *Sternutator.*—An agent which causes sneezing, vomiting, irritation of the throat and nose, and temporary physical disability.
② *Lacrimator.*—An agent which, in low concentrations, exerts an intense irritant action on the eyes, causing a profuse flow of tears and such discomfort that vision becomes impossible.
③ In open.
④ In woods
⑤ *Vesicant.*—An agent that blisters.

■ 187. DATA ON CHEMICAL MUNITIONS:

1	2	3	4	5	6
Munition	*Agents and weight of filling (pounds unless otherwise indicated)*	*Weight of complete round (pounds unless otherwise indicated)*	*Weight of complete round, crated (pounds)*	*Approximate time for agent to burn or evaporate at point of release*	*Effective range of weapon (yards)*
Grenade, hand, gas, irritant, CN-DM, M-6	CN-DM mixture, 4 oz (2 oz each)	17 oz	1.96	40 sec	35
Grenade, hand, gas, irritant, CN, M-7	CN.....2.9 oz	17 oz	1.96	40 sec	35
Grenade, hand, smoke, HC, M-8	HC.....20.6 oz	28 oz	2.64	3 min	30
Candle, gas, irritant, DM, MI ①	DM.....2	9	13.6	2 min	None ②
Cylinder, chemical, portable, M1A2 ③	CG.....31.7 FS.....40.0	63	66	1 min	None ④
Land mine (1 gallon can)	HS.....8.5	10	16	10 days	Must be placed
Pot, smoke, HC, MI	HC.....12.5	14.3		5 to 8 min	None
Shell, chemical, Livens projector, MII and MIIA1	CG } .....28 FS }	63	97	1 to 2 min	1,450
Shell, 4.2-inch chemical mortar	CNS.....5.8 CG.....5.0 HS.....5.4 WP.....7.5 FS.....7.5	25.5	32.5	CNS.....2 hr CG.....1 min HS.....10 days WP.....2–3 min FS.....30 sec	2,400
Shell, chemical, 81-mm, M57	WP	11.4		WP	300–2,470
Shell, 75-mm gun, chemical, Mk II	HS.....1.3 WP.....1.8 FS.....1.9	16.6	20 (bundle packing)	HS.....1 week WP.....30 sec FS.....15 sec	8,000
Shell, 105-mm howitzer	HS.....3.3 WP.....4.7 FS.....4.8	42.1	51 (bundle packing)	HS.....1 week WP.....35 sec FS.....20 sec	10,000
Shell, 155-mm howitzer, Mk II and 155-mm gun, chemical Mk VII ⑤	HS.....11.1 WP.....15.6 FS.....16.3 CG.....10.7	How: 102.4 Gun: 122.8	How: 105.3 Gun: 148.6	HS.....10 days WP.....4–5 min FS.....30 sec	How: 11,000 Gun: 16,000
Tank, airplane, chemical spray (22 gallons)	HS.....231 FS.....250 CNS.....250 CNB.....227	277 to 300		HS.....4–6 hr (summer) FS.....5 sec ⑥ CNS.....1 hr CNB.....1 hr	Radius of action of airplane

DATA ON CHEMICAL MUNITIONS (Continued):

1	2	3	4	5	6
Munition	*Agents and weight of filling (pounds unless otherwise indicated)*	*Weight of complete round (pounds unless otherwise indicated)*	*Weight of complete round, crated (pounds)*	*Approximate time for agent to burn or evaporate at point of release*	*Effective range of weapon (yards)*
Bomb, chemical, 30-pound, M1	HS..... 9.1 FS.....13.7 WP.....12.5	33.6	44.2	HS.....1 week FS.....30 sec WP.....2–3 min	Radius of action of airplane
Bomb, gas, persistent (HS), 30-pound, M46	HS.....20.6	26.8	74.8 (2 in box)	HS.....1 week	Radius of action of airplane
Bomb, gas, persistent (HS), 100-pound, M47	HS.....73.0	93	119.5	HS.....1 week	Radius of action of airplane

NOTES

① One chemical company can install and fire 300 candles.
① The maximum effective range of cloud attack from candles is 5,000 yards.
③ One chemical company can install 300 cylinders in 6 hours at night, if the carry is not over 2 miles.
④ The maximum effective range of cloud attack from cylinders is 7,500 yards.
⑤ WP and FS fillings are not authorized for 155-mm guns. CG fillings are not now authorized.
⑥ Time of discharge of tank.

■ 188. CHEMICAL AMMUNITION REQUIREMENTS.—*a. Chemical shell:*

1	2	3	4	5	6	7	8	9	10	11
Agent	*HS ②, ③ (mustard)*				*CNS ②, ④ (chloracetophenone solution)*			*CG ⑤ phosgene)*		
Weapon	*75-mm gun*	*155-mm howitzer*	*155-mm gun*	*4.2-inch mortar*	*75-mm gun*	*4.2-inch mortar*	*155-mm howitzer*	*155-mm howitzer*	*4.2-inch mortar*	*Livens projector*
Rounds per target (point target) ①	160	30	30	30	10	8	8		90	
Rounds per square 100×100 yards (area target)	80	15	15	15	5	4	4	25	45	15
Rounds per circle 200 yards diameter (area target)	320	60	60	60	20	16	16	100	180	60

NOTES

① Minimum depth in line of fire 200 yards (observed fire).
② Below 50 degrees F, increase HS 25%, CNS 25%. On wooded targets use 50% of the quantities given.
③ Do not fire HS below 32 degrees F. Use Lewisite.
④ Rounds per hour.
⑤ Fired in not over ½ minute.

b. Smoke.—(1) Rounds per 100 yards per minute for combined screening and casualty effects:

1	2	3	4	5
Weapon	*Wind direction*			
	Following	*Head*	*Flank*	*Quartering*
4.2-inch chemical mortar	1.25	1	0.5	1
75-mm gun	12.00	10	4.0	8
155-mm howitzer	3.00	2	0.5	2

(2) Rounds per 100 yards per minute for screening effect only:

1	2	3	4	5
Weapon	*Wind direction*			
	Following	*Head*	*Flank*	*Quartering*
4.2-inch chemical mortar	0.7	0.7	0.4	0.5
75-mm gun	6.0	6.0	3.0	4.0
155-mm gun	1.3	1.3	.5	1.0

To obtain the number of rounds required, measure the line to be screened in hundreds of yards. Multiply this length by the quantity shown for the direction of wind given. Multiply this result by the number of minutes the screen is to be maintained plus 1 minute for the establishment of the screen.

c. Airplane munitions.—(1) *30-pound bombs, HS:*

Bombs per square (100x100 yards) of area target.....15
Bombs per 100 yards of occupied road target..... 5
Bombs per 100 yards of road for interdiction.....10
For bombs used on wooded area targets, reduce the quantity 50%.
For temperatures below 50 degrees F, increase the quantity 25%.

(2) *HS tanks for airplanes.*—Area covered by one wing tank: 500 yards long by 200 to 300 yards wide.

NOTE.—Based on average meteorological conditions and following conditions of flight:

Altitude of plane: 100 feet.
Wind velocity (at right angles to line of flight): 3 to 8 miles per hour.
Average ground speed of airplane: 200 miles per hour.
Airplane chemical spray tank, 22 gallons, discharge rate approximately 5 seconds.
Airplane carries 2 wing tanks. Length of area may be doubled by release in turn.

(3) *Smoke, FS (or FM), airplane chemical spray tank.*—One plane can screen 1,000 yards of front, can blanket an area 1,000x400 yards.

d. Land mines, HS filled.—(Effect is obtained by contamination):

MINES REQUIRED

Purpose	*Mines required*
Barriers	Four parallel lines of mines 25 yards apart with mines staggered at 10-yard intervals in each line
Large areas	Lines of mines 25 yards apart with mines staggered at 20-yard intervals in each line
Along roads	One line of mines on each side of the road with mines staggered at 10-yard intervals along each line
Demolitions	Mines placed in lines 5 yards apart at 5-yard intervals along each line

e. Cloud attacks. — (Require favorable wind.) — (1) *Cylinders.* — Fire one cylinder per yard of front for the first thousand yards in range and add ½ cylinder per yard of front for each additional thousand yards in range. Maximum effective range: 7,500 yards.

(2) *Candles.*—Use 1/5 candle per yard of front for targets 500 yards away. Add 1/5 candle per yard of front for each additional thousand yards in range. Maximum effective range: 5,000 yards.

■ 189. CAPABILITIES OF CHEMICAL UNITS.—*a. Mortar operations:* ①

Agent	*Platoon*	*Company*	*Battalion*
Non-persistent gas	Unit too small to use effectively	Covers target area of 7 squares	Covers target area of 28 squares
		Gas also effective downwind on additional area at least equal to initial area covered	
Persistent gas (HS)	Neutralizes area of 28 squares ②	Twice the capability of one platoon	Four times the capability of one company
Irritant gas (CNS)	Harasses for 1 hour 54 squares, or for 2 hours, 27 squares, etc. ③	Twice the capability of one platoon	Four times the capability of one company
	Gas remains effective for about 1 hour after firing ceases. The concentration should be maintained for at least 2 hours.		
Smoke (WP)	Screens 800 yards wide for 25 minutes ③	Twice the capability of one platoon	Four times the capability of one company

① Figures are based on normal loads of ammunition of one type shell.
② In woods twice as much area can be neutralized.
③ Based on adverse winds. With flank winds the capabilities are approximately twice the above.

b. Livens projector operations:

Agent	*Platoon*	*Company*	*Battalion*
Non-persistent gas (CG)	Unit too small to use effectively	With 200 weapons, covers target area of 13 squares; installed in 5 hours at night	With 800 weapons, covers target area of 54 squares; installed in 5 hours at night
		Effective downwind on at least an equivalent area	
	Capabilities of a unit are limited by the number of weapons available and the time for installation. If additional weapons and time are available, above figures can be increased proportionally.		

c. Cylinder operations:

Agent	*Platoon*	*Company*	*Battalion*
Non-persistent gas (CG)	Unit too small to use effectively	Unit too small to use effectively	Can install and fire 3,000 cylinders on front of about 3,000 yards. Effective downwind several thousand yards.
	These figures assume that weapons have been delivered near the emplacement. Time for installation depends on hand-carry involved; usually 4 to 5 hours must be allowed for large shoots.		

d. Land mine operations:

1	*2*	*3*	*4*	*5*	*6*
Nature of task	*Squad task*	*Platoon task*	*Company task*	*Average time* ①	
	1 Truck (1½-ton)	*6 Squads*	*12 Squads*	*Time fuse or detonating chord*	*Wired for firing electrically*
Barrier, 100 yards deep	500 yards	3,000 yards	6,000 yards	4 hours	8 hours
Road contamination	1,000 yards	6,000 yards	12,000 yards	5 to 10 minutes ②	2 hours
Mines required	200	1,200	2,400		

NOTES

① The time should be increased 50% for night work.
② Mines are dropped from truck moving up to 15 miles per hour

■ 190. PENETRATION OF PROJECTILES.—*a. Non-armor piercing bullet, caliber .30 (174 grains):*

1	2	3
Material	*Maximum penetration inches*	*Thickness in inches to be provided for protection*
Armor plate	.3	.5
Concrete (plain)	2.0	3.0
Brick masonry (well cured)	5.0	7.0
Gravel	8.0	10.0
Dry sand	12.0	14.0
Moist sand	14.5	18.0
Solid oak	20.0	24.0
Earth loam	30.0	36.0
Greasy clay	60.0	72.0
Snow	①	①

NOTE

① Varies greatly; 3 feet of packed frozen snow, well consolidated with water, will provide protection, but the penetration will increase as the temperature rises. Soft, unpacked snow affords little protection.

b. Caliber .30 and caliber .50 armor-piercing bullet:

1	2	3	4	5
Type	*Projectile weight*	*Armor penetration in inches at*		*Thickness of armor in inches to provide protection*
		100 yards	*300 yards*	
.30 cal M6	174 gr	5/8		1
.50 cal M6	753 gr		1	2

c. Antitank weapons:

1	2	3	4	5	6
Type	*Maximum rate of fire (rounds per minute)*	*Projectile weight*	*Weight of piece in firing position (pounds)*	*Armor penetration in inches, at 600 yards*	
				Normal impact	*30 degrees from normal*
.50 cal machine gun	600	753.00 gr	130	.55	.40
25-mm antitank gun	170	.72 lb.	1,200	1.95	1.50
37-mm antitank gun	30	1.85 lbs.	850	2.20	1.76
47-mm antitank gun	20	3.50 lbs.	1,120	1.90	1.45
75-mm gun M2	6	15.00 lbs.	3,450	①	①

① Data to be supplied.

d. Field artillery projectiles in ordinary compact soil:

1	2	3	4	5
Caliber	*Striking velocity (feet per second)*	*Angle of impact, degrees*	*Penetration (feet)*	
			Vertical	*Horizontal*
75-mm	730	45	4	4
105-mm	800	45	5	5
155-mm	770	45	7	7
8-inch	790	45	9	9
240-mm	806	45	14	14

■ 191. FIELD ARTILLERY BARRAGE AND CONCENTRATIONS.—*Field artillery barrages and concentrations.*—(Dimensions in yards):

1	2	3	4	5	6
Caliber and type	*Burst of one shell*	*Area of barrage*		*Diameter of concentration*	*Effective radius of large fragments*
		Normal	*Emergency*		
75-mm gun battery	5x30	100x200	100x300	100–300	150
105-mm howitzer battery	9x40	100x300	100x400	200–400	300
155-mm howitzer battery 155-mm gun battery	9x70	.....	.....	200–400	550

Chapter 7

FIELD ENGINEERING DATA

■ 192. PURPOSE.—These data are intended for use as general guides only. Their application should be varied to conform to local field conditions as required in each specific tactical situation, based on the recommendation, after reconnaissance, of the unit engineer charged with the task.

■ 193. ROADS.—*a. Traffic Capacity* See par. 48, Chapter 2.

b. Load capacity of civilian roads and bridges.—The design of civilian roads and bridges is based on standard loadings, called H—loadings, in which several vehicles of specified weight follow each other at specified intervals, with, at the same time, loads on the remaining traffic lanes. (Table XXIII, FM 5-35.) This design includes a factor of safety of nearly four to care for variation in strength of materials, variations in construction and minor depreciation. In addition, it is standard civilian practice to design for 100% overload where one lane at a time is used and the interval between vehicles is increased. Thus as a guide for military purposes, for infrequent use, civilian roads and bridges may be expected to carry twice the rated load capacity, where restrictions are placed on the number of lanes in use and the speed and intervals between vehicles is controlled. During hostilities, loads in excess of the above may be carried on the recommendation of the unit engineer, in accordance with the situation.

Plans must in all cases provide for engineer reconnaissance, and, where necessary, reinforcement or repair on roads and bridges under our control, and for engineer troops to accompany advance elements into unreconnoitered terrain.

c. Construction, maintenance and repair.—Advantage is taken of the available road net, and all means are utilized to repair and maintain existing roads to fulfill military requirements, rather than to build new roads. Except for short sections, new road construction is avoided. In the combat zone, no better road should be maintained or built than is essential for the immediate purpose. Minimum width of one-track road is 10 feet; two-track road 18 feet—preferably 20 feet. Drainage is always vital; dry subgrades obtained by ditches, culverts, and smooth graded crowns are most important.

On most roads, bridges are sensitive points which may often become bottlenecks to flow of traffic. Alternate crossings or detour routes should be planned for bridges on important roads.

The following tables are given for the purpose of rapid, rough estimates; more accurate tables should be used for detailed estimates.

(1) *Labor for repair of road craters.*

Method of repair	*Man-hours required*
Earth fill with shovels alone	4 x volume in cubic yards
Earth fill with shovels and trucks where hauling distance is not over 200 yards and number of trucks is ¼ number of men	2 x volume in cubic yards
Spaned with standard bridge trestle and bents (trained workmen)	15 x diameter in yards
Spanned with timber bridge (trees in vicinity, trained workmen)	60 x diameter in yards
Detour of corduroy (corduroy available in vicinity)	18 x diameter in yards
Detour of planks	9 x diameter in yards

NOTES

(1) The volume of a conical road crater is $V = \pi \frac{D^2 d}{12}$

where V = volume of crater in cubic yards.
D = distance across top of crater in yards.
d = depth of crater in yards.
$\pi = 3.1416$.

(2) A rough rule of thumb is:
Fill craters under 7 yards in diameter.
Bridge or detour craters over 7 yards in diameter.

(2) *Data for rough estimates of road work.*

(a) Clearing and grubbing with hand tools, medium clearing, 40 feet width, 55—140 man-hours per 100 linear yards.

(b) Earth handling with hand tools,
Excavation in average soil with pick and shovel 0-6 feet deep —1 cu yd per man-hour.
Loading average soil into trucks, using shovel in loose soil— 2 cu yds per man-hour.

(c) Materials required for plank-tread road [1] for motor transportation—12 tons lumber and spikes per 100 linear yds.

(d) Materials required for one-track plank road for motor transportation—35 tons lumber and spikes per 100 linear yds.

(e) Average weight of lumber is 40 pounds per cubic foot.

(f) Materials needed for 10 foot width of crushed stone or gravel roads:
4″ depth spread—37 cu yds per 100 lin yd, 650 cu yds per mile.
8″ depth spread—74 cu yds per 100 lin yd, 1300 cu yds per mile.
1 cu yd of crushed stone weighs approximately 1½ tons, or is a light load for a 1½-T truck.

(g) Capacity of road-construction equipment:
⅜ yard power shovel—24 cu yds per hour, average soil, good operator.
Bulldozer, 60 HP—50 cu yds per hour on level, 100 ft haul.

Blade grader, 7½-ton (self-propelled)—440 sq yds gravel road surface scarified and reshaped per hour.
—50 cu yds of loose rock or loose earth spread per hour.

NOTE
(1) Planks running lengthwise of road on each tread.

■ 194. BRIDGE AND FERRYING EQUIPMENT.—*a. Distribution of equipment.*

1	2	3	4	5	6	7	8	9
						Fixed bridges		
	Assault boats	*Ferry units (30-ton)*	*Foot bridge, M-1938 (units of 432 feet)*	*Light ponton bridge (10-ton), M-1938 (units of 250 feet)*	*Heavy ponton bridge (25-ton), M-1940 (units of 250 feet)*	*Portable steel bridge, H-10 capacity* ① *(feet)*	*Portable steel bridge, H-20 capacity* ① *(feet)*	*Portable trestle bridge (feet)*
Engineer Battalion, Combat, Triangular Division (T/O 5–75)	10							
Engineer Squadron, Cavalry Division (T/O 5–115)	10							
Engineer Regiment, Combat, Square Division (T/O 5–11)	20							
Engineer Regiment, Combat, Corps (T/O 5–171)	30		1					
Engineer Company, Bridge, Armored Division (T/O 5–215)	20	2			1	72	125	300
Engineer Company, Light Ponton (T/O 5–85)	80		2	3 ②				
Engineer Battalion, Heavy Ponton (T/O 5–275)					4 ③			

NOTES

① Also stocked in Corps and Army depots.
② Will provide approximately 350 feet of reinforced bridge (20-ton capacity).
③ Will provide approximately 430 feet of reinforced bridge (50-ton capacity).

b. Characteristics of floating equipment. (1)

1	2	3	4	5	6	7	8	9	10	11
River crossing means	*Time of construction for stream width of* (2)				*Standard construction party* (3)	*Maximum loads*	*Capacity in units transported per hour per site (1 way)* (4)			
	150 feet	*300 feet*	*500 feet*	*1,000 feet*			*150 feet*	*300 feet*	*500 feet*	*1,000 feet*
Assault boats					Engineer crew — 2 men	9 passengers 8 passengers and 1 MG, 30-50 cal, or 60-mm mortar 7 passengers and one 81-mm mortar	100 feet per minute if allowed to drift with current; 40 feet or less per minute if paddled against current to enable return to same point.			
Footbridge	15 min	20 min	30 min	40 min	1 platoon	Personnel	Day.....75 men per minute (double time) Night.....half day rate			
Raft ferries										
10-ton equipment, single ponton					Engineer crew — 7 men if rowed 3 men if use motor	Using oars — 25 men plus crew Using outboard motor — 50 men plus crew (2 infantry heavy weapons with a supply of ammunition will displace 3 men.)	300–600	250–500	200–400	150–300
2 ponton, 1-bay	1:00	1:00	1:00	1:00	1 platoon	One 1½-ton truck One 2½-ton truck, empty One 155-mm howitzer One scout car	7	6	5	4
3 ponton, 1-bay	1:15	1:15	1:15	1:15	1 platoon	One light tank One 6-ton truck	6	5	4	3
3 ponton, 2-bays	1:15	1:15	1:15	1:15	1 platoon	Two 1½-ton trucks..... One 2½-ton truck with 105-mm howitzer.....	12 6	10 5	8 4	6 3
25-ton equipment, single ponton					Engineer crew — 9 men if rowed 3 men if use motor	Using oars — 50 men plus crew Using outboard motor — 100 plus crew	300–900	250–800	200–600	150–400

Other data on 25-ton equipment not yet available

b. Characteristics of floating equipment ① (Continued):

FLOATING BRIDGES

1	2	3	4	5	6	7	8	9	10	11
River crossing means	*Time of construction for stream width of* ②				*Standard construction party* ③	*Maximum loads*	*Capacity in units transported per hour per site (1 way)* ④			
	150 feet	*300 feet*	*500 feet*	*1,000 feet*			*150 feet*	*300 feet*	*500 feet*	*1,000 feet*
10-ton bridge	2:00	3:00	4:00	8:00	Company	All organic infantry and cavalry division loads; truck with 10-ton gross weight	500 plus vehicles per hour			
20-ton bridge (10-ton reinforced)	2:30	3:30	5:00	10:00	Company plus platoon (approximately 220 men)	All corps or army loads — trucks with 20 tons gross weight Light tank	500–750 vehicles per hour			
25-ton bridge	3:00	4:00	6:00	12:00	Heavy Ponton Battalion plus General Engineer Company	All Corps or Army loads — truck with 25 tons gross weight 30-ton tank at reduced speed and extended distances	500–750 vehicles per hour			
50-ton bridge (25-ton reinforced)	Data not yet available.									

NOTES

① Most of this data is suitable only for staff planning purposes. Conditions in the field may differ widely and allowances therefor must be made.
② Time is from the time of arrival of equipment on the site and includes unloading and construction in daylight. For night increase 75%. It does not include any preparation of approach roads, which may govern. Adequate length of accessible river line is assumed.
③ Normally constructed by general engineer troops.
④ Two-way capacity of bridges is half that of one-way. Two-way capacity of ferries is about the same as one-way. Capacity given is for daylight; for night decrease 25%.

c. Fixed bridges.—

	Portable steel bridge, H-10 capacity	*Portable steel bridge, H-20 capacity*	*H-15 Timber trestle bridge a*
Normal span	72 ft	125 ft	15 feet-25 ft per bay, bays as required.
Width of roadway	One-track	One-track	One-track
Capacity	H-10 *b*	H-20 *c*	15-tons
Where stocked	Corps and army engineer supply points		
Time to construct *d*	1-2 hours	4-8 hours	1-5 hours per bay

NOTES

a Bridges built for H-15 loads will carry any corps load or the tank, light (26,000-30,000 pounds). If time and materials are lacking, an H-10 timber trestle bridge can be built using fewer stringers and omitting one layer of flooring.

b Portable Steel bridge H-10 capacity will carry all organic infantry and cavalry division loads. It will carry any vehicle with a gross weight of not over 10 tons. It will also carry the tank, light (26,000-30,000 pounds) for spans of not over 48 feet.

c Portable Steel bridge, H-20 capacity will carry any corps load and any Armored or Motorized Division load to include the 30-ton medium tank.

d Exclusive of approaches; well trained troops.

■ 195. WATER SUPPLY.—*a. Troop requirements.*—Average requirements① for water by troops under several conditions of service, expressed in gallons per unit (man, animal, vehicle) per day:

	In battle	*March and bivouac*	*Temporary camp*	*Semi-permanent camp in rest area*	*Cantonment*
Men	½ -2②	2	5	30	50
Animals	3 -5②	10	10	30	50
Motor vehicles	¼-1	¼-1	¼-1	¼-30	¼-50

NOTES

① Modify according to circumstances, especially in hot climates. Maximum requirement may exceed the average by from 15 to 100 per cent.

② ½ gallon per man and 3 gallons per animal is the absolute minimum, for not more than three days.

b. Capacity of water-supply equipment.—

1	2	3	4	5	6
	No. of sets of water supply equipment	*Gallons per minute*		*Gallons*	
		Pump	*Purify*	*Store*	*Transport*
Engineer Battalion (Combat) (Triangular Division)	① 4	880	40	24,000	
Engineer Battalion (Armored Division)	① 4	880	40	24,000	
Engineer Squadron	① 3	660	30	18,000	
Engineer Regiment (Combat) (Square Division)	① 4	880	40	24,000	
Engineer Regiment (Combat) (Corps)	① 2	440	20	12,000	
Engineer Regiment (General Service)	① 2	440	20	12,000	
Engineer Regiment (Aviation)	① 3	660	30	18,000	
Engineer Battalion (Separate)	① 1	220	10	6,000	
Engineer Company, Topographic (Corps)	② 1	165	10	3,000	
Engineer Battalion, Topographic (Army)	② 1	165	10	3,000	
Engineer Battalion (water supply):					
Headquarters and Service Company	③ 1	④1,590	⑥ 420	⑧ 55,560	
Company		⑤ 100	⑦ 70	⑨ 22,500	⑨ 22,500
Battalion		1,890	630	123,060	67,500

NOTES

① Water supply equipment, engineer. Each set includes: one portable purification unit complete with capacity of 55 g.p.m. as a simple pump, and 10 g.p.m. when purifying (filtering); three 55 g.p.m. power pumps; and two 3,000-gallon canvas storage tanks.
② Water supply equipment, topographic battalion. Each set includes: one portable purification unit (capacity as above); two 55 g.p.m. power pumps; and one 3,000-gallon canvas storage tank. Used normally in connection with map reproduction operations and available for general use in extreme emergency only.
③ Water supply equipment, water supply battalion. Each set includes: eighteen 55 g.p.m. power pumps; eighteen 3,000-gallon canvas storage tanks; and six 260-gallon canvas storage tanks.
④ Water supply equipment listed in note ③ plus 6 purification trucks, each of capacity of 100 g.p.m. as simple pump.
⑤ One purification truck per company, used as a simple pump.
⑥ Six purification trucks listed in note ④ each of capacity of 70 g.p.m. when purifying (filtering).
⑦ One purification truck per company, used for purifying.
⑧ Canvas storage tanks of water supply equipment. (See note ③.)
⑨ Storage and transportation capacity of the thirty 750-gallon tank trucks of each company.

c. Equipment issued to troop units.—Organizations are supplied with ten-gallon cans for carrying water. A 1½-ton truck will carry 30 cans (filled).

■ 196 DEMOLITIONS.—*a. Pounds of explosives carried by units:*

Unit	*In lettered units*	*In headquarters units*	*Total pounds*
Armored Force:			
Reconnaissance Battalion, Armored	240		240
Infantry Regiment, Armored	120		120
Armored Regiment, Light	240		240
Cavalry:			
Hq Troop (Cav Div., Horse)	------	60	60
Antitank Troop (Cav. Div., Horse)	340	------	340
Reconnaissance Squadron (Cav. Div., Horse)	980	60	1040
Brigade Hq Troop (Cav. Div., Horse)	------	120	120
Brigade Weapons Troop (Cav. Div., Horse)	360	------	360
Regiment (Cav. Div., Horse)	------	140	140
Reconnaissance Troop (Triangular Div.)	320	------	320
Regiment (Horse-Mechanized)	960	1800	2760
Engineers:			
Battalion, Combat (Triangular Div)	2375	1000	3375
Squadron (Cavalry Div)	1650	1000	2650
Battalion, Armored (Armored Div)	1700	2075	3775
Battalion, Separate	1600	------	1600
Regiment, Combat (Square Div)	3300	2000	5300
Regiment, Combat (Corps)	4950	2000	6950
Regiment, General Service	3600	2000	5600
Regiment, Aviation	7425	3000	10425

b. Zones of demolitions.—

Approximate amount of explosives to create an effective antimechanized barrier in average rolling terrain with numerous streams and routes of communication_____1 ton per square mile.

In thickly settled areas _____½ ton or more per square mile.

■ 197. FIELD FORTIFICATIONS.—*a.* General arrangement of defense areas to include the battalion.

(1) Platoon defense area providing for all-around defense.

(2) Company defense area composed of platoon positions, located for mutual protection by flanking fires.

(3) Battalion defense area composed of company positions distributed in width and depth, with rearward positions covering the intervals between forward positions, and heavy weapons sited to furnish flanking fires in front of and within the position, and in front of adjacent battalion positions.

b. Priority of work.—Under average conditions, the defensive measures taken to organize the ground will follow the general group sequence shown below. The priority of tasks within groups is not indicated, since several items of work normally proceed concurrently. The priorities are of value as a *general guide,* and *should be modified to meet existing conditions.*

(1) Deployed defense *(when attack is imminent or already launched):*

Road blocks.

Antitank obstacles and mine fields.

Digging foxholes (pits for individuals).
Digging shallow emplacements for automatic weapons.
Removing small obstructions to improve the field of fire of individual weapons.
Establishing temporary command and observation posts.
Camouflage of installations and suppression of signs of occupation.

(2) *Hasty fortifications (to be completed in approximately six hours):*
Machine gun, mortar, and antitank gun emplacements.
Improvement of fields of fire.
Squad trenches, simple standing type, or slit trenches, in platoon positions on main line of resistance (developed by connecting individual foxholes)
Continuous obstacle in front of main line of resistance, based if possible on a natural barrier, to include antitank mine fields, tank obstacles, and road blocks.
Shallow connecting trenches between squad or slit trenches in platoon positions.
Improvement of temporary command posts, observation posts, and aid stations.
Provisions for camouflage, in all tasks, utilizing natural cover to the maximum.

(3) *Improvement of hasty fortification:*

(a) *1st Priority.—*
Camouflage to conceal the nature, extent, and location of the principal installations.
Remaining squad trenches, simple standing type or slit trenches, on main line of resistance and in company and battalion reserve areas.
Shallow connecting trenches.
Obstacles protecting platoon positions.
Strengthening and extending natural and artificial antimechanized obstacles.
Permanent command posts, observation posts, and aid stations.

(b) *2d Priority.—*
Squad trenches, simple standing type or slit trenches, in platoon and company positions on regimental reserve line. Completion of fire trenches and obstacles in company areas on main line of resistance.
Strengthening and extending natural and artificial antimechanized obstacles.
Communication trenches from regimental reserve line to main line of resistance.

(c) *3d Priority.—*
Completion of trenches and obstacles in the position.

Strengthening and extending natural and artificial antimechanized obstacles.

Improvement and camouflage of covered routes of communication leading from rear areas to the regimental reserve line.

Construction of shelters.

(d) *4th Priority.—*

Continued improvement of all defensive works, and their camouflage.

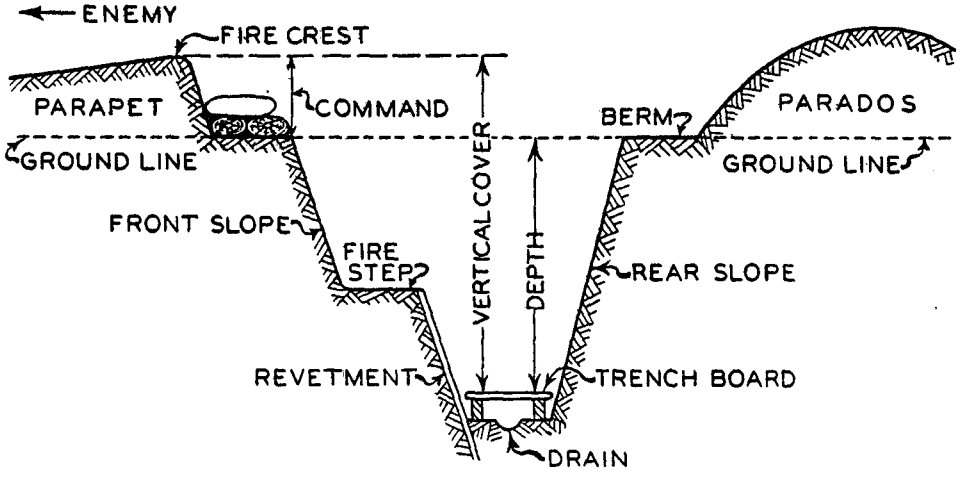
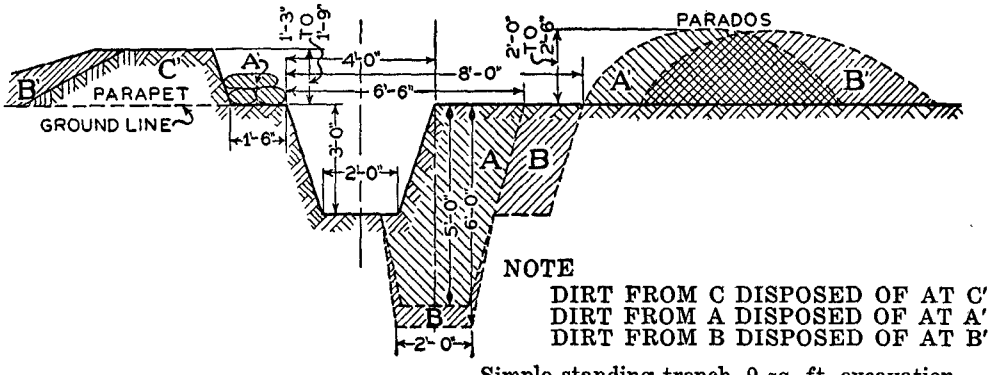


FIGURE 39—Trench nomenclature.



Simple standing trench, 9 sq. ft. excavation
Type A, fire trench, 22 sq. ft. excavation
Type B, fire trench, 28.5 sq. ft. excavation
Type A, communications trench. (No fire step, no parapet, parados on both sides.) 17.5 sq. ft. excavation.

FIGURE 40—Simple standing trench (Showing development into standard fire trench, types A and B).

c. Works (figures given are for daylight work; for work at night, increase labor by 50%).—(1) *Trenches.*—(a) Work capacity of a platoon of three 12-man squads for eight hours, medium soil, with pioneer tools:

(i) Simple standing trench (Figure 40), 120 linear yards.

(ii) Standard fire trench, type A (Figure 40), 48 linear yards.

(iii) Standard communication trench, type A, 60 linear yards.

(b) In estimating for slit or other type trenches than the above, allow 15 cu. ft. per man hour, average soil, using pioneer tools.

(2) *Obstacles.*—(a) *Against personnel.*—Single belt of double apron fence, 1000 yards long, requires approximately five (5) tons of materials and 380 man-hours of labor. Work capacity of 3-squad platoon in eight hours is approximately 750 linear yards of double apron fence, or 450 yards of high wire entanglement.

(b) *Against mechanized vehicles.*—(i) Antitank mine field, 1000 yards long, mines laid directly from truck in 3-6 rows, density of 1½ mines per yard of front, requires:

Number	1,500 mines	
Weight	7½ tons	
Man-hours (average)	Daylight	Night
Mines laid on surface	20	30
Mines laid and buried, soft soil	80	120
Mines laid and buried, medium soil	100	150
Mines laid and buried, hard soil	200	300

(ii) If trucks cannot reach and travel along the axis of the mine field, man-hours for carrying mines should be added at the following rates: in daylight, one man can carry 50 mines a distance of 100 yards in one hour; at night one man can carry 25 mines a distance of 100 yards in one hour.

(3) *Clearing.*—Four man-hours of labor for clearing 100 square yards of brush and a few trees up to 12-inches in diameter; if brush only, 2 man-hours.

(4) *Machine-gun emplacement.*—Simple shell-hole type requires nine (9) man-hours of labor and 200 pounds of materials.

d. Intrenching equipment.—Sets of intrenching equipment of pioneer tools are carried in 1-ton trailers by organic combat engineers as follows:

Unit	*No. of Sets*	*No. of Trailers*
In infantry divisions (triangular)	3 Inf	6
In infantry divisions (square)	6 Inf	12
In each combat regiment (corps)	2 Inf	4
In cavalry divisions	4 Cav	6

Weight of cavalry set: 1,800 pounds; volume: 105 cubic feet.
Weight of infantry set: 3,048 pounds; volume: 180 cubic feet.

Principal items of intrenching equipment set:

Item	*Infantry*	*Cavalry*
Axes	26	13
Bars, crow	4	2
Mattocks, pick	125	65
Sandbags	500	500
Saws, crosscut, hand	26	13
Shovels, D-handled	250	130
Tape, tracing, 500-ft rolls	6	6

■ 198. ROAD BLOCKS AND ANTIMECHANIZED MEASURES.—*a. Classification of obstacles.*

	Classification	*General Purposes*	*Remarks*
Location:	Distant-25 miles or more.	Block lines of communication at critical points.	By air bombardment; or demolitions placed by parachute or ground troops.
	Outlying-beyond normal antitank gun range (700 yards).	Impede reconnaissance, delay advance.	Placed by engineers or other arms.
	Close-in-within normal antitank gun range.	Immediate protection of front and flanks of the basic unit and front, flanks and rear of subordinate units; canalize the movement of hostile mechanized units; gain time for movement of antitank guns and mechanized forces to meet the threat; limit the freedom of movement of hostile mechanized units if portion of main battle position ruptured.	Placed by troops to be protected by the obstacle, assisted by engineers.
	Rear area-on line of communications.	Protect supply routes and installations. Limit freedom of movement of hostile mechanized units which have penetrated the main battle position.	By engineers or reserve units.
Time required for placement	Quick	Block avenues of approach on short notice (matter of minutes).	Examples: wire rolls, cables, antitank mines, wrecked vehicles, contaminated areas (when authorized).
	Semi-quick	Block avenues of approach on fairly short notice (matter of several hours).	Examples: mine fields, demolitions, abatis, barricades, road craters.
	Deliberate	Block avenues of approach with relatively long time available.	Examples: Antitank ditches, post obstacles, extensive demolitions, inundations, mine fields.

b. Description and use.

1	2	3	4	5	6
	Description			*Use*	
Obstacle	*Class*	*Construction*	*Transportation*	*Method of installation*	*Rate of installation*
Wire rolls	Quick	Issue item. Wire wound in spiral. Length extended — 40 feet. Effective against wheeled vehicles by entanglement	75 rolls per 1½-ton truck	Group of 4 rolls placed in contact, with first roll suspended by a wire, across road at places where encountered unexpectedly by vehicles; 30 to 50 yards between groups. Insert logs inside one or two rolls on ground, and place antitank mines in front of and within each group	Two men place 1 roll in 1 minute
Cables	Quck	Heavy wire		Several slack strands placed diagonally across road, so as to throw vehicle into ditch	Few minutes only, using trees, buildings, etc., as anchorages
Improvised road blocks	Quick	Local vehicles, telephone poles, felled trees, furniture, rocks, demolished buildings, etc.		Heaped together. Strew with contact and antitank mines (and persistent chemical, when authorized)	
Abatis	Semi-quick	Interlocking bands of felled trees or poles		Trees of 12-inch diameter or larger; tips toward enemy. Strew with contact mines (and persistent chemical, when authorized)	Two men per tree in 15–45 minutes. Power equipment will accelerate rate of installation
Demolitions	Semi-quick to deliberate	Destroyed culverts, bridges, buildings, etc.		Explosives, mechanical means, fire	See FM 5–25, and FM 5–30.
Post obstacles	Semi-quick to deliberate	Logs, 9–10 feet long, 10–12 inches diameter; railroad rails; concrete blocks, etc., set vertically		Ends protruding 2–3 feet. Multiple rows, staggered	100 men (hand tools) — 20 per hour. 8 men (power auger) — 15 per hour
Road craters	Semi-quick to deliberate	Blown by explosives. Must block entire roadway		Minimum requirements: craters 20 feet wide, 8 feet deep, with side slopes made as steep as possible. Water makes passage more difficult	1 squad (hand tools) per crater in 1–5 hours. Power augers desirable for drilling holes for explosive charges

b. Description and use.—(Continued) :

1	2	3	4	5	6
	Description			*Use*	
Obstacle	*Class*	*Construction*	*Transportation*	*Method of installation*	*Rate of installation*
Mine fields	Semi-quick to deliberate	3–6 longitudinal rows, 1–3 yards between rows. Density of whole: 1½ mines per yard	300 mines per 1½-ton truck	Placed along fence lines, in draws, brush, etc. for concealment. Reinforce natural obstacle	Maximum overall laying rate directly from trucks (carrying and burying in medium soil) about 15 mines per man-hour (Also see paragraph 197 *c* (2) (b).]
Timber obstacles	Deliberate	Log or timber crib; saw-horse ramp; log wall, etc.		Space between walls filled with earth, stones, etc. Fasten timbers with drift-pins, cables, etc.	See FM 5–30.
Inundations	Deliberate	Necessary depth at least 3 feet for wheeled vehicles; at least 4 feet for light and medium tanks		Construction of dams; cutting existing dams, levees or dikes; diversion of streams	
Antitank ditch	Deliberate	4–6 feet deep. 8 feet wide for light tanks; 12 feet wide for medium tanks. (For profile, see figures 41, 42 and 43.)		Triangular or trapezoidal type ditch, concealed by trees, brush, or ground folds	100 feet of triangular ditch: 32 men (hand tools) — 5½ hours in average soil
Contamination by persistent chemical (only when specifically authorized by appropriate commander)	Quick to semi-quick	Contaminate road blocks, demolitions and obstacales. Contaminate roads and areas as part of a barrier mission	200 chemical mines per 1½-ton truck	1 or more mines per obstacle. 200 mines per mile of road. Airplane spray: average area covered by one airplane — 800 yards long, 300 yards wide	Road contamination: 8 men — 1 to 2 hours per mile (day); 1½ to 3 hours per mile (night)

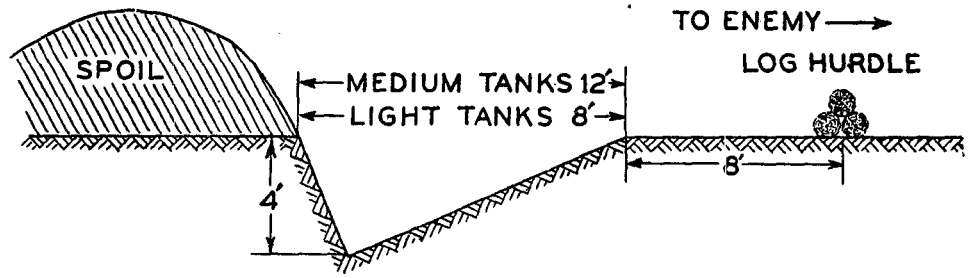


FIGURE 41—Triangular antitank ditch and log hurdle.

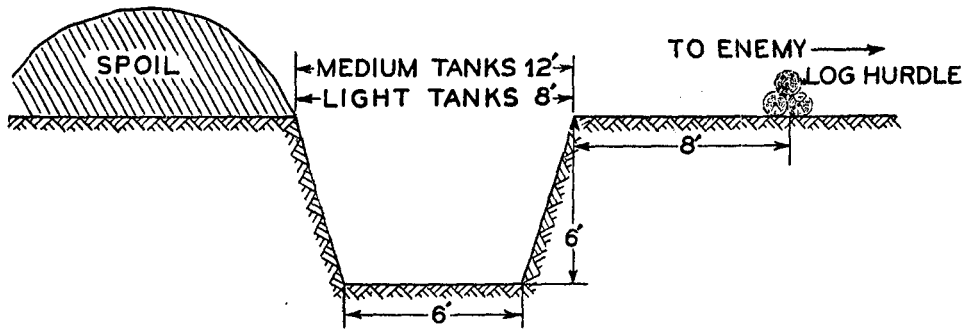


FIGURE 42—Trapezoidal antitank ditch and log hurdle.

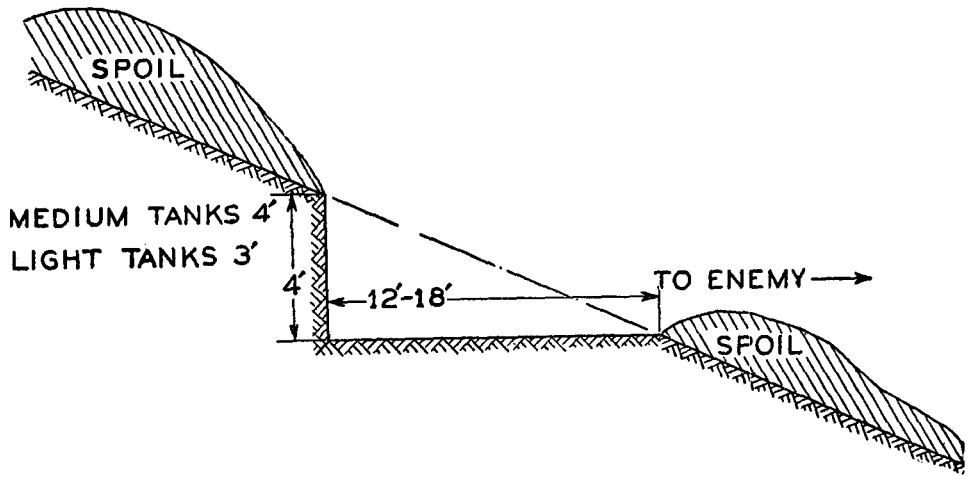


FIGURE 43—Side hill antitank ditch.

Chapter 8
SIGNAL COMMUNICATION DATA

		Paragraphs
SECTION I.	General	199-202
II.	Message center	203-208
III.	Airplane messengers and pigeons	209-210
IV.	Radio communication	211-224
V.	Visual communication	225-229
VI.	Wire communication	230-235
VII.	Tables of signal equipment	236-237

SECTION I
GENERAL

■ 199. CLASSIFICATION OF MESSAGES.—*a. Secrecy.*—In actual or simulated tactical operations, all messages not classified as *Secret* will be regarded as *Confidential* and need not be so marked.

b. Urgency.—Messages are classified as to urgency by the writer.

(1) *Urgent* (D).—Commanders must restrict the use of the urgent classification to the most urgent messages; excessive use will defeat its purpose. Urgent classification, is reserved for messages requiring the greatest speed in handling.

(2) *Priority* (P).—Priority classification is used for messages of less urgency than those entitled to urgent classification but which warrant precedence over routine messages in order to reach the addressee in time for effective action.

(3) *Routine* (R).—Used for messages which require no special precedence. They are transmitted in the order in which they are received.

(4) *Deferred* (D).—The deferred classification is used for those messages whose delivery to the addressee may be delayed until the beginning of office hours of the morning following the day on which they are filed. Similar to commercial "night letter."

■ 200. USE OF CRYPTOGRAMS.—All messages to be transmitted by radio or other means, when danger of hostile interception exists, are cryptographed except in the following cases:

a. When the tactical situation is such that time cannot be spared for cryptographing or when the information to be transmitted, if intercepted by the enemy, cannot be acted upon in time to influence the situation in question, a commanding officer or his authorized representative may order the transmission of a message in plain language by a radio station serving

his headquarters or command. Such written messages will be marked: "Send in clear" over the signature of the commander or his authorized representative.

b. Commanders of units smaller than a division may authorize the normal transmission of messages in clear text which are to be acted upon immediately in rapidly moving situations.

■ 201. RULES FOR USE OF CODES AND CIPHERS.—The following general rules govern the use of codes and ciphers:

a. The instructions contained in each code book or furnished with each cipher system must be carefully studied and thoroughly understood before the code or cipher is used.

b. Care should be exercised to prevent the loss or compromise of a code book or cipher key. If a code book is lost or possibly compromised, the fact should be reported promptly to higher headquarters.

c. Except as indicated in rule *i* following, no code or cipher which has not been approved by higher authority should be employed within any unit.

d. Never repeat a message in a code or cipher system other than in the system in which it was originally sent.

e. Never cryptograph a message which has been sent previously in clear and never send a message in clear which has been sent previously as a cryptogram.

f. Never mix cryptograph and clear text in the same message except as indicated in rule *i* following. This caution applies also to abbreviations and signs of punctuation which are equivalent to clear text.

g. A cryptographed message should never be filed with the clear text.

h. Capital letters should be employed throughout in writing cryptograms in order to avoid errors. In the case of code, the grouping of the letters of the code text corresponds to the length of the code groups as given in the book; in the case of cipher, the text is written and transmitted in groups of five letters. For a complete discussion, see AR 380-5, and FM 24-5.

i. Prearranged messages and special message codes.—In traffic by radiotelephone, it is often desirable to use some form of prearranged message or groups of letters to indicate meanings which will not readily be apparent to the enemy. These messages or groups will be changed frequently and may be prepared by local commanders as appropriate. These codes being of a temporary nature, the prohibition as to mixing of clear and cryptographed text does not apply. A map coordinate code is particularly appropriate for use in conjunction with such message codes. For example, "Advance guard motors move forward to next position" might be transmitted as "CJ" or a prearranged phrase might be used instead of a letter group. For example, "Objective taken" might be transmitted as "The fox is in his hole."

■ 202. REFERENCES:

FM 24-5, Signal Communication: methods and technique of signal communication, with special emphasis on that of divisions and smaller units.

FM 11-5, Missions, Functions, and Signal Communication in General.

FM 11-10, Organizations and Operations in the Infantry Division.

FM 11-15, Organizations and Operations in the Cavalry Division and Cavalry Corps.

FM 11-20, Organizations and Operations in the Corps, Army, Theater of Operations, and GHQ.

FM 24-10, Joint Army and Navy Procedure (JANP) (Applicable to both services whether or not they operate jointly).

FM 30-25, Counterintelligence.

SECTION II

MESSAGE CENTER

■ 203. PURPOSE.—The sole purpose of the message center is to speed the transmission of messages. The message center chief selects the means of transmission of messages which are entrusted to the message center; the encryptographing and decryptographing of messages is also performed by the message center personnel.

■ 204. LOCATION.—Message centers are located at all command posts and at the rear echelon of the headquarters of larger units. *Advance message centers* may be established at advance command posts or at any other location where they are needed to speed the transmission of messages. They are frequently employed as collecting points for messages from several reconnaissance detachments or to facilitate signal communication with advanced units or units operating on a flank. When the commander or an echelon of the headquarters moves in column on a march, a message center operating in a vehicle accompanies the command group.

■ 205. LIMITATIONS.—The message center is not organized or equipped to perform stenographic or clerical work pertaining to the headquarters which it serves. It is not equipped to prepare copies of outgoing messages for multiple distribution, nor to prepare additional copies of incoming messages for multiple distribution. When transmission of mimeographed or printed material to a number of addressees is desired, all copies required for each addressee are delivered to the message center, wrapped, packaged, or otherwise secured, and plainly marked with its destination. Each such package, envelope, or container is handled by the message center as a single message and will be delivered by messenger.

The message center is not responsible for those messages which are:

a. Transmitted directly by the writer to the addressee by telephone or personal agency.

b. Handled by the military or civil postal service.

c. Local messages between staff sections or individuals at the same location.

■ 206. NUMBER OF COPIES OF MESSAGES.—Except with secret messages, the writer should provide the message center with an additional copy of each message for use by the message center should verification of delivery become necessary.

■ 207. SECRET MESSAGES.—In tactical operations when time permits, secret messages will normally be carried by a staff officer or special messenger operating as a direct agent. They may be transmitted by electrical or other means available to the message center when the time of transmission can be reduced thereby. The writer of an outgoing secret message, which is to be cryptographed, submits to the message center only a single copy of the message. When the message is cryptographed the original of the plain text message is marked, "Sent in secret code" and is returned to the writer.

■ 208. TIME INVOLVED IN MESSAGE TRANSMISSION.—*a. Message Center.*—(1) *Recording.*—Maximum time permitted for recording operations should not exceed 20 seconds. The total message center time, unless cryptographing is required, should not exceed 2 minutes.

(2) *Cryptographing and decryptographing.*—The rates are based upon one man working alone.

Cipher device or code	*Code groups per minute*
Cipher device M-94	1
Division field code	3
Air-ground liaison code	3
Fire control code	3

b. Operator.—The message rates are based upon calling, transmitting, and acknowledging receipt of a message of ten code or cipher groups or ten words of clear text with address and signature.

Means	*Rate*
Telegraph (Single Line Manual)	28-36 messages per hour
Telegraph printer	60-100 messages per hour
Radiotelegraph	15-25 messages per hour
Radiotelephone	10-15 messages per hour
Lamp	10 messages per hour
Semaphore flag	15 messages per hour
Wig-wag flag	10 messages per hour
Panel	30 code groups per hour

c. Messenger:

Kind	*Miles per hour*
Dismounted (runner)	3-5
Mounted	6-8
Bicycle	6-10
Motor and motorcycle	25-40

SECTION III

AIRPLANE MESSENGERS AND PIGEONS

■ 209. AIRPLANE MESSENGERS.—Messages transmitted by airplane may be delivered directly by the pilot, observer, or other messenger on the ground or from the airplane in flight by radio, pyrotechnics, or other visual means, or by dropping.

Messages are picked up by airplane observers from units down to and including the battalion when requirements for a pick-up field can be met. By prearrangement, messages may be picked up from any unit or detachment. This means of message delivery is available to those ground troops equipped with panels.

■ 210. PIGEONS.—Homing pigeons may be used as one-way message carriers between the point of release and the point where they have become accustomed to find their home loft.

Normally pigeons fly during clear daylight only. By special breeding and long training, pigeons can be taught to fly at night.

Normal rate of flight: ½ to ¾ miles per minute.

Normal range from home loft: 60 miles.

Time required to train birds to return to a loft after each change of location: 5 days to 2 weeks.

Maximum time birds should remain away from home loft before release: 2 days and 3 nights.

SECTION IV

RADIO COMMUNICATION

■ 211. GENERAL.—Radiotelegraphy is the normal means of radio communication.

Radiotelephony is limited to special uses between airplanes, between airplanes and ground, between vehicles of mechanized units, between ground stations and vehicles, for artillery fire control and liaison, and for control of forward combat units.

Radio communication within a tactical unit on the march may be established at prearranged times and places or between vehicular stations accompanying the units and operating while actually on the march.

Within the range of the sets radio communication is the most effective means of signal communication between rapidly moving units when the maintenance of wire and messenger communication is impracticable.

The range and quality of radio communication are seriously affected by the weather. Likewise they are affected to a varying degree, depending upon the frequency used, by the nature of the intervening terrain or obstacles, such as high hills, wooded areas, large structures of reinforced concrete and steel, pole lines carrying conductors, and by the time of day (or night).

■ 212. ENEMY INTERFERENCE.—Hostile radio stations can interfere deliberately with our radio communication by blocking a single frequency or band of frequencies and by deception, that is, causing our stations to accept false or erroneous information and messages.

■ 213. ENEMY INTERCEPTION AND POSITION FINDINGS.—Radio communication is subject to interception by hostile stations. The approximate number and locations of our radio stations can be determined by hostile position-finder stations. From this information the enemy can estimate the disposition and approximate strength of our forces. These disadvantages of radio communication can be minimized by:

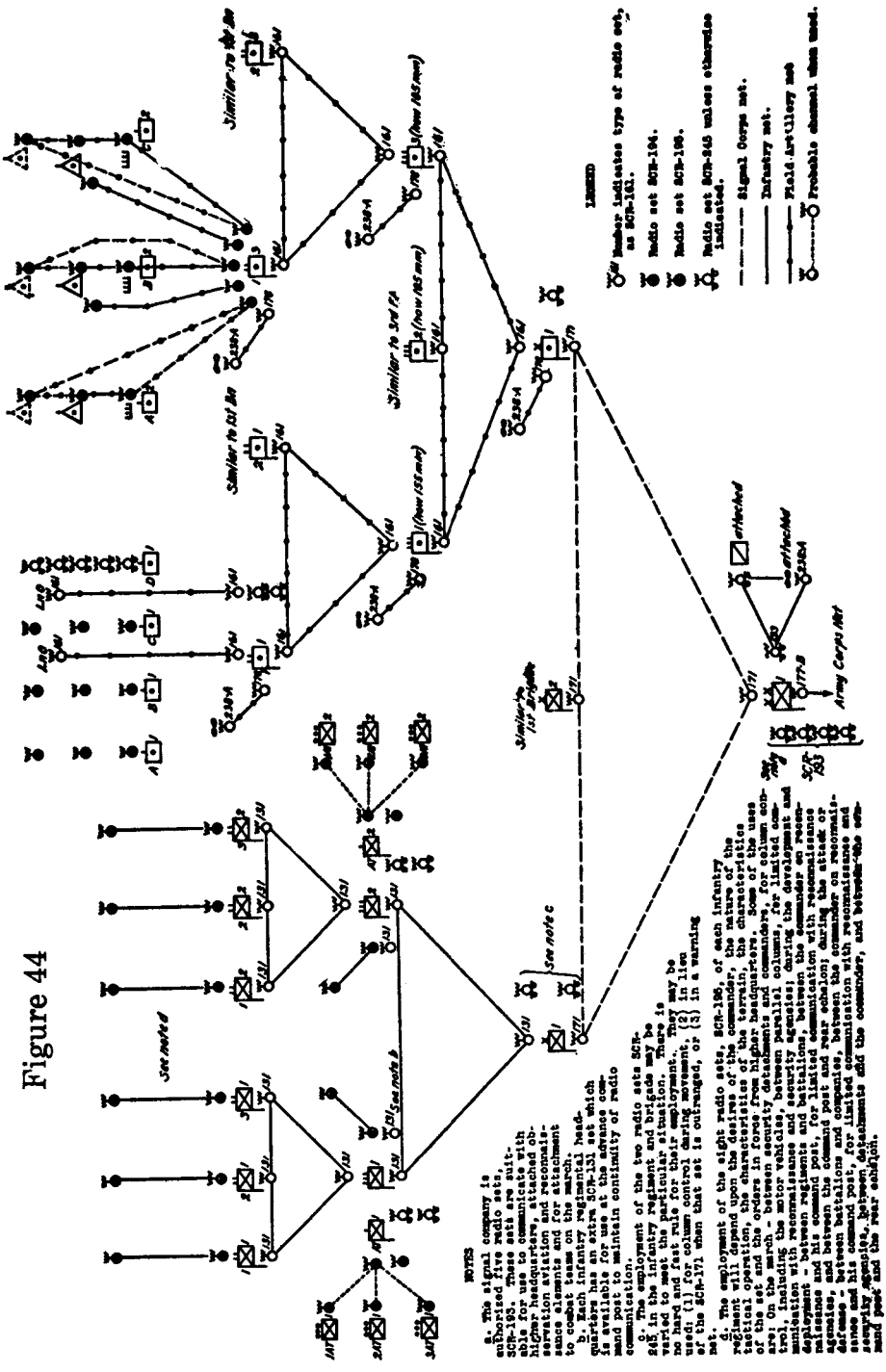
a. Curtailing the use of radio when the information transmitted would be of most value to the enemy.

b. Establishing dummy stations and sending false messages to cause errors in his deductions.

c. Rigid radio discipline and the habitual use of authorized codes and ciphers for all radio messages.

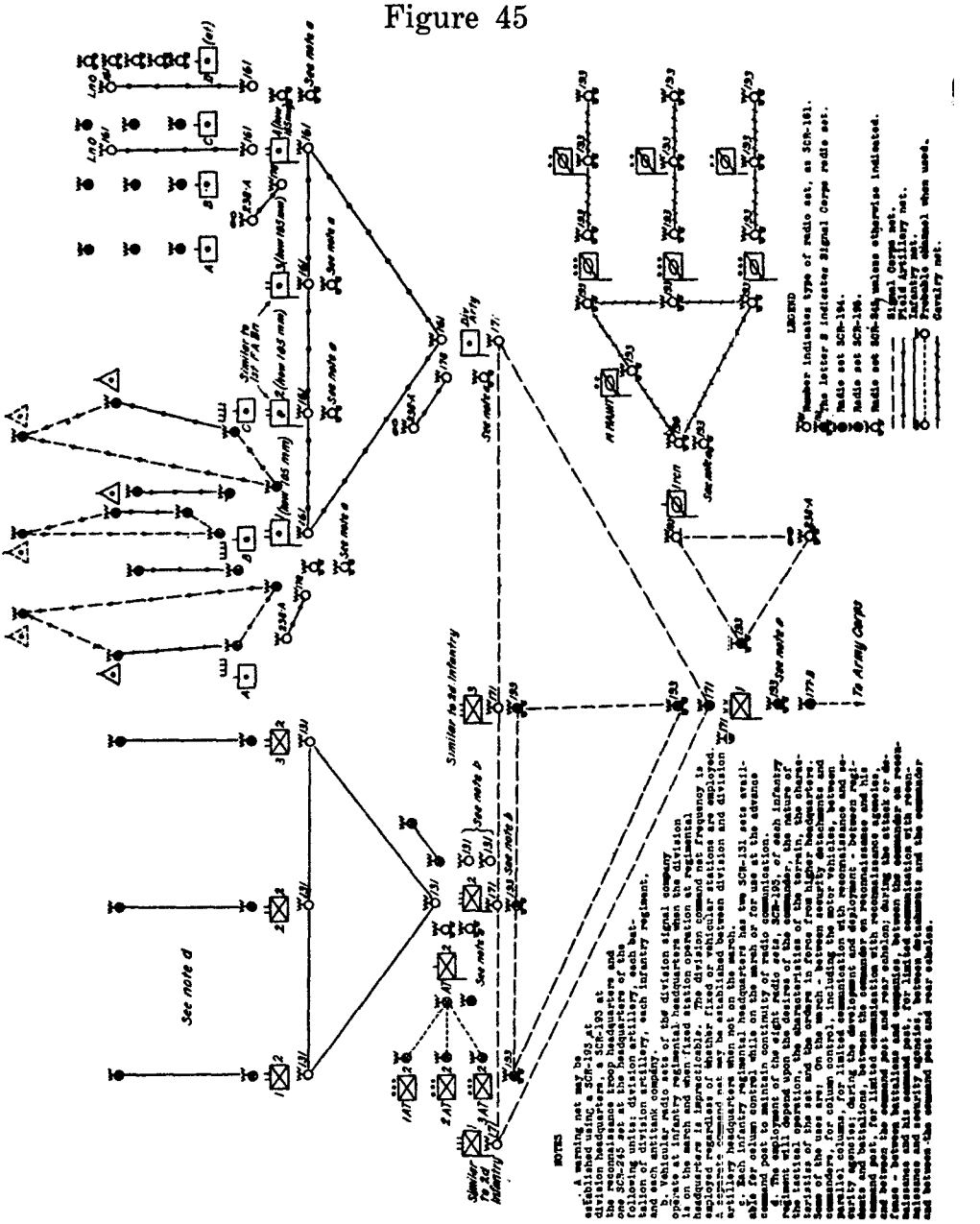
d. The habitual use of simple prearranged codes during tactical operations. Prearranged messages or phrases containing information which it is anticipated reconnaissance and security detachments will secure, or directing the executing of prearranged plans, can be transmitted by a single code word or group.

■ 214. TYPE RADIO NETS, SQUARE DIVISION.



■ 215. TYPE RADIO NETS, TRIANGULAR DIVISION.

Figure 45



■ 216. TYPE RADIO NETS, CAVALRY DIVISION.—(Upper) Antiaircraft-Antitank Warning Net. (Lower) Cavalry Division Command Net.

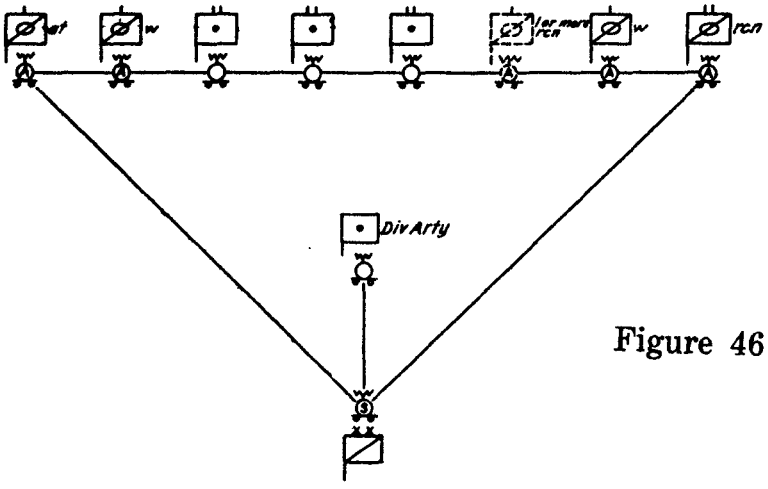
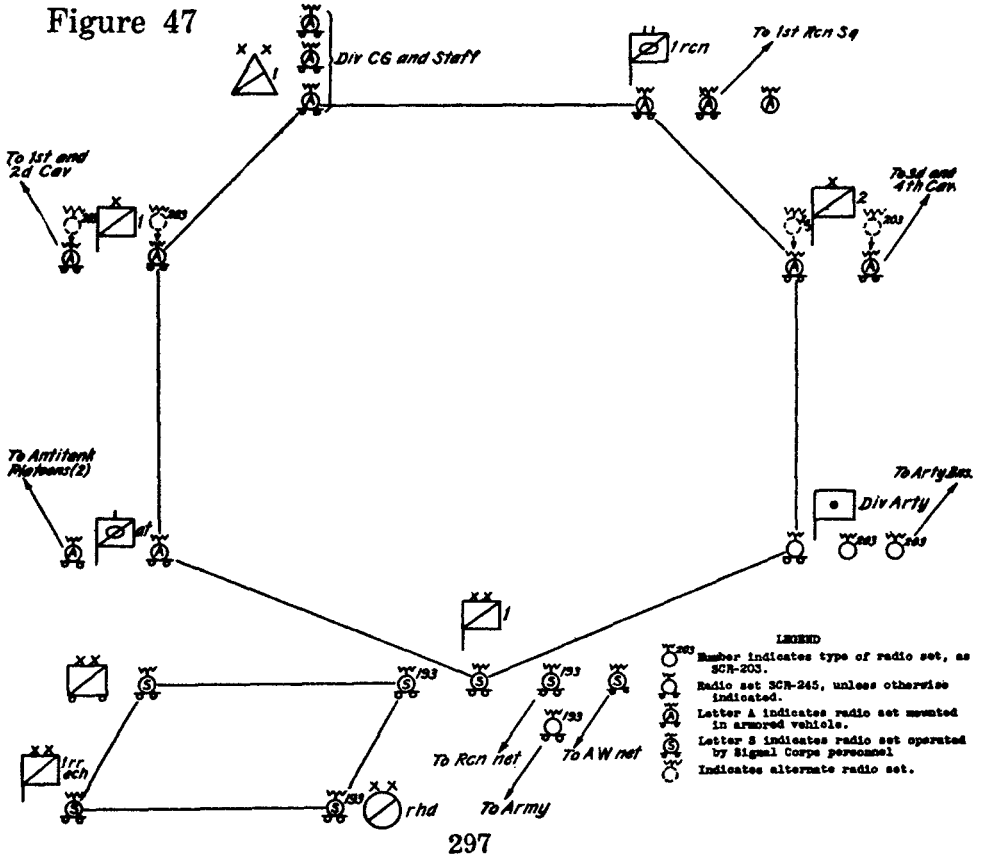


Figure 46

Figure 47



■ 217. TYPE RADIO NETS, CAVALRY DIVISION (Cavalry Brigade).

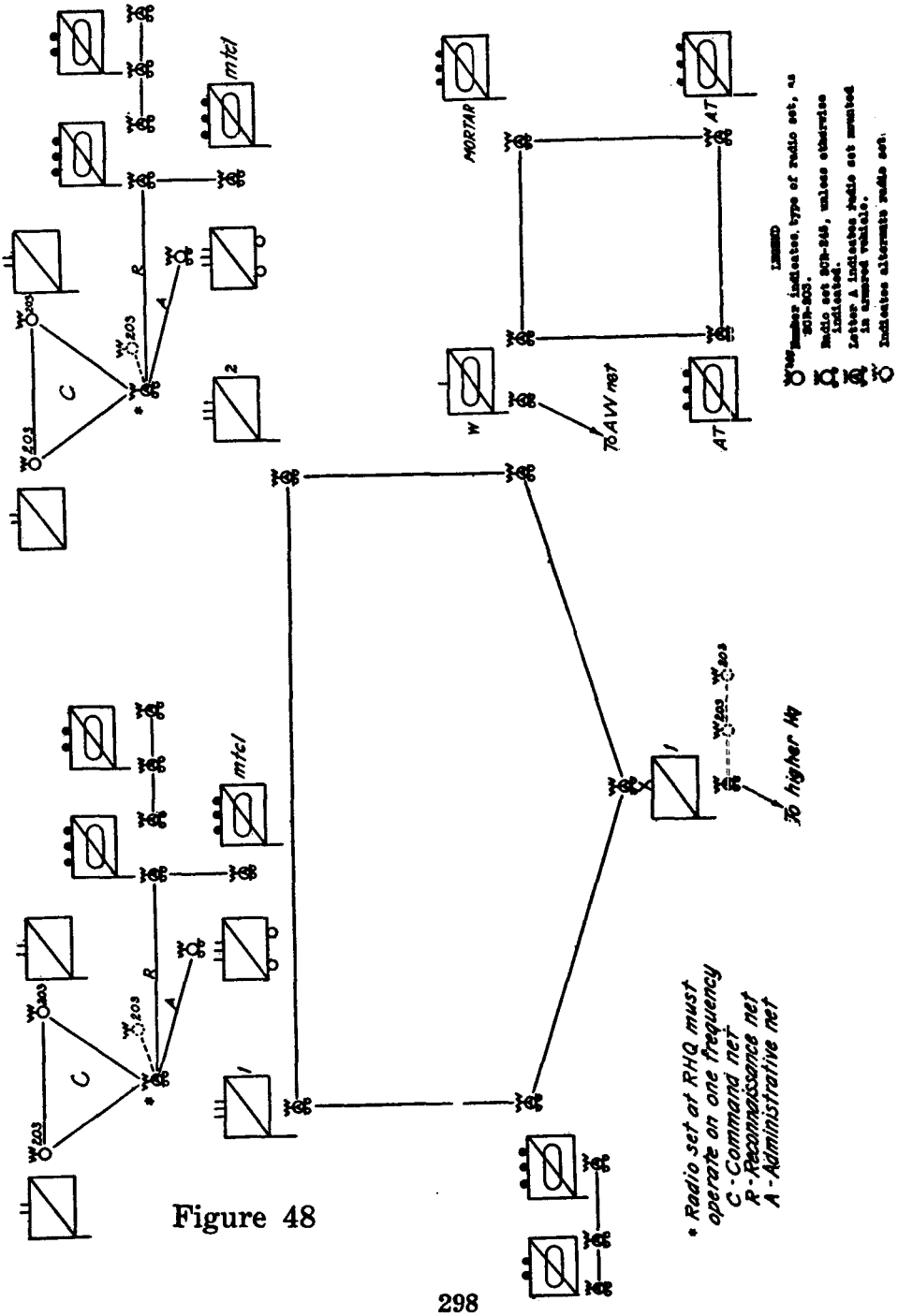
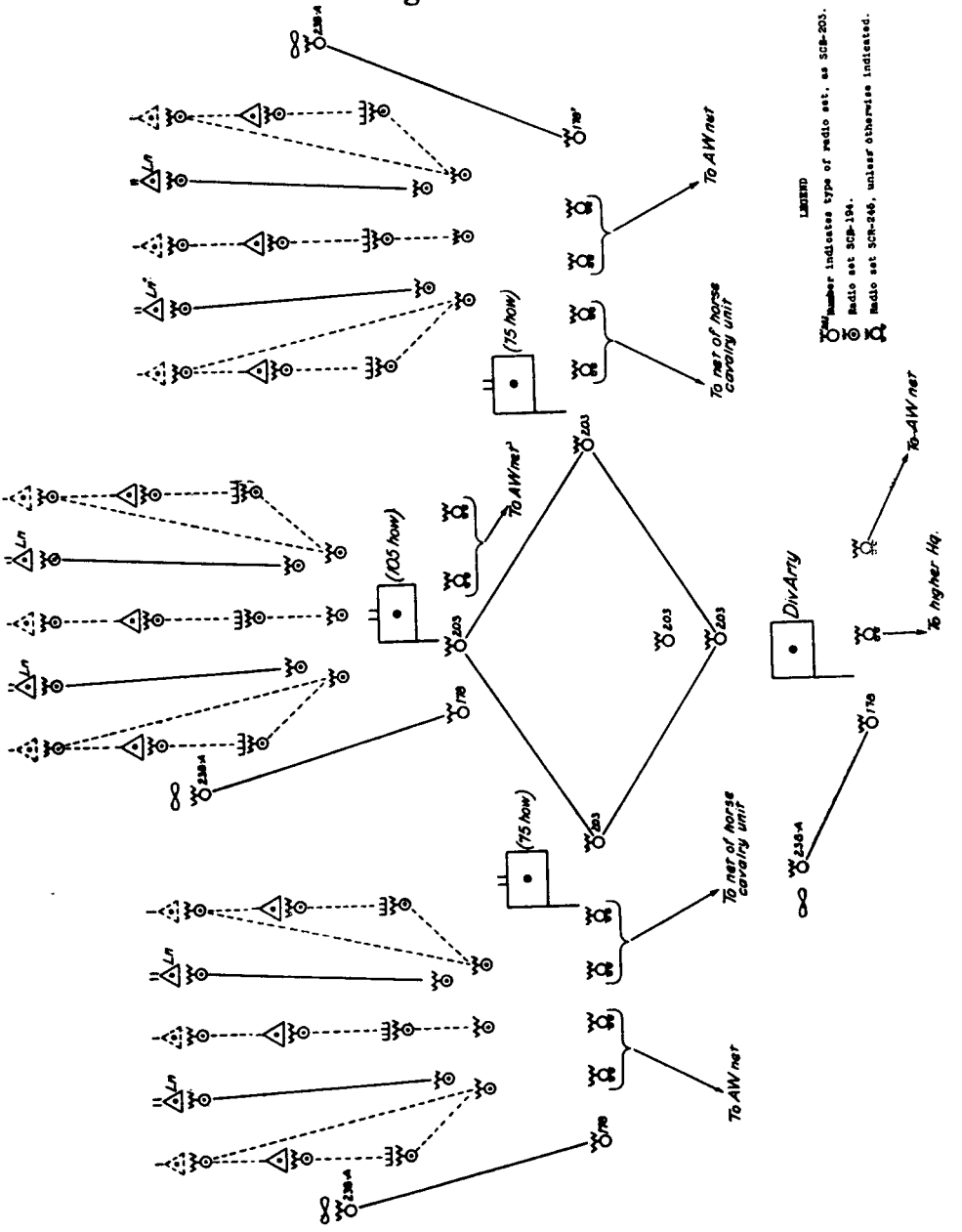


Figure 48

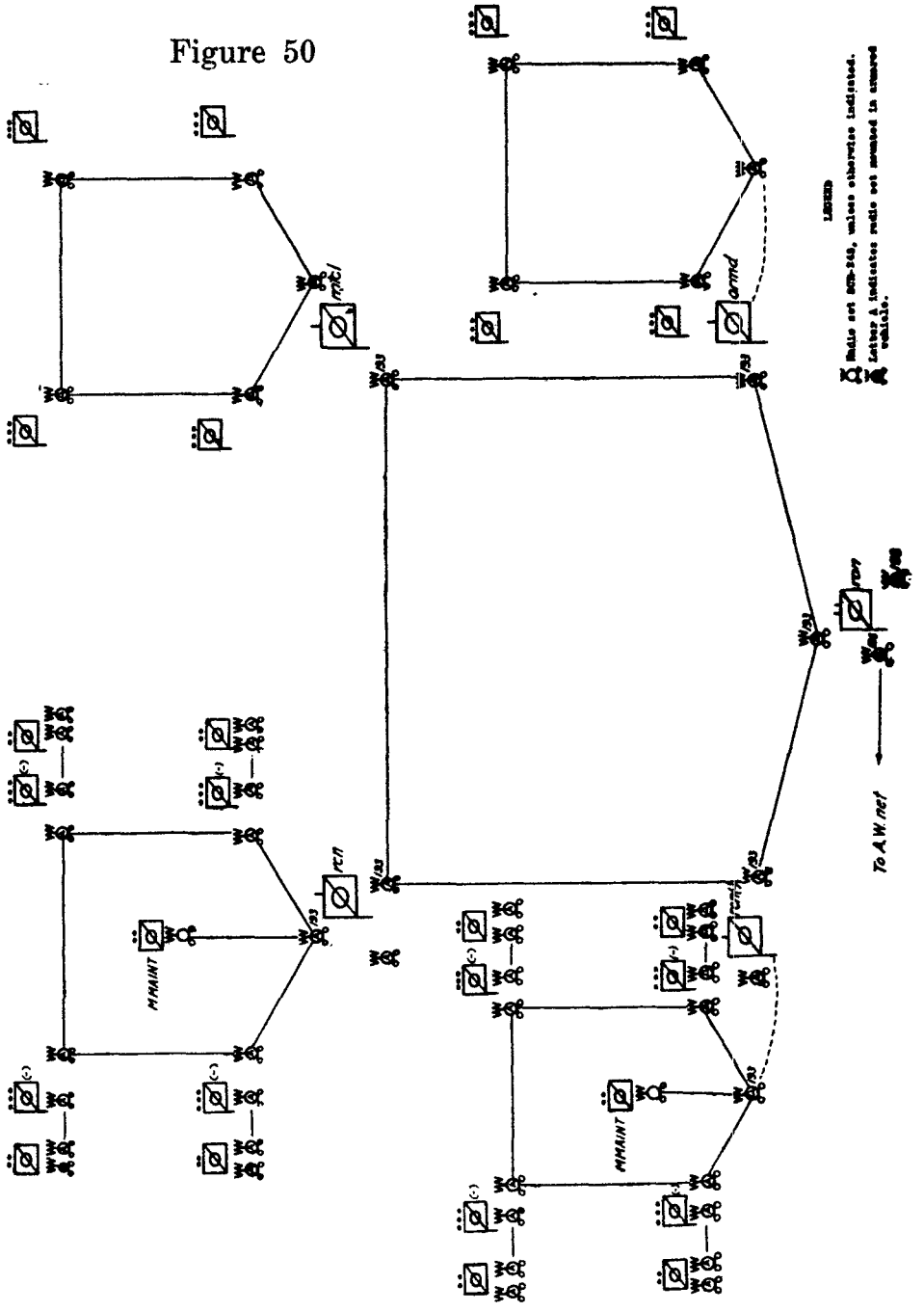
218. TYPE RADIO NETS, CAVALRY DIVISION (Division Artillery).

Figure 49



■ 219. TYPE RADIO NETS, CAVALRY DIVISION (Reconnaissance Squadron, Mechanized).

Figure 50



220. TYPE RADIO NETS, ARMORED DIVISION.

1. Division Command Net:
a. Div Comdr and/or Div AC of S, G-3
b. Brig Ex, Armd Brig
c. Regtl Ex, Inf Regt, Armd
d. Ex O, FA Bn
e. Ex O, Div Rcn Bn
f. Asst to Div AC of S, G-4
g. Div Sig O
h. Div Msg Cen O

2. Division Reconnaissance Net:
a. Div AC of S, G-2
b. Int O, Rcn Bn
c. CO Rcn Co No 1
d. CO Rcn Co No 2
e. Engr Rcn O
f. Arty Rcn O
g. Arty Ln O

3. Division Air-Ground Net No. 1:
a. Div A O
b. A Ln O No 1
c. A Ln O No 2
d. Obsn AP of C Avn
e. C Avn
f. C Avn Adrm

4. Division Air-Ground Net No. 2:
a. Div A O
b. Obsn Ap in flight
c. Adv Landing Fld
d. Div Obsn Adrm

5. Division Administrative Net:
a. Div AC of S, G-4
b. CO Div QM Bn
c. CO Div Ord Co
d. CO Div Med Bn
e. CO Div Hq Co
f. CO Div Sig Co

6. Division Relay Net:
a. Div CP
b. Div Rr Ech
c. Div Tns

7. Command Net, Armored Brigade:
a. CG Armd Brig
b. Ex O 1st Armd Regt (L)
c. Ex O 2d Armd Regt (L)
d. Ex O Armd Regt (M)
e. Ex O FA Regt 75-mm how Armd
f. Ex O Engr Bn Armd

8. Command Net, FA Regt, 105-mm how, Armd:
a. CO FA Regt
b. Ln O No 1
c. Ln O No 2
d. Ln O No 3
e. Ln O No 4
f. OP
g. M Maint O
h. Regt Sup O
i. CO Btry A
j. CO Btry B
k. CO Btry C
l. CO Btry D
m. Rcn O No 1
n. Rcn O No 2
o. CO C Tns

9. Fire Direction Net No. 1, FA Regt, 105-mm how, Armd:
a. Regtl S-3
b. Ln O No 1
c. Rcn O No 1
d. Asst Ex O Btry A
e. Asst Ex O Btry B
f. Ln O No 3

10. Fire Direction Net No. 2, FA Regt, 105-mm how, Armd:
a. Regtl S-2
b. Ln O No 2
c. Asst Ex O Btry C
d. Asst Ex O Btry D
e. Ln O No 4

11. Fire Control Net, Battery A (Nets for Batteries B, C, and D are similar):
a. Co Btry A
b. Rcn O
c. Ex O
d. M O

12. Field Artillery Air-Ground Net:
a. CO FA Rgt, 75-mm how, Armd
b. Obsn APs in flight

13. Command Net, Field Artillery Battalion, Armored:
a. CO FA Bn Armd
b. Ex O FA Bn Armd
c. Ln O No 1
d. Ln O No 2
e. Ln O No 3
f. Ln O No 4
g. Rcn O No 1
h. Rcn O No 2
i. OP
j. M Maint O
k. Bn S-4
l. CO Btry A
m. CO Btry B
n. CO Btry C
o. CO AT Btry
p. CO C Tn

14. Fire Direction Net No. 1, FA Bn Armd:
a. Bn S-3
b. Ln O No 1
c. Ln O No. 3
d. Rcn O No 1
e. Rcn O No 2
f. Ln O No 2
g. Ln O No 4
h. Asst Ex O Btry A
i. Asst Ex O Btry B
j. Asst Ex Btry C

15. Fire Control Nets, FA Bn Armd:
The Fire Control Nets of Batteries A, B, C and the Antitank Battery are organized in a manner identical to the Fire Control Nets of the batteries of the Field Artillery Regiment in the Armored Brigade. (See 11 above.)

16. Command Net, Armored Division Reconnaissance Battalion:
a. CO Div Rcn Bn
b. CO R Co
c. CO Armd Co (L)
d. CO Armd Rcn Co No 1
e. CO Armd Rcn Co No 2
f. Bn S-4
g. Bn M O
h. CO Bn Tns
i. Plat Comdr 1st Plat Inf Co Armd
j. Plat Comdr 2nd Plat Inf Co Armd
k. Plat Comdr 3rd Plat Inf Co Armd
l. Plat Comdr 4th Plat Inf Co Armd
m. Plat Comdr 1st Plat Armd Co (L)
n. Plat Comdr 2d Plat Armd Co (L)
o. Plat Comdr 3d Plat Armd Co (L)

TYPE RADIO NETS, ARMORED DIVISION (Continued):

17. Command Net, Armored Reconnaissance Company No. 1, (Command Net, Armored Reconnaissance Company No. 2 is similar):
- *a.* CO Armd Co
- *b.* Plat Comdr, 1st Plat Armd Rcn Co
- *c.* Sec Leader 2d Sec Armd Rcn Co
- *d.* Plat Comdr 2d Plat Armd Rcn Co
- *e.* Sec Leader 4th Sec Armd Rcn Co
- *f.* Plat Comdr 3d Plat Armd Rcn Co
- *g.* Sec Leader 6th Sec Armd Rcn Co
- *h.* Plat Comdr 4th Plat Armd Rcn Co
- *i.* Sec Leader 8th Sec Amd Rcn Co
- *j.* Plat Comdr Mtcl Plat
- *k.* Co M O

18. Command Net, 1st Armored Regiment, Light, (see also 22):
- *a.* CO Armd Regt (L)
- *b.* Regtl M O
- *c.* CO Serv Co
- *d.* CO 1st Bn
- *e.* CO 2d Bn
- *f.* CO 3d Bn
- *g.* CO MG Co
- *h.* Plat Comdr 1st Plat MG Co
- *i.* Plat Comdr 2d Plat MG Co
- *j.* Plat Comdr 3d Plat MG Co
- *k.* Plat Comdr 4th Plat MG Co
- *l.* Plat Comdr Mort Plat

19. Regimental Reconnaissance Net, 1st Armored Regiment, Light (see also 22):
- *a.* Regtl S-2
- *b.* Ex O Armd Rcn Co

20. Command Net, Armored Reconnaissance Company, 1st Armored Regiment, Light:
This net is identical to the Command Net of the Armored Reconnaissance Company shown in 17 above less the motorcycle platoon. (See also 22.)

21. Command Net, 1st Battalion, Armored Regiment, Light (Command Nets for the 2d and 3d Battalions are similar. See also 22.):
- *a.* CO 1st Bn Armd Regt (L)
- *b.* CO 1st Armd Co
- *c.* CO 2d Armd Co
- *d.* CO 3d Armd Co
- *e.* Plat Comdr 1st Plat 1st Armd Co
- *f.* Plat Comdr 2d Plat 1st Armd Co
- *g.* Plat Comdr 3d Plat 1st Armd Co
- *h.* Plat Comdr 1st Plat 2d Armd Co
- *i.* Plat Comdr 2d Plat 2d Armd Co
- *j.* Plat Comdr 3d Plat 2d Armd Co
- *k.* Plat Comdr 1st Plat 3rd Armd Co
- *l.* Plat Comdr 2d Plat 3d Armd Co
- *m.* Plat Comdr 3d Plat 3d Armd Co

22. 2d Armored Regiment Light:
Nets are organized in the 2d Armored Regiment, Light, in a manner identical to that indicated in 18 through 21 above for the 1st Armored Regiment, Light.

23. Command Net, Armored Regiment, Medium:
- *a.* C O Armd Regt (M)
- *b.* Regtl M O
- *c.* CO Regtl Tn
- *d.* Ex O 1st Bn Armd Regt (M)
- *e.* Ex O 2d Bn Armd Regt (M)

24. Command Net, 1st Battalion, Armored Regiment, Medium (Command Net for 2d Battalion is similar):
- *a.* CO 1st Bn
- *b.* CO 1st Co
- *c.* CO 2d Co
- *d.* CO 3d Co
- *e.* Plat Comdr 1st Plat 1st Co
- *f.* Plat Comdr 2d Plat 1st Co
- *g.* Plat Comdr 3d Plat 1st Co
- *h.* Plat Comdr 1st Plat 2d Co
- *i.* Plat Comdr 2d Plat 2d Co
- *j.* Plat Comdr 3d Plat 2d Co
- *k.* Plat Comdr 1st Plat 3d Co
- *l.* Plat Comdr 2d Plat 3d Co
- *m.* Plat Comdr 3rd Plat 3d Co

25. Command Net, Infantry Regiment, Armored:
- *a.* CO Inf Regt Armd
- *b.* Regtl M O
- *c.* CO Serv Co
- *d.* CO 1st Bn
- *e.* CO 2nd Bn
- *f.* CO AT Co
- *g.* Regtl Com O (also a silent station in division air-ground net)

26. Command Net, Engineer Battalion, Armored:
- *a.* CO Engr Bn
- *b.* CO 1st Co
- *c.* CO 2d Co
- *d.* CO 3rd Co
- *e.* Plat Comdr Rcn Plat Hq Co
- *f.* Bn M O
- *g.* Bn S-4

27. Clear Channel Requirements:
The net organization indicated in 1 to 26 above requires 41 clear channels within the frequency range of the authorized vehicular sets. In addition, channels for the SCR-194 and SCR-195 sets are required in general as follows: 4 for the infantry regiments, armored; 10 for the field artillery regiment; and 8 for the field artillery battalion. The infantry regiment, armored requires in addition, one (1) channel for the operation of a regimental command net employing low-powered portable sets. These channels are minimum requirements; availability of additional channels permits reduction of number of stations in any particular net. Additional artillery air-ground channels are particularly desirable.

■ 221. TYPE RADIO NETS, ARMY CORPS (Less Field Artillery Brigade and Cavalry Regiment, Horse and Mechanized).

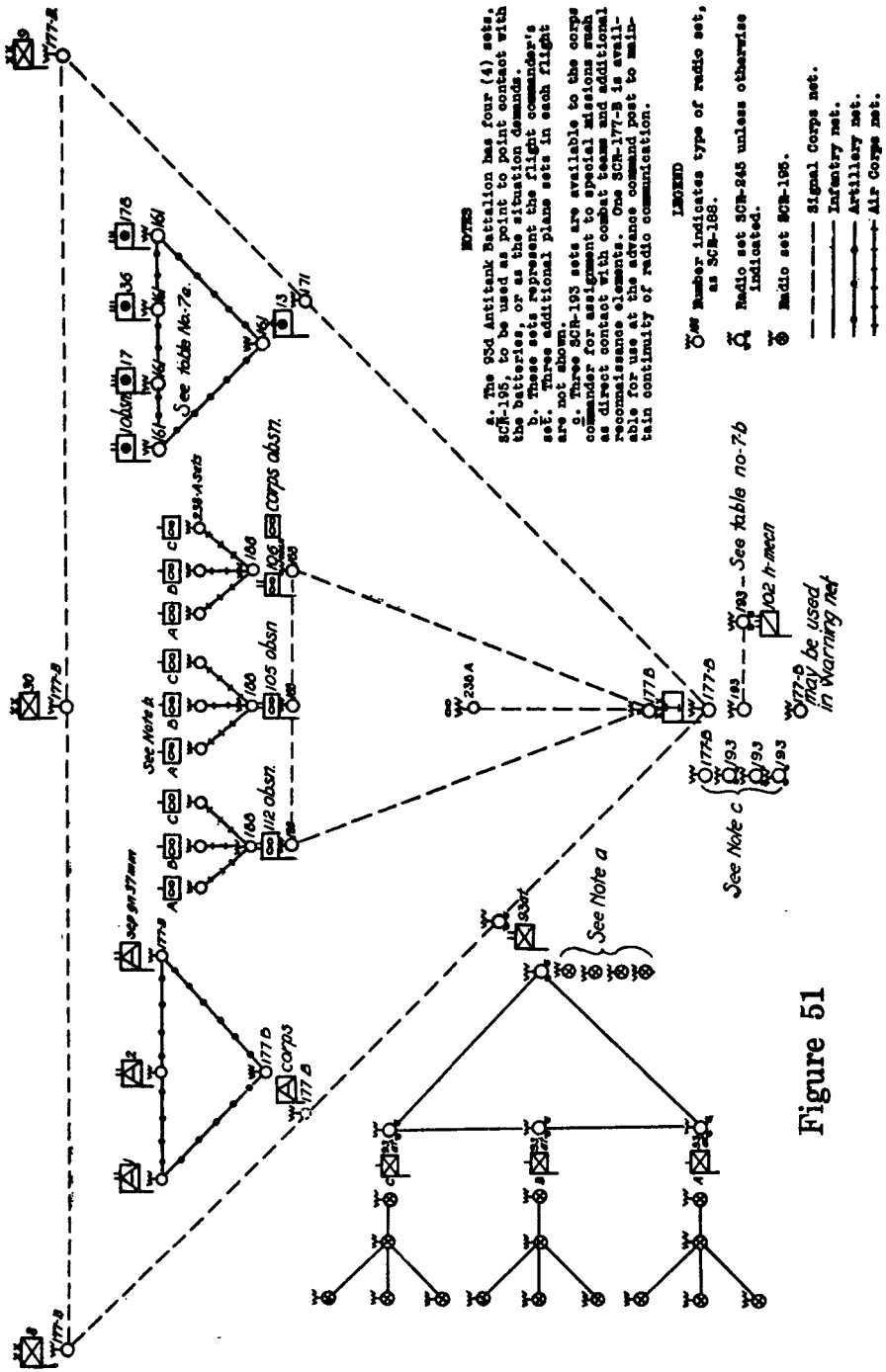


Figure 51

■ 222. TYPE RADIO NETS, ARMY CORPS (Field Artillery Brigade).

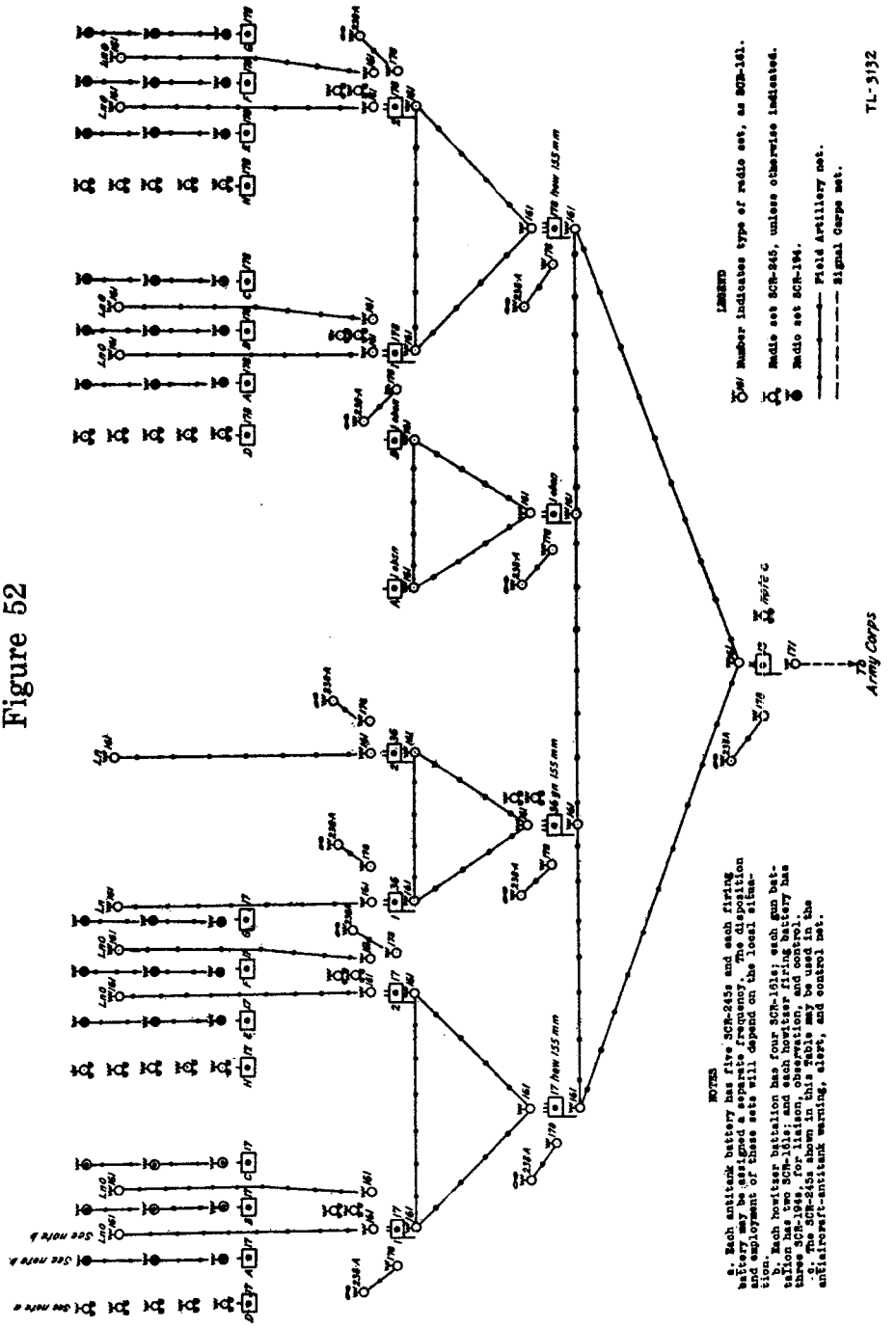


Figure 52

■ 223. TYPE RADIO NETS, ARMY CORPS (Cavalry Regiment, Horse and Mechanized).

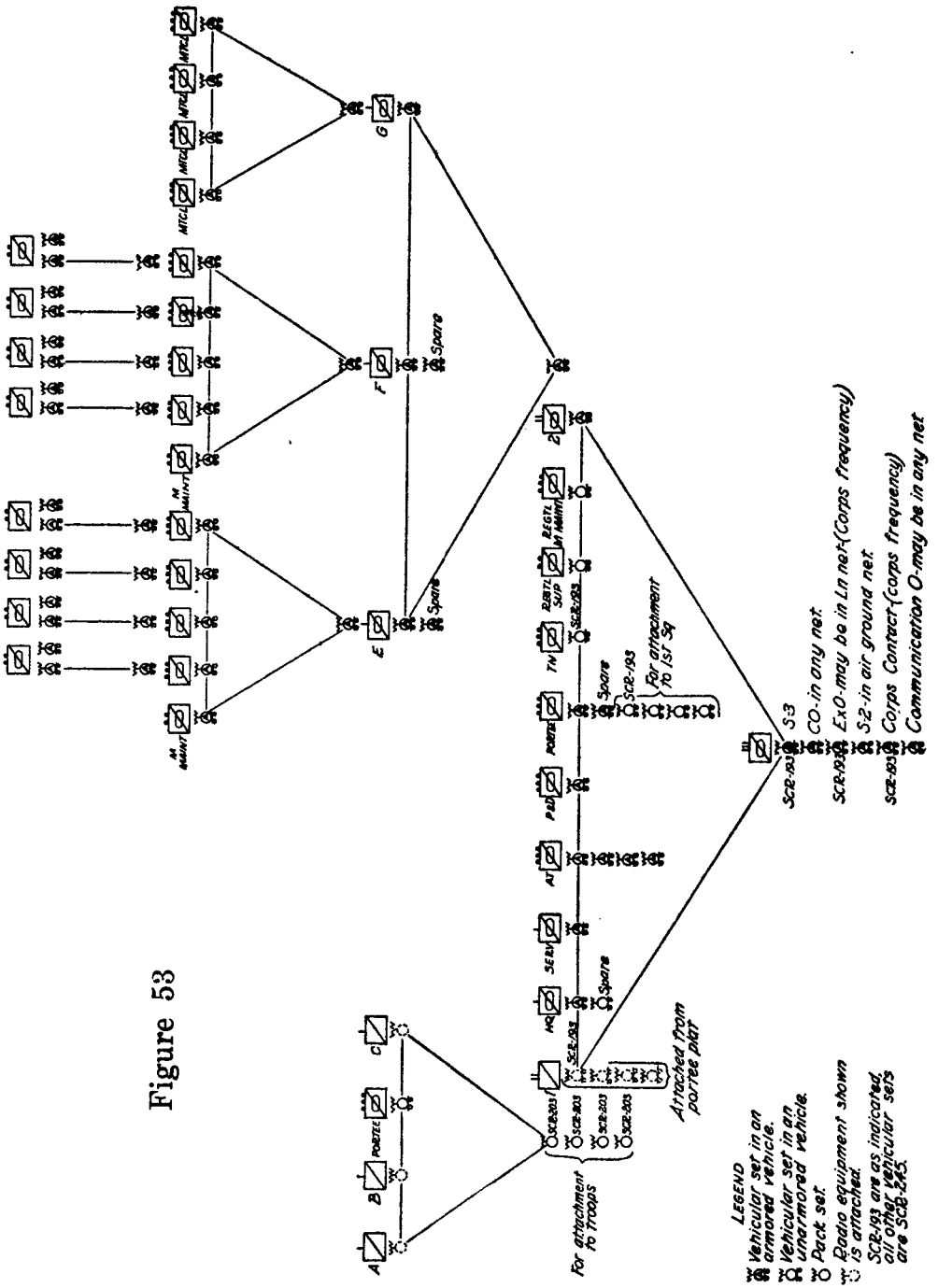


Figure 53

224. Radio Sets, Characteristics.

1	2	3	4	5	6	7	8	9
Set SCR	Type signals		Range (miles)	Frequency in KC		Power for transmitter	Weight (lbs)	Description and remarks
	Trans	Rec		Trans	Rec			
131	CW③	CW③	5	3,960–4,360	3,960–4,360	Hand Gen 10V and 400V	76	Loop set. Carried by 2 men. Command net Inf Brig and Regt.
161	CW③	CW③	5	4,370–5,100	4,370–5,100	Hand Gen 10V and 400V	76	Loop set. Carried by 2 men. Command net for FA within Inf Div.
163-A	CW③	CW③	40	2,300–2,700	2,300–2,700	Hand Gen 8V and 350V	154	Pack set for transportation on one animal. Replaced by SCR-203.
171	CW③	CW③	15	2,640–3,040	2,640–3,040	Hand Gen 10V and 400V	179	Carried in vehicle. Command set Inf Div.
177 177-A 177-B	CW③ Tone Voice	CW③ Tone Voice	100 70 30	400 800 and 1,500–4,500	400– 1,000 and 1,500–4,500 ①	Gas Eng Gen set 14V and 1,000V	900 177 850 177-A 860 177-B	Carried in vehicle. Command set for higher headquarters. Air-ground set. Replaced by SCR-177-B.
178 179	CW③ Tone Voice	CW③ Tone Voice	25 20 10	2,400–3,700	2,400–3,700	Hand Gen 8V and 500V	203	Air-ground set for FA. When fitted for pack animal transportation is known as SCR-179.
AA-183	Tone Voice	Tone Voice	45 30	6,200–7,700	② 224 448 and 4,150–7,850	Dynamotor	63	Aircraft command set. All types of airplanes.
AB-183	CW③ Tone Voice	Tone Voice	45 45 30	6,200–7,700	② 201–391 and 4,200–7,700	Dynamotor	50.5	Aircraft command set. All types of airplanes.
VC-183 VD-183	CW③ Tone Voice	Tone Voice	45 45 30	6,200 7,700 and 3,050–3,800	224–7,850	Dynamotor	45	Aircraft command set. All types of airplanes.
AE-183	CW③ Tone Voice	Tone Voice	45 45 30	6,200–7,700 and 3,050–3,800	200–390 and 2,500–7,850	Dynamotor	45	Aircraft command set. All types of airplanes

① Additional coil sets available but not issued with setwill extend receiving range from 150 to 12,500 KC.
② Coil sets available but not furnished as component part of set will extend frequency range. See Signal Corps General Catalog.
③ CW means continuous wave telegraph.

RADIO SETS, CHARACTERISTICS (Continued):

1	2	3	4	5	6	7	8	9
Set SCR	*Type signals*		*Range (miles)*	*Frequency in KC*		*Power for transmitter*	*Weight (lbs)*	*Description and remarks*
	Trans	*Rec*		*Trans*	*Rec*			
AF-183	CW Tone Voice	Tone Voice	45 45 30	† 3,050–3,800 and † 6,200–7,700 * 6,200–7,700	† †201–398 and † 2,500–7,850 * 201–398 and * 4,150–7,700	Dynamotor	45	Aircraft command set. †Frequency band for attack planes. *Frequency band for all other types planes.
AG-183 AH-183 AJ-183 AK-183	CW Tone Voice	Tone Voice	45 45 30	2,500–7,700	201–398 and 2,500–7,700	Dynamotor	56	Aircraft command set. All types of airplanes.
AA-185 AB-185	CW Tone Voice CW Tone Voice	Tone Voice	250 100 10 750 500 250	400–800 1,500–4,500	400–4,700	Dynamotor	380	Observation aircraft set.
187-A	CW Tone Voice	CW Tone Voice	750 500 250	1,500–12,500	1,500–18,000	Dynamotor	375	Medium range aircraft liaison set.
AA-187	CW Tone Voice	Tone Voice	750 500 250	3,000–4,500 and 6,200–7,700 and 10,000–12,500	150–12,500	Dynamotor	144	Medium range aircraft liaison set.
AB-187	CW Tone Voice	Tone Voice	750 500 250	1,500–6,200	150–12,500	Dynamotor	144	Medium range aircraft liaison set.
AC-187	CW Tone Voice	Tone Voice	750 500 250	400–12,500	150–12,500	Dynamotor	144	Medium range aircraft liaison set.
188-A	CW Tone Voice	CW Tone Voice	‡ 100 ‡ 70 ‡ 50	1,500–12,500	1,500–18,000	Gas Eng Gen Set 14V and 1,000V and will operate on 110–220 volts 60 cycles	1,385	Carried in vehicle. Air-ground set for Air Corps. ‡Transmission distances can be greatly increased by using high frequency.

RADIO SETS, CHARACTERISTICS (Continued):

1	2	3	4	5	6	7	8	9
Set SCR	*Type signals*		*Range (miles)*	*Frequency in KC*		*Power for transmitter*	*Weight (lbs)*	*Description and remarks*
	Trans	*Rec*		*Trans*	*Rec*			
193	CW(3) Tone Voice	CW(3) Tone Voice	‡ 60 ‡ 40 ‡ 20	1,500–4,500	1,500–4,500	Dynamotor	195	Vehicular set for use in tanks, armored cars, etc. ‡Stationary, approximately half these values when moving.
193-A 193-B 193-C 193-D 193-E	CW(3) Tone Voice	CW(3) Tone Voice	‡ 60 ‡ 40 ‡ 20	1,500–4,500	1,500–18,000	Dynamotor	190	Vehicular set for use in tanks, armored cars, etc. ‡Stationary; approximately half these values when moving.
194	Voice	Voice	5	27,700–52,200	27,700–52,200	Battery BA-32 +144V +4½V +3V –13½V	89 * 26	Carried by one man, pack animal, or vehicle. Weight includes spare parts chest. *Weight carried by one man for operation.
195	Voice	Voice	5	52,800–65,800	52,800 65,800	Battery BA-32 +144V +4½V +3V –13½V	91 * 26	Carried by one man, pack animal, or vehicle. Weight includes spare parts chest. *Weight carried by one man for operation.
197-A 197-B 197-C	CW(3) Tone Voice	CW(3) Tone Voice	Long range 400W output probably 1,000 on CW 700 on T and 300 on V	1,500–18,000	1,500–18,000	110 or 220V 60 cycles. Gen coupled to drive shaft of truck, or connected to coml power circuit	Truck 9,980 Trailer 7,000	Air-ground set for higher headquarters. Aircraft warning service. Vehicular set contained in truck and trailer.
203	CW(3) Tone Voice	CW(3) Tone Voice	30 20 5	2,200–3,060	2,200–3,060	Hand Gen 8V and 350V	162	Pack set for transportation on one animal. Replaces SCR-163-A.
209	CW(3) Tone Voice	CW(3) Tone Voice	25 20 10	2,200–2,600	1,500–4,500	Dynamotor 12V and 440V	164	Vehicular set. Replaced by SCR-245.
210-A 210-B 210-C 210-D	CW(3) Tone Voice	CW(3) Tone Voice			1,500–18,000		85	Vehicular set. Receiver only.

RADIO SETS, CHARACTERISTICS (Continued):

1	2	3	4	5	6	7	8	9
Set SCR	*Type signals*		*Range (miles)*	*Frequency in KC*		*Power for transmitter*	*Weight (lbs)*	*Description and remarks*
	Trans	*Rec*		*Trans*	*Rec*			
238-A	CW③ Tone Voice	CW③ Tone Voice	50 40 30	1,500-8,100	1,500-18,000	Dynamotor	129	Aircraft command set.
245-A to 245-H	CW③ Tone Voice	CW③ Tone Voice	45 35 20	2,000-4,500	1,500-18,000	Dynamotor	181	Vehicular set. Transmitter has provisions for four plug-in type crystals. (FT-171). Number ofcrystals available will be as authorized for each using organization.
288	CW③ Voice	CW③ Tone Voice	15 8	3,500-6,000	2,300-6,700	Hand Gen 6V and 280V	65	Antenna 30 feet wire. Will temporarily replace sets SCR-131 and 161 until sets SCR-284 and 285 are available.

SECTION V

VISUAL COMMUNICATION

■ 225. EMPLOYMENT.—Visual communication is unsuited for the transmission of long messages but is well suited for transmitting prearranged signals, short code groups, and brief messages for fire control, laterally and from front to rear between small units and between ground and airplanes.

■ 226. LAMPS.—Signal lamps are authorized for issue to headquarters of light field artillery battalion, and signal stations of coast artillery harbor defense headquarters only. Signal lamps may be improvised by using standard flashlights.

■ 227. FLAGS.—The general use of flags as a means of visual communication has been discontinued.

■ 228. PYROTECHNICS.—Pyrotechnics are an emergency means of sending short urgent messages. Due to the limited number of distinguishable signals available, meanings assigned to signals are usually limited to the following uses:

a. From front-line units to cause artillery fire to commence, cease, or lift.

b. To indicate arrival of units at important terrain features or to coordinate attacks when no other means are available.

c. From airplanes to call for display of marking or identification panels.

Meanings are assigned pyrotechnic signals by the superior headquarters in signal operation instructions and should be changed frequently for secrecy and to prevent the enemy from using similar pyrotechnics to confuse infantry-artillery liaison.

■ 229. PANELS.—*a. Use.*—Marking panels are displayed by troops in combat on signal from the infantry liaison airplane in order that the airplane may report their progress and location to higher headquarters. These panels are issued on the basis of 3 black and 3 white to a rifle squad and should be used for no other purpose than that for which issued; the black panels are used on snow.

Signaling panels are issued for communicating with aircraft and for the location and identification from the air of unit command posts on request by aircraft.

An identification code number is assigned to each headquarters in signal operation instructions. The unit is identified from the air on request by friendly aircraft by displaying the identification group indicator prescribed in the current air-ground liaison code in combination with the numerical identification number assigned to the unit in the current signal operation instructions. See FM 24-5.

b. Display grounds.—Panel display grounds are located near the radio station since the panel operators are normally also the radio operators, and communication from the airplane is normally by radio. Care must be exercised to see that panels are displayed only to friendly aircraft who have identified themselves as such by use of a prearranged signal or code group. Upon the approach of hostile aircraft the friendly airplane should first be warned and then panels should be taken up and concealed.

c. Communication with airplane.—In an emergency, when a ground station is not equipped for radio reception or when the radio transmitter of an airplane is silenced or out of commission, an airplane may communicate to a limited degree with a ground panel station by means of various maneuvers of the airplane while in flight. No standard code has been developed for this means of communication but any code used should be prescribed in signal operation instructions. Individual units devise such codes by coordination with observation aviation designated to operate with them. Adjustment of the fire of field artillery batteries using only panel signals and airplane wing signals is both rapid and practicable.

SECTION VI

WIRE COMMUNICATION

■ 230. TELEPHONE.—*a. Powers and limitations.*—The distance over which satisfactory telephone communication is possible is determined by the electrical characteristics of the telephone circuit. A given type of wire circuit has a definite talking range (paragraph 232 *b*). Telephone conversations should be brief. Long conversations deprive others of the use of the circuits. The telephone should not be used for long reports, orders, or messages when messenger or telegraph communication would serve as well or better. Telephone conversation must be discreet since secrecy is never assured.

b. Urgent calls.—Because of the limited number of wire circuits between telephone centrals, they will often be found busy. In order to avoid delaying an important critical call, certain designated personnel may be authorized to class a telephone call as urgent when they believe it is more important than any call which may be in progress. In placing an urgent call the calling party adds "Urgent call" after the designation of the called party, as: "Magic six, urgent call." The urgent classification should be used cautiously. An urgent call is completed by a switchboard operator with all possible haste by interrupting any routine call which may be in progress.

■ 231. TELEGRAPH PRINTER.—The telegraph printer is a telegraph instrument designed for interchanging printed messages between two or more stations. It is employed between headquarters in the same manner as the manual telegraph. Data relative to the employment of the telegraph printer will be found in FM 11-5.

■ 232. WIRE COMMUNICATION DATA.—The following data are furnished for use in planning for the construction of wire lines:

a. Rates of construction.—(1) *Field wire line.*—Construction unit: 1 wire-laying team (FM 11-10 and 11-15).

1	2	3	4	5
	Miles per hour			
Wire laying equipment	*One circuit*		*Two circuits concurrently*	
	Cross country	*Roads*	*Cross country*	*Roads*
Reel cart RL-16	1	1½	1	1½
Carrier RL-24, RL-24-A, or RL-34	1½	2	---	---
Reel unit RL-26 or RL-26-A (mounted in truck)	3-5	3-5	3-5	3-5
Axle RL-27 or RL-27-A	1	1½	---	---
Reel unit RL-31 (mounted in truck)	3-5	3-5	---	---

(2) *Open wire pole line.*—Construction unit: 1 construction platoon of war-strength construction company (FM 11-20).

1	2	3
Type of construction	*Weight of material in pounds per mile*	*Average miles per 8-hour day a*
Iron pole line, 1 circuit on cross arm and single wire on top of pole	6,420	3
Iron pole line, 2 circuits on cross arms and single wire on top of pole	7,042	2½
Light pole line, 3 circuits on 6-pin cross arm. (Light 20-foot poles or 4 by 4's with 2 by 4's for cross arms with knob insulators)	5,093	2½
Standard pole line, 5 circuits on 10-pin cross arm. Poles to be serviced and set, using earth-boring machine	11,590	2
Stringing wire on installed poles—addition of one 10-pin cross arm with 5 circuits	3,598	5
Single-bracket line on installed poles	466	20

NOTE

a. The rate at which open wire lines may be constructed will depend upon the size of the working party, the number of circuits required, the weather, and the type of terrain, and the facilities for distributing poles and materials. The chief factors are transportation and road congestion. The data listed above are based on the assumption that the poles and material have been distributed along the route and that average conditions prevail.

b. Normal talking range on wire circuits.—Using standard equipment without repeaters, the normal talking ranges on nonloaded wire circuits are as follows:

1	2	3	4
Wire type	*Range in miles*	*Weight (pounds per mile)*	*Remarks*
W-38	18	240	Commercial outside distributing wire
W-73	50	39	No. 17 AWG bronze, 8-inch spacing, dry weather
W-74	200	166	Commercial bare copper No. 10, AWG, 12-inch spacing, wet weather
W-108	18	216	Commercial parallel drop wire
W-110	15	132	Field wire, dry weather
W-110	10	132	Field wire, wet weather
W-110-B	17	132	Field wire, dry weather
W-110 B	11	132	Field wire, wet weather
W-130, T-1	9	31	Infantry assault wire, dry weather
W-130, T-1	6	31	Infantry assault wire, wet weather
W-130, T-3	9	49	Field Artillery assault wire, dry weather
W-130, T-3	6	49	Field Artillery assault wire, wet weather

c. Replacement requirements of field wire W-110 per day of combat (expressed in miles of wire) :

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*
Type of combat	*Infantry Division (Square)*					*Infantry Division (Triangular)*				
	Inf Brig	*FA Brig*	*Sig Co*	*Others*	*Total*	*Inf Regt*	*3 Inf Regts*	*Div FA*	*Sig Co*	*Total*
Attack in a meeting engagement	20	160	25	2	227	8	24	76	30	130
Defense in a meeting engagement	10	160	20	2	202	5	15	76	24	115
Attack of a position:										
First day	80	175	40	4	379	16	48	84	35	167
Succeeding days	60	90	30	3	243	10	30	42	30	102
Defense of a position:										
First day	20	110	25	4	179	6	18	52	24	94
Succeeding days	10	90	20	1	131	4	12	42	20	74
Attack of a zone:										
First day	40	90	40	2	212	8	24	42	35	101
Succeeding days	60	90	30	1	241	10	30	42	30	102
Defense of a zone:										
First day	20	165	25	4	234	8	24	77	30	131
Succeeding days	10	90	20	1	131	4	12	42	20	74
Delaying action	60	210	60	4	394	10	30	100	40	170
Retirement:										
Night	20	165	25	2	232	8	24	77	30	131
Daylight withdrawal	80	210	60	4	434	16	48	100	40	188

233. TYPE WIRE NETS, SQUARE DIVISION.

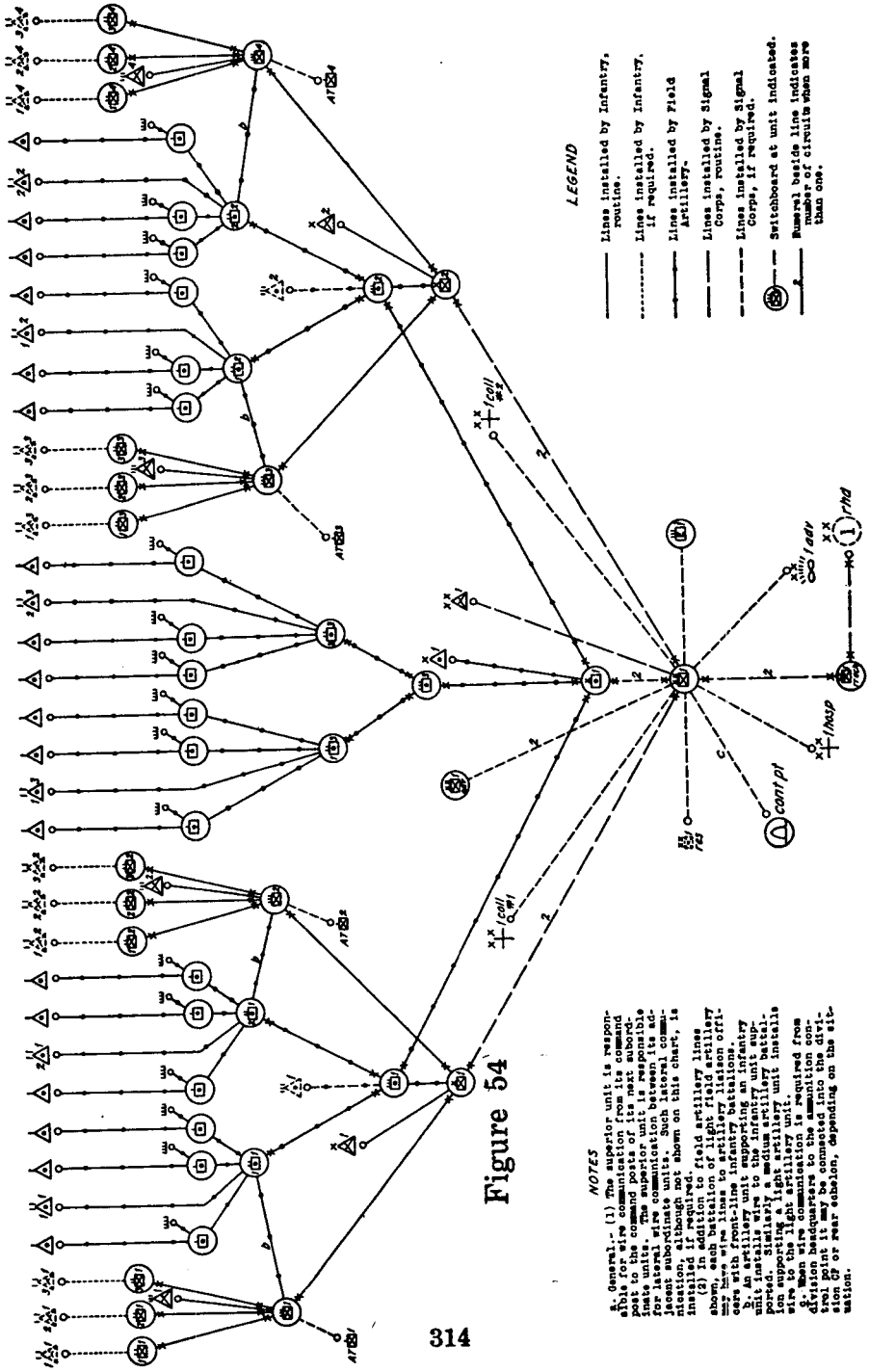


Figure 54

234. TYPE WIRE NETS, TRIANGULAR DIVISION.

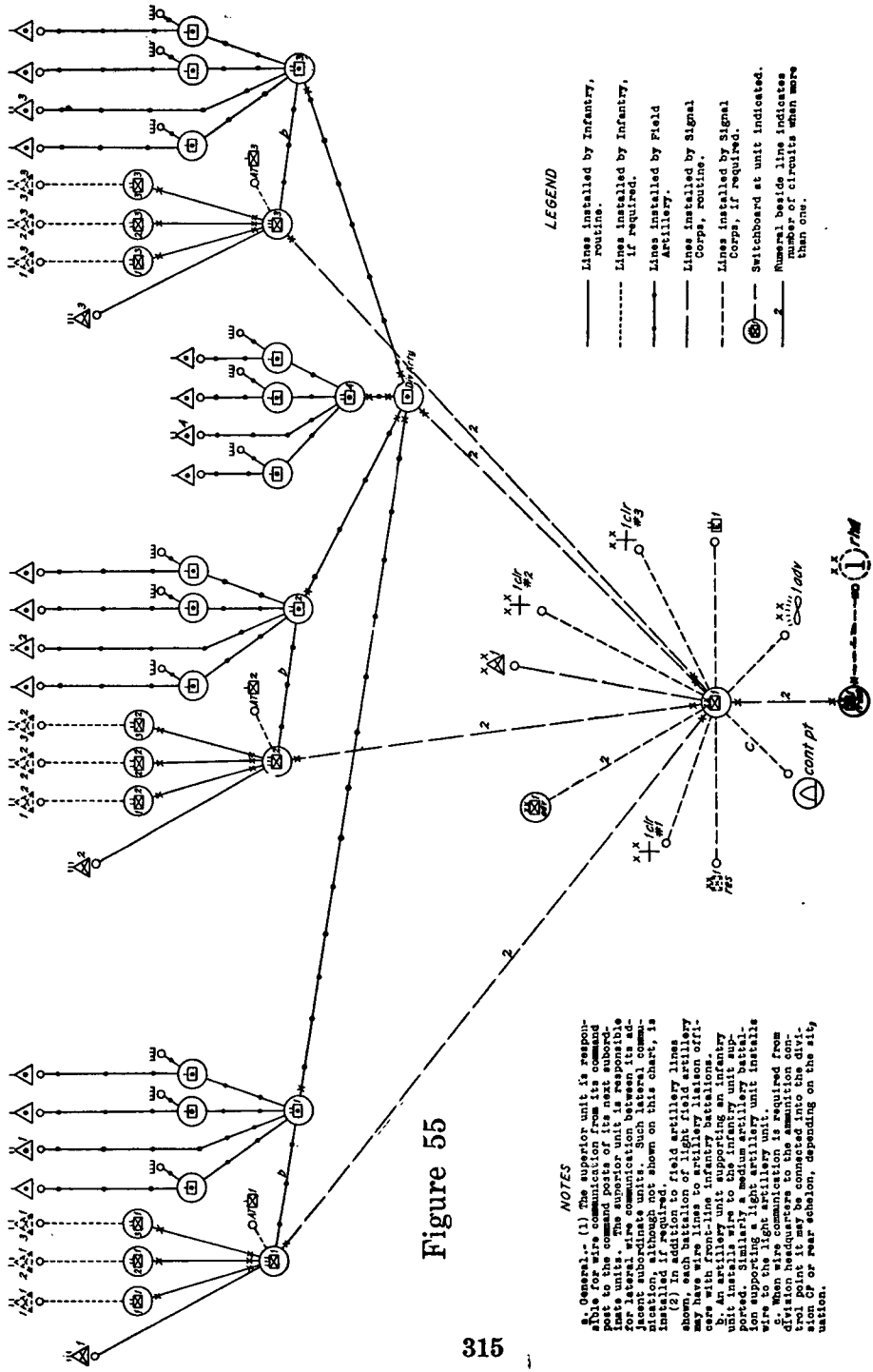
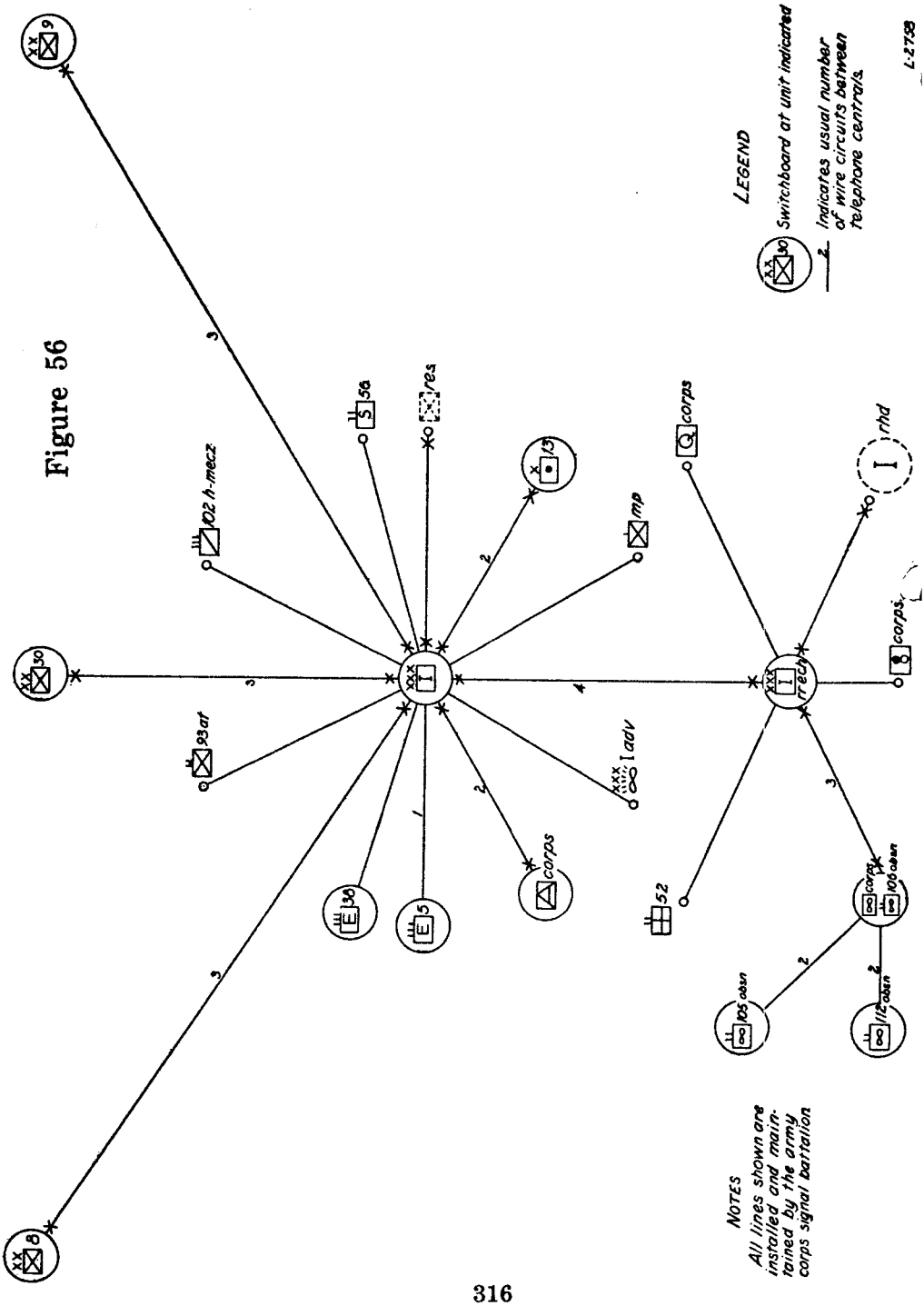


Figure 55

■ 235. TYPE WIRE NETS, ARMY CORPS.



SECTION VII

TABLES OF SIGNAL EQUIPMENT

236. GENERAL.—This section lists in ready reference form the principal items of signal equipment issued to troop units of the triangular and square divisions. It indicates a suitable method of asembling signal data applicable to any unit. Similar tables should be prepared and kept up to date by Signal or Communication Officers of each unit.

237. *a.* PRINCIPAL ITEMS OF SIGNAL CORPS EQUIPMENT.—INFANTRY DIVISION (Triangular).

1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	*Unit*	*Type*	*Weight (lbs)*	*Sig Co (DHQ)*	*Rcn Tr Hq*	*Rcn Plat, Rcn Tr*	*Regtl Sec Inf Regtl Hq Co*	*Bn Sec Inf Regtl Hq Co & Bn Hq*	*AT Co*	*Hq Btry Div Arty*	*Hq Btry FA Bn L*	*Firing Btry FA L*	*Hq Btry FA Bn M*	*Firing Btry FA M*	*AT Btry -mm*
2	Axle (wire-laying, hand)	RL 27-A	5⅛	8			2	1		2	2	2	2	2	
3	Axle (wire-laying)	LC-31	58	1											
4	Charging set	SCR 169	225	2											
5	Cipher device	M-94	½	6	2	2	2	2		2	2		2		
6	Codes	①	5	8	5	4	2	2		4	4		4		
7	Coil (loading)	C-114	1½	120											
8	Coil (repeating)	C-161	3½	12			4	1		2					
9	Flag kit	M-113	3								6	4	6	4	10
10	Flag set	M-133 ②	⅛				2	2	2						
11	Frequency meter set	SCR 211-A	40	1			1			1					
12	Lineman's equipment	TE-21	20	30			9	2							
		TE-33	1½							25	20	15	20	15	
13	Panel (front-line marking) ③	AL-119 and AL-120	½ each												
14	Panel (signaling)	AP 30-A	42	1			1	1		1	1		1		
		AP 30-B	23	1	1	1	1	1		1	1		1		
15	Projector, signal, ground ④	M-IV													
16	Radio set (5 mile, CW ⑤)	SCR 131	76				3	1							
17	Radio set (5 mile, CW ⑤)	SCR 161	76							1	1		5		
18	Radio set (15 mile, CW ⑤)	SCR 171	179	2			2			1					
19	Radio set (100 mile, CW ⑤)	SCR 177-B	860	1											
20	Radio set (25 mile, CW ⑤)	SCR 178	203							1	1		1		
21	Radio set (vehicular, 60 mile, CW ④)	SCR 193	195	6	4	4									
22	Radio set (5 mile, voice)	SCR 194	89 (26⑥)								7	3		3	

a. PRINCIPAL ITEMS OF SIGNAL EQUIPMENT.—INFANTRY DIVISION (Triangular) (Continued):

1	1 Unit	2 Type	3 Weight (lbs)	4 Sig Co (DHQ)	5 Rcn Tr Hq	6 Rcn Plat, Rcn Tr	7 Regtl Sec Inf Regtl Hq Co	8 Bn Sec Inf Regtl Hq Co & Bn Hq	9 AT Co	10 Hq Btry Div Arty	11 Hq Btry FA Bn L	12 Firing Btry FA L	13 Hq Btry FA Bn M	14 Firing Btry FA M	15 AT Btry 75-mm
23	Radio set (5 mile, voice)	SCR 195	91 (26 ⑥)				8		5						
24	Radio set (vehicular, 45 mile, CW ⑤)	SCR 245	181				1		1	1	2		2		5
25	Radio set (15 mile, CW ⑤)	SCR 288 ⑦	65												
26	Reel equipment	CE-11 ⑧	5¾				4	4	10						
27	Reel unit (hand)	RL-16	73				2	1							
28	Reel unit (truck)	RL 26-A	275	8			1			2	2	2	2	2	
29	Reel unit (hand or truck)	RL 31	31	8						2	2	2	2	2	
30	Signal lamp	EE 84	22								2		2		
31	Switchboard (40-line, telephone)	Bd-14	250	3											
32	Switchboard (6-line, telephone)	Bd-71	48	6				1				2		2	
33	Switchboard (12-line, telephone)	Bd-72	68	6			2			2	2		2		
34	Telegraph set	Tg-5-A	5½	8			4	1		5	1		1		
35	Telegraph, printer set	EE-97		4											
36	Telephone	EE-8-A	10	60			8	4		10	16	9	14	9	
37	Wire, mile (on DR 4, ½ mile)	W 110	176	62			6	4		3	2	1	2	1	
38	Wire, mile (on DR 5, 1 mile)	W 110	166	63			6			24	16	8	16	8	
39	Wire, mile (assault wire)	W 130	32												

NOTES

① Training editions.
② Also 2 per Infantry Company Headquarters and 1 per Infantry Platoon.
③ 3 per Rifle Squadron.
④ 1 per Rifle Company and Platoon.
⑤ CW means continuous wave telegraph.
⑥ Weight carried for operation.
⑦ Training set, temporarily replaces SCR 131 and SCR 161.
⑧ Consists of telephone and ¼ mile assault wire, also 20 per Weapon Company and 2 per Rifle Company.

b. Principal Items of Signal Corps Equipment—Infantry Division (Square).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Unit	Type	Weight (lbs)	Sig Co (DHQ)	Hq Co Inf Brig	Regtl Sec Inf Regtl Hq Co	Bn Sec Inf Regtl Hq Co & Bn Hq	AT Co	Hq Btry FA Brig	Hq Btry FA Regt 105-mm How	Hq Btry FA Bn 105-mm How	Firing Btry FA 105-mm How	Hq Btry FA Regt 155-mm How	Hq Btry FA Bn 155-mm How	Firing Btry 155-mm How	AT Btry
Axle (wire-laying, hand)	RL-27-A	5⅛	8	2	2	1		2	2	2	2	2	2	2	
Axle (wire-laying)	LC-31	58	1												
Charging set	SCR 169	225	2												
Cipher device	M-94		6	2	2	2		2	2	2		2	2		
Codes	①		8	4	4	4		4	4	4		4	4		
Coil (loading)	C-114	1½	120												
Coil (repeating)	C-161	3½	12					2							
Flag kit (signaling)	M 113	3								6	4		6	4	10
Flag set (signaling)	M 133 ②	⅛			2	2	2								
Frequency meter	SCR 211-A	40	1		1			1							
Lineman's equipment	TE-21	20	20	3	9	2		2							
	TE-33	1½						25	15	20	15	15	20	15	
Panel (front-line marking) ③	AL-119 and AL-120	½ each													
Panel (signaling)	AP-30-A	42	1	1	1	1		1	1	1		1	1		
	AP-30-B	23	1					1	1	1		1	1		
Projector, signal, ground ④	M-IV														
Radio set (5 mile, CW ⑤)	SCR 131	76		1	3	1									
Radio set (5 mile, CW ⑤)	SCR 161	76						1	2	1		2	5		
Radio set (15 mile, CW ⑤)	SCR 171	178	2	1				1							
Radio set (100 mile, CW ⑤)	SCR 177-B	860	1												
Radio set (25 mile, CW ⑤)	SCR 178	203						1	1	1		1	1		
Radio set (vehicular, 60 mile, CW ⑤)	SCR 193	195	5												
Radio set (5 mile, voice)	SCR 194	89 (26⑥)								7	3			3	

b. PRINCIPAL ITEMS OF SIGNAL EQUIPMENT—INFANTRY DIVISION (Square) (Continued):

1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Unit	*Type*	*Weight (lbs)*	*Sig Co (DHQ)*	*Hq Co Inf Brig*	*Regtl Sec Inf Regtl Hq Co*	*Bn Sec Inf Regtl Hq Co & Bn Hq*	*AT Co*	*Hq Btry FA Brig*	*Hq Btry FA Regt 105-mm How*	*Hq Btry FA Bn 105-mm How*	*Firing Btry FA 105-mm How*	*Hq Btry FA Regt 155-mm How*	*Hq Btry FA Bn 155-mm How*	*Firing Btry 155-mm How*	*AT Btry*
23	Radio set (5 mile, voice)	SCR 195	91 (26 ⑥)			8		5								
24	Radio set (vehicular, 45 mile CW⑤)	SCR 245	181		2	1		1	1		2			2		5
25	Radio set (15 mile, CW ⑤)	SCR 288 ⑦	65													
26	Reel equipment	CE-11 ⑧	5¾			4	4	10								
27	Reel unit (hand)	RL-16	73			2	2	1								
28	Reel unit (truck)	RL-26-A	275	8		1	1		2	2	2	2	2	2	2	
29	Reel unit (hand or truck)	RL 31	31	8					2	2	2	2	2	2	2	
30	Signal lamp	EE-84	22								2			2		
31	Switchboard (40-line, telephone)	Bd-14	250	3												
32	Switchboard (6-line, telephone)	Bd-71	48	6			1					2			2	
33	Switchboard (12-line, telephone)	Bd-72	68	6	2	2			2	2	2		2	2		
34	Telegraph set	Tg-5-A	5½	8	3	4	1		5	3	1		3	1		
35	Telegraph printer set	EE-97		4												
36	Telephone	EE-8-A	10	60	8	8	4		10	10	16	9	10	14	9	
37	Wire, mile (on DR 4, ½ mile)	W-110	176	62	8	6	4		3	2	2	1	2	2	1	
38	Wire, mile (on DR 5, 1 mile)	W-110	166	63	8	6			24	16	16	8	16	16	8	
39	Wire, mile (assault wire)	W-130	32													

NOTES

① Training editions.
② Also 2 per Infantry Company Headquarters and 1 per Infantry Platoon.
③ 3 per Rifle Squad.
④ 1 per Rifle Company and Platoon.
⑤ CW means continuous wave telegraph.
⑥ Weight carried for operation.
⑦ Training set, temporarily replaces SCR 131 and SCR 161.
⑧ Consists of telephone and ¼ mile assault wire. Also 20 per Weapons Company and 2 per Rifle Company.

Chapter 9
CAMPS AND BIVOUAC AREAS

■ 238. CANTONMENTS.—*a.* Considering the theater of operations as a whole, barracks probably will have to be provided for about 60% of the total force plus 100% of the prisoners.

b. Space requirements for sleeping quarters are as follows:

Zone of the Interior.

Normal: 60 sq. ft. floor space and 720 cu. ft. air space per person.

Minimum: 50 sq. ft. floor space and 500 cu. ft. air space per person.

Theater of Operations (for seasoned troops).

Normal: 40 sq. ft. floor space and 400 cu. ft. air space per person.

Emergency: 20 sq. ft. floor space and 200 cu. ft. air space per person.

c. In cantonment, the building area for a 1000-man unit is 8.3 acres. However, large forces require a greater proportional area because of the desirability of dispersion, as a security measure, and to provide training, parking, and storage facilities.

Approximate area for square division is 220 acres.

Approximate area for triangular division is 160 acres.

Approximate area for cavalry division is 200 acres.

Approximate area for armored division is 180 acres.

(Areas for drill, supply facilities, hospital and paddocks not included.)

■ 239. BILLETING.—In hostile territory billeting is resorted to when desirable. The capacity of a locality for billeting is approximately as follows:

Rich farming country	—10 per inhabitant
Cities	— 5 per inhabitant
Average American city	—20 per vacant dwelling
Vacant buildings and dwellings in average city	—20% of population
(Inhabitants may be caused to move to vacancies in order to concentrate military activities.)	
With inhabitants furnishing subsistence	—200% of population for one week.

■ 240. SEMIPERMANENT CAMPS.—*a.* Tactical and terrain conditions will largely determine the actual dimensions of sites for semipermanent camps. Whenever possible, areas should be selected for semipermanent camps which will permit such camps to be so arranged as to provide for the comfort and convenience of the command.

b. There are many possible arrangements of facilities in a semipermanent camp. Data on them are given in a number of arm and service field manuals. A typical arrangement of such a tent camp which has been found satisfactory is shown in the following diagram:

DIAGRAMMATIC LAYOUT OF A TENT CAMP

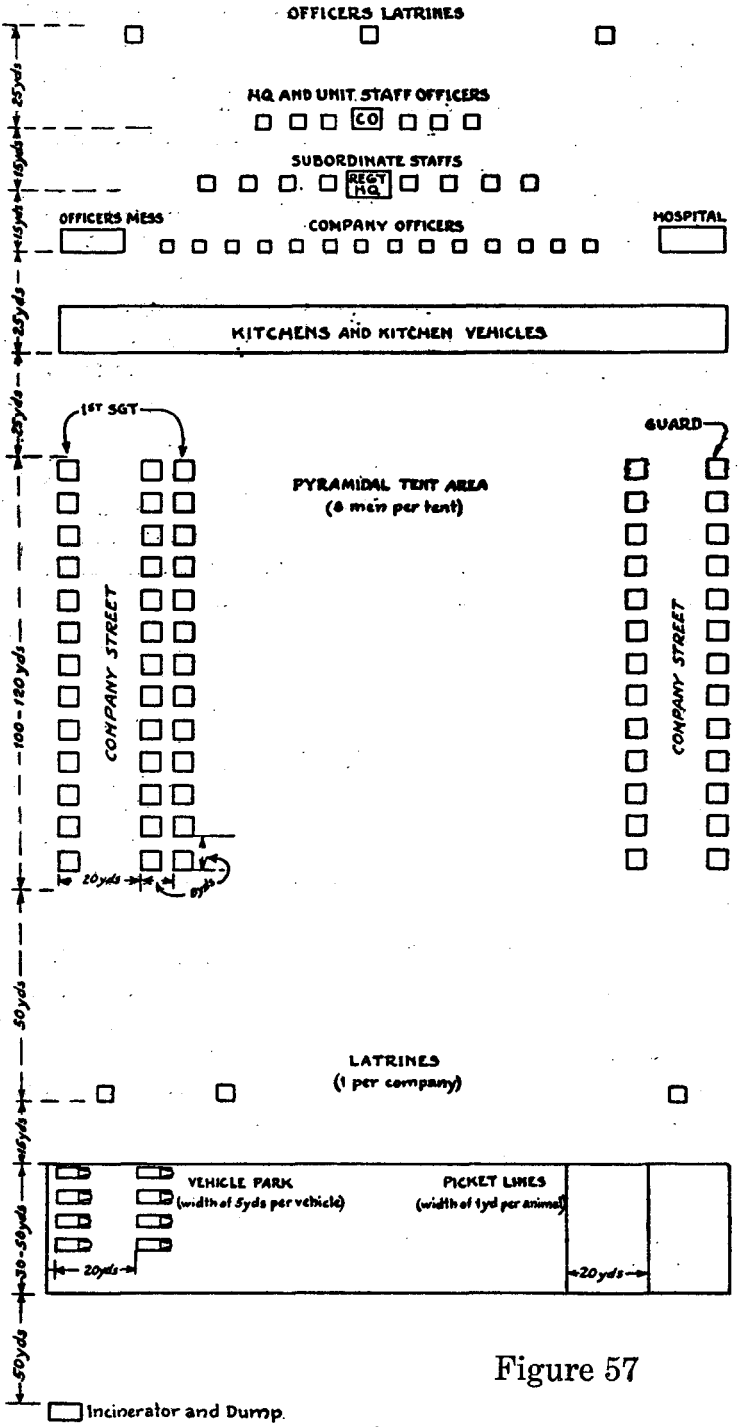


Figure 57

It is desirable to assign 6 men per large pyramidal tent with a maximum of 8 men. The area of open ground for an infantry regimental combat team (war strength) would be about 50 acres. The initial estimate of the total area for any unit may be figured on the basis of 50 sq. yds. per man, 50 sq. yds. per animal, and 100 sq. yds. per vehicle (10 acres per 1000 men or animals, 5 acres per 100 vehicles). This includes room for roads and assembly areas.

c. In a camp for units of the combined arms it will usually be desirable or necessary to have regimental or separate unit camps dispersed to a greater or less degree, with a minimum area for a division of about 480 acres. In the presence of the possibility of air attack, such a camp should not be established, but shelter should be dispersed, by battalion or company units, camouflaged, and advantage taken of existing cover and shelter.

d. SHELTER TENT CAMP.—The camp may be arranged as shown in the diagram, or shelter tents may be pitched in lines parallel to the vehicles of each company or similar unit (motorized units). Parking of vehicles abreast facilitates the use of individual vehicles; parking in close column facilitates the entry into camp and resumption of the march. Because a shelter tent camp generally is occupied only a short time, intervals may be reduced from those used in a semipermanent camp.

■ 241. BIVOUAC AREAS.—In the presence of a hostile air threat, or when tactical considerations govern, or when the nature of the terrain makes it desirable units will bivouac in a dispersed formation and without formal alignment of their elements. Full use will be made of cover, and vehicles will be camouflaged, and parked to facilitate their movement. The bivouac area of a regimental combat team, consisting of an infantry regiment and a field artillery battalion under conditions requiring maximum use of overhead cover, will vary in excess of 50 acres in proportion to the amount of cover available.

■ 242. REFERENCES.—FM 100-5, Halts and Security during halts, for tactical considerations in the selection of camp and bivouac areas.

FM 100-5, for detailed information regarding security measures.

FM 100-10, for administrative considerations.

FM 5-5, Shelters and Camps; FM 5-10, Construction; and Quartermaster Handbook for data on construction of shelter.

FM 21-10, for sanitation.

NOTE.—The number of acres in a rectangular tract is approximately equal to the product of one-seventieth of the length in yards by one seventieth of the breadth in yards. One acre equals 4840 square yards (about 70 yards square).

Chapter 10

MOVEMENT BY AIR TRANSPORT

	Paragraph
Outline of procedure	243
Orders to unit to be moved	244
Orders to the air task force	245
Initial studies	246
Conference between commander of the unit to be moved and the commander of the air task force	247
Plans and orders of unit to be moved	248
Plans and orders of air task force commander	249
Form for showing strength and composition of unit	250
Form of equipment table	251
Airplanes required	252
Airplane loads	253
Air transport movement table	254
Weights of personnel equipment and supplies	255
Supply factors	256

■ 243. OUTLINE OF PROCEDURE.—The following outline presents a procedure which may be followed in a troop movement by air transport (see diagram below).

a. Orders are issued by higher authority to the commander of the unit to be moved and to the commander of the air task force (see paragraphs 244 and 245).

b. The commander of the unit to be moved and the commander of the air task force prepare initial studies of requirements and means available (see paragraph 246).

c. The commander of the unit to be moved and the commander of the air task force confer with reference to matters of combined action (see paragraph 247).

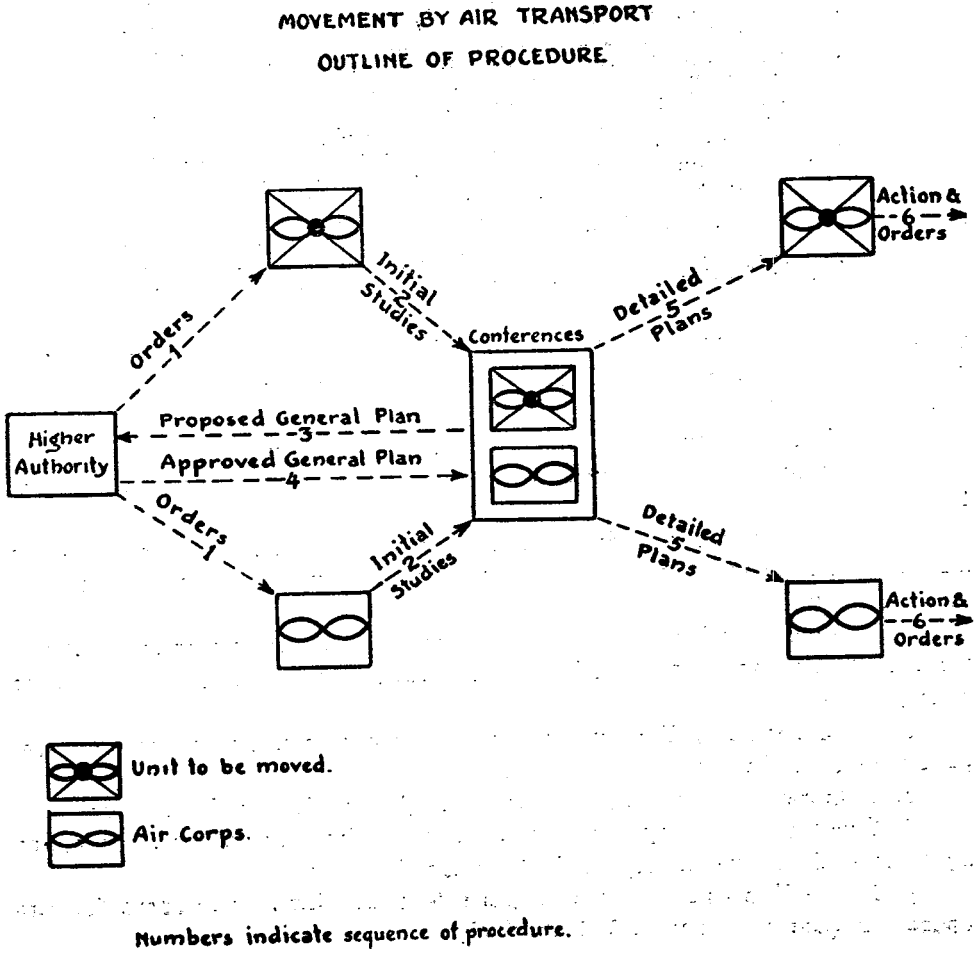
d. As a result of the conference(s) the commanders concerned prepare a general plan for the operation.

e. This general plan is submitted to higher authority for approval.

f. Based upon the approved general plan, the commanders concerned agree on matters which require further coordination.

g. Respective commanders prepare detailed plans and orders for the operation (see paragraphs 248 and 249).

Figure 58


MOVEMENT BY AIR TRANSPORT
OUTLINE OF PROCEDURE
Higher Authority
Orders 1
Initial Studies 2
Conferences
Proposed General Plan 3
Approved General Plan 4
Detailed Plans 5
Action & Orders 6
Orders 1
Initial Studies 2
Detailed Plans 5
Action & Orders 6
Unit to be moved.
Air Corps.
Numbers indicate sequence of procedure.

■ 244. ORDERS TO UNIT TO BE MOVED.—Orders from higher authority to the unit to be moved include *such of the following as are applicable:*

a. Composition of unit.
b. Destination(s).
c. Mission of unit and general plan of the operation.
d. Designation of departure airport(s).
e. Movement to departure airport(s).
(1) Movement from training areas.
(2) Quartering arrangements at or near airport(s).
f. Date and hour air transport movement begins.
g. Probable length of time during which the unit must be self-sustaining as to supply.
h. Restrictions on amount or type of equipment or supplies to be taken.
i. Provisions for subsequent supply.

■ 245. ORDERS TO THE AIR TASK FORCE.—Orders from higher authority to the air task force include *such of the following as are applicable:*

a. Composition of air task force.
b. Mission of the air task force and general plan of the operation.
c. Unit to be transported.
d. Destination(s).
e. Designation of departure airport(s).
f. Date and hour air transport movement begins.
g. Probable length of time during which air transport will be required.

■ 246. INITIAL STUDIES.—Based upon the orders received, commanders concerned make initial studies covering *such of the matters indicated below as are applicable:*

a. By the commander of the units to be moved:
(1) General plan(s) of action of unit upon arrival at destination.
(2) Strength and composition of unit (see paragraph 250).
(3) Total weight of supplies and equipment (see paragraph 251).
(4) List of bulky items, including name, volume, weight, and number of items.
(5) Method of loading desired (combat, convoy, commercial).
b. By the commander of the air task force:
(1) Number and type of airplanes that can be made available for the operation.
(2) Distance between airport(s) and destination(s).
(3) Plan of support by combat aviation.
(4) Maintenance and supply requirements.

■ 247. CONFERENCE BETWEEN THE COMMANDER OF THE UNIT TO BE MOVED AND THE COMMANDER OF THE AIR TASK FORCE.—Upon completion of initial studies, the commanders concerned discuss *such of the following subjects as are applicable:*

a. General considerations.

(1) Number and type(s) of airplanes *available* for the air transport movement.

(2) Loading capacity of each type of airplane.

(3) Determination of number and type of airplanes for *each unit* to be moved (see paragraph 252).

(4) Priority of movement of units.

(5) Consideration of composition of serials.

(6) Adjustment between the airplanes and time available for the movement; and the troops, equipment, and supplies to be moved.

(7) Airplanes required for resupply of unit to be moved (see paragraph 252).

(8) *Total* number of airplanes by type to be used for the movement.

(9) Employment of observation aviation.

(10) Coordination with Air Defense Command to include number of airplanes, type, formation and time of take-off and landing.

(11) Training matters; such as, combined training, rehearsals, practice loading and unloading.

b. Arrangements at departure airport(s).

(1) Date and hour of arrival of unit to be moved.

(2) Loading point for each airplane.

(3) Loading materials to be furnished.

(4) Hour loading begins.

(5) Ground traffic control measures.

(6) Provisions to keep runways clear of personnel and equipment.

(7) Coordination between loading and servicing of airplanes.

(8) Air defense measures.

(9) Communications to be employed during movement.

c. Arrangement for movement to destination(s).

(1) Support by combat aviation.

(2) Movement of serial commander and air commander in the same airplane in order to facilitate arrangements for landing.

(3) Air reconnaissance of landing field by serial commander and air commander prior to landing at destination.

d. Arrangements at destination(s).

(1) Coordination of operations of combat aviation, parachute troops, and air-landing troops. This includes such matters as: time at which, and area within which, bombing operations cease; seizing and clearing of landing areas by parachute troops; time of landing of airplanes; and air support of ground operations.

(2) Provisions for taxiing to unloading points immediately upon landing.

(3) Rapid unloading of personnel and equipment.

(4) Movement of personnel and equipment from unloading points to positions off the field.

(5) Provisions for unloaded airplanes to take the air without delay as protection against hostile combat aviation.

(6) Provisions for keeping runways clear of obstructions.

e. Subsequent movements.

(1) Completion of troop movement.

(2) Provisions for resupply and evacuation.

(3) Continuation of air support by combat aviation.

NOTE

While in flight, control of parachute and air landing troops is necessarily exercised by the commander of the supporting air task force. After their landing has been effected, the control of these troops reverts to their own commander.

■ 248. PLANS AND ORDERS OF UNIT TO BE MOVED.—The detailed plans and orders prepared by the unit to be moved include *such of the following as are applicable:*

a. Movement from training area to vicinity of departure airport(s):

(1) March table.

(2) Entraining table.

b. Movement to loading points at departure airport(s):

(1) Loading of trucks to correspond to loading of airplanes (loading of personnel and equipment for one airplane on one truck or two trucks, depending on capacity of trucks).

(2) Orders for movement to loading points, including such matters as time, route, traffic control, loading arrangements, guides, and marking of loading points.

(3) Loading airplanes (see paragraph 253).

c. Movement to destination(s):

(1) Air transport movement table (see paragraph 254).

(2) Initial operations at destination, including such as unloading arrangements, procurement of transportation, and tactical dispositions.

■ 249. PLANS AND ORDERS OF AIR TASK FORCE COMMANDER.—The detailed plans and orders prepared by the air task force commander include *such of the following as are applicable:*

a. Arrangements for procurement of necessary transport airplanes.

b. Arrangements for procurement of supporting combat aviation.

c. Provisions for gaining air superiority.

d. Arrangements with Air Defense Command for antiaircraft protection.

e. Coordination with Air Defense Command regarding number of airplanes employed, type, formation, and time of take off and landing.

f. Arrangements at departure airdromes for the following:

(1) Servicing and maintenance facilities.

(2) Messing and housing of air and ground crews.

(3) Use of meteorological facilities.

(4) Coordination with units to be moved for the time of their arrival at departure airdrome(s).

(5) Arrangements for the time of arrival of airplanes for the movement.

(6) Designation of loading point for each airplane.

(7) Ground traffic rules.

(8) Air traffic rules around airdrome(s).

(9) Issuance of maps and orders for the movement.

g. Movement to destination(s).

(1) Orders issued for continuous support of air transport movement by combat aviation.

(2) Arrangement for reconnaissance of landing fields.

h. At destination.

(1) Coordination of operations of parachute troops, air landing troops, and combat aviation.

(2) Orders issued to cease bombing operations in certain areas.

(3) Arrangements for landing of the transport airplanes.

(a) Air traffic rules.

(b) Ground traffic rules.

(4) Tentative unloading points designated.

(5) Orders for immediate takeoff of transport airplanes after unloading and return to departure airdrome.

(6) Continuous air support of ground operations.

■ 250. FORM FOR SHOWING STRENGTH AND COMPOSITION OF UNIT.

UNIT (INFANTRY BATTALION & DETACHMENTS)

Organization	*Personnel to be transported by air*		*Personnel to remain*	
	Officers	*Men*	*Officers*	*Men*
Hq & Hq Det (Bn)	——	——	—— (a)	—— (a)
Com Sec				
Med Sec				
Rifle Co				
Hv W Co				
Aggregate				

(a) Includes: (list of personnel to remain)

NOTE

Similar tables are required for all units to be moved.

■ 251. FORM OF EQUIPMENT TABLE.—The following extract illustrates the preparation of an equipment table. *The figures are only illustrative andshould not be considered as the number actually involved.*

EQUIPMENT TABLE
1ST BN 1ST INF
(Designation of unit)

1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
No. of Items	*Item*	*Pounds per item*	*Basis for computation*	*Bn Hq Det*	*Com Sec*	*Med Sec*	*3 Rifle Cos*	*Hv W Co*	*Total pounds per item*
350	O and EM (pistol, 7 w/o arms)	190	Includes light pack, pistol & am, 1 D-ration. (Med: same except no pistol & am)	(10) 1,900	(20) 3,800	(30) 5,700	(140) 26,600	(150) 28,500	(350) 66,500
* *	Other personnel	* *	* * * * * * * * * * * * * *	* *	* *	* *	* *	* *	* *
Ordnance equipment & ammunition (in addition to individual)									
4	Mortars, 81-mm, complete	136						544	544
Quartermaster equipment									
Signal equipment									
Medical equipment									
	Total men and equipment with D-ration			* *	* *	* *	* *	* *	* *
* *	C-ration	6	Accompanies personnel	* *	* *	* *	* *	* *	* *
	Total men, equipment and rations			* *	* *	* *	* *	* *	* *

NOTE

Similar tables are required for all units to be moved.

■ 252. AIRPLANES REQUIRED.—A method of computing the number of airplanes required by type for an air transport movement is indicated below.

Unit to be moved	*Pounds to be transported* (a)	*Airplanes required*	
		Type (b)	*Type* (b)
Inf Bn FA Bn Parachute Bn (List all other units similarly)			

(a) Ordinarily weight is the controlling factor. In the case of bulky items, volume and dimensions must be considered.
(b) The number of airplanes required by type is determined by dividing the pounds to be transported by the net cargo capacity of each type.

■ 253. AIRPLANE LOADS.—Based upon the type of airplane assigned, a detailed loading plan, as indicated below, is prepared for each type of unit to be moved.

LOADING TABLE

Organization (Co A 1st Inf) Loading Point No. _____

Quantity	*Unit*	*Where carried*	*Unit Weight*	*Total Weight*	*Remarks*
1	Officer	Pilot's compartment	190	190	Co. Comdr.
*	*	* *	*	*	*
12	Chests, Cal .30 MG am (lt)	Main cabin	20	240	
*	*	* *	*	*	*
	Total weight, personnel and equipment.				

■ 254. AIR TRANSPORT MOVEMENT TABLE.—The following extract illustrates the method of preparing an air transport movement table.

Annex ..... to FO ..... AIR TRANSPORT MOVEMENT TABLE Organization.....
Maps:..... Place.....
Date; Hour.....

1	2	3	4	5	6	7	8	9	10	11
Serial No.	*Serial commander*	*Air transport unit*	*No. airplanes required*	*Departure airport*	*Troops to be loaded*	*Hour loading begins*	*Hour of departure*	*Destination*	*Hour of arrival*	*Remarks*
				D-DAY (FIRST WAVE)						
1 * *	CO 901st Par Bn * * * * *	1st Gp * * * *	41 * *	Municipal * * * * *	901st Par Bn * * * *	H minus 58 * * *	H minus 28 * * *	I * * *	H * * *	* * *

OFFICIAL:
B
G-3

X
Commanding

1. Serials are numbered consecutively throughout.
2. H-hour and the designation of the destination(s) are given in separate orders when secrecy is desired.
3. In arriving at the various hours shown, consideration must be given to the time required for loading, taking off, flying to destination, landing, unloading, taking off, return to departure airport, and landing.

■ 255. WEIGHTS OF PERSONNEL, EQUIPMENT AND SUPPLIES.—*a. Weight of personnel and component units.*

Item	Pounds per item	Remarks
(1) *Individuals:*		
1 officer or enlisted man (pistol), individual equip & 1 D-ration	190	
1 enlisted man (rifle), individual equipment & 1 D-ration.	210	With 40 rounds.
1 enlisted man (auto rifle), individual equipment & 1 D-ration	235	With 2 loaded magazines.
(2) *Weights of component units:*		
(a) *Infantry Rifle Company*	47,014	The weights given should be used only as a guide. The total weight of each unit will depend upon the number of men transported by air, the equipment carried for each unit, and the amount of ammunition and rations transported with the troops. The weights given provide for the following ammunition: 100 rounds per rifleman; 300 rounds per automatic rifle; 5000 rounds per .30 Cal MGs; 1000 rounds per .50 Cal MG; 75 rounds per 60-mm mortar; and 80 rounds per 81-mm mortar. D-ration only included in totals.
Rifle Squad	2,570	
Auto-rifle Squad	1,697	
Rifle Platoon	11,491	
Lt MG Squad	1,190	
Lt MG Section	3,213	
60-mm Mortar Squad	1,203	
60-mm Mortar Section	4,442	
Weapons Platoon	8,543	
(b) *Infantry Heavy Weapons Company*	43,861	
.30 Cal MG Squad	1,707	
.30 Cal MG Section	3,644	
.30 Cal MG Platoon	9,046	
81-mm Mortar Squad	2,238	
81-mm Mortar Section	4,686	
81-mm Mortar Platoon	11,042	
.50 Cal MG Squad	1,804	
.50 Cal MG Section	3,838	
.50 Cal MG Platoon	9,220	
(c) *Infantry Battalion Units*		
Bn Hq	6,379	
Com Sec	3,336	
Med Sec	5,450	
Rifle Co (47,014)		
3 Rifle Cos	141,042	
Hv Wp Co	43,861	
Total Inf Bn	200,068	
(d) *Infantry Antitank Co. (37-mm)*	42,193	
Squad	2,238	
Section	4,676	
Platoon	12,845	
(e) *Infantry Regt's Hq and Hq Co*	20,924	

NOTE: For a rough estimate for infantry armed, equipped and supplied for a limited combat operation for a twenty-four hour period, use a weight of 235 lbs. per man.

Item	Pounds per item	Remarks
(f) *Field Artillery Battalion Units*		Following equipment not included: barrack bags, officers bedding rolls, field desks, cooking outfits, wall tents, and non-portable typewriters.
FA Btry (75-mm How pack)	41,674	
Bn Hq FA Bn (75-mm How pack)	24,012	
FA Bn (75-mm How pack) (3 Btrys and Bn Hq)	149,034	
(g) *Engineers*		Includes reasonable quantities of engineer equipment and supplies.
1 Engineer Squad	3,279	
1 Engineer Platoon	10,610	
1 Engineer Company	33,796	
(h) *Detachment—Div Sig Co*	3,480	Includes 2 SCR 177 sets.
(i) *Parachute troops*		See FM 7-20.
Rifle Platoons: Each airplane should be capable of transporting, in addition to airplane crew: 13 parachutists and 3 equipment delivery containers (each 300 lbs net cargo capacity).		
Co Hqs One airplane required for each rifle company headquarters.		
Bn Hqs Two airplanes required for each Bn Hq and Hq Co.		

b. Weights of essential items of equipment and supplies.

Item	Pounds per item	Remarks
Rations and water		
Reserve ration (extra) (C-ration)	5.25	One meal 1.75 lbs.
Can, water, 10-gal (with water)	100.00	
Ordnance equipment and ammunition		
Cartridge, Very, assorted	.20	
Chest, cal .30 MG Am (250 rounds)	20.00	
Chest, cal .30 LMG Am (250 rounds)	20.00	
Chest, cal .50 MG Am (100 rounds)	36.00	
Chest, spare parts, MG	12.50	
Gun, submachine, cal .45	10.75	
Gun, 37-mm, Antitank	912.00	
Howitzer and carriage, pack, 75-mm M1	1,269.00	
Tube ---------- 221.00		

Item	Pounds per item	Remarks
Breech mechanism ---------- 121.00		
Top sleigh ---------- 121.00		
Bottom sleigh and recoil ---------- 203.00		
Cradle ---------- 100.00		
Front trail ---------- 235.50		
Rear trail ---------- 95.00		
Axle and traversing mechanism ---------- 65.50		
Wheels ---------- 96.50		
Telescope and mount ---------- 10.50		
Machine gun, cal .30, light complete	50.00	
Machine gun, Browning, cal .30, complete	137.00	
Machine gun, Browning, cal .50, complete	124.00	
Magazine, submachine gun (50-rd) filled	5.00	
Mortar, 60-mm, complete	42.00	
Mortar, 81-mm, complete	136.00	
Projector, ground signal	4.20	
Rifle, automatic, cal .30 (B&R), M1918A2	23.50	
Rifle, automatic, cal .30, M-1	9.00	
Round, 37-mm antitank gun Am, AP	3.41	
Round, 37-mm antitank gun AM, HE	2.72	
Round, 60-mm mortar Am	3.50	
Rounds, 81-mm mortar Am (L)	7.20	
Signals, ground, assorted	.75	
Quartermaster equipment		
Axe, handled	4.00	
Bag, water sterilizing	16.75	
Pick, handled	6.00	
Shovel, general purpose	4.50	
Medical equipment		
Bucket, canvas	2.00	
Chest, MD (99280)	121.00	
Chest, MD (99281)	150.00	

Item	Pounds per item	Remarks
Medical equipment (contd)		
Chest, MD (99282)	161.00	
Litter	15.00	
Set, splint	50.00	
Set, blanket	138.00	
Set, lantern	30.00	
Signal equipment		
Axle, RL 27-A	5.00	
Batteries for radio set SCR-195	12.00	Spare
Chest, BC-5	35.00	
Codes (special for the operation)	.25	
Devices, code	.50	
Lineman equipment	15.00	
Panel set	23.00	
Radio, SCR-195	27.00	
Radio, SCR-178	203.00	
Telephone, EE-8	9.75	
Wire, field telephone, 1-mile	132.00	

■ 256. SUPPLY FACTORS.—Factors, other than tactical, influencing supply by air transport consist of:

a. Characteristics of air transport:

(1) Pay load carrying capacity of the airplane in tons.
(2) Cubature of space available.
(3) Door dimensions and conformity of fuselage areas.
(4) Amount of pay load capacity to be reserved for fuel for the airplane for return trip when required.

b. Supply characteristics:

(1) Weight of supplies to be moved.
(2) Volume and dimensions of items.

Chapter 11

MISCELLANEOUS DATA

■ 257. FACTORS FOR CONVERSION OF UNITS.—To convert A to B, multiply A by C. To convert B to A, multiply B by D.

1	2	3	4
Unit	*Factor*		*Unit*
A	C	D	B
Length:			
Miles	63,360. *c*	0.00001578	Inches
Miles	5,280. *c*	0.0001894	Feet
Miles	1.609	0.6214	Kilometers
Knots (nautical miles) *a*	1.1516	0.8684	Miles
Meters	3.281	0.3048	Feet
Kilometers	3,281.0	0.0003048	Feet
Inches	2.540	0.3937	Centimeters
Feet	.1667	6.	Fathoms
Surface:			
Square miles	27,878,400.	0.00000003587	Square feet
Square miles	640. *c*	0.001563	Acres
Acres	43,560. *c*	0.00002296	Square feet
Acres	4,047.	0.0002471	Square meters
Square inches	6.452	0.1550	Square centimeters
Square meters	10.76	0.0929	Square feet
Volume:			
Cubic feet	0.025	40.0	Tons (shipping)
Cubic feet	1,728.	0.0005787	Cubic inches
Cubic inches	16.39	0.06102	Cubic centimeters
Cubic meters	35.31	0.02832	Cubic feet
Cubic feet	7.481	0.1337	U.S. gallons
Cubic feet	6.23	0.1605	Imperial gallons
Cubic feet	28.32	0.03531	Liters
U.S. gallons	231. *c*	0.004329	Cubic inches
U.S. gallons	3.785	0.2642	Liters
Imperial gallons	1.201	0.8327	U.S. gallons
Fluid ounces	1.805	0.5540	Cubic inches
Velocities:			
Miles per hour	1.467	0.6818	Feet per second
Meters per second	3.281	0.3048	Feet per second
Meters per second	2.237	0.4470	Miles per hour
Pressure:			
Atmospheres (mean)	14.70	0.0680	Pounds per square inch
Atmospheres (mean)	29.92	0.03342	Inches of mercury
Pounds per square inch	2.036	0.4912	Inches of mercury
Feet of water	62.42	0.01602	Pounds per square foot
Weight:			
Ounces	0.0625	16.0	Pounds
Pounds	7,000.0 *c*	0.0001429	Grains (avoirdupois)
Kilograms	2.205	0.4536	Pounds
Short tons	2,000.	0.0005	Pounds
Long tons	1.120 *c*	0.8929	Short tons
Angular measurement:			
Circle	360.0		Degrees
Degree	60.0		Minutes
Degree	17.8	0.056	Mils
Mil *b*	3.27	0.296	Minutes
Minute	60.		Seconds

NOTES

a Normally express speed as a number of nautical miles per hour.
b A mil is the angle subtended by an arc of 1 unit on a radius of 1,000 units or, in other words, an angle the tangent of which is approximately (small angles) 1/1,000. The arbitrary value of the mil adopted by the United States Army is 1/6,400 of a circle.
c Exact values.

258. Common Calibers (Diameter of Bore):

1	2	3	4
Millimeters	*Inches*	*Millimeters*	*Inches*
6.	.236	105.	4.134
7.	.276	106.678	4.200
8.	.315	114.298	4.500
9.	.354	120.	4.725
11.	.433	126.998	5.000 *f*
12.	.472	150.	5.906
13.	.512	152.397	6.000
20.	.787	155.	6.103
25.	.984	180.	7.087
37. *a*	1.457	203.196	8.000
47. *b*	1.850	210.	8.268
57. *c*	2.244	220.	8.662
60.	2.362	233.676	9.200
65	2.559	240.	9.449
75.	2.953	320.	12.599
76.	2.992	420.	16.536
76.199	3.000 *d*		
77.	3.032		
81.	3.189		
83.819	3.300 *e*		
88.	3.465		
90.	3.543		
93.977	3.700		
100	3.937		

a Also called 1-pounder.
b Also called 3-pounder.
c Also called 6-pounder.
d Also called 13-pounder.
e Also called 18-pounder.
f Also called 60-pounder.

259. Fordable Depth of Water:[a]

Type unit	*Depth of water (feet)*
Infantry	3½
Horse cavalry	4½
Artillery (horse-drawn)	3
Wagons	3
Trucks and truck-drawn artillery	2

a Moderate current; hard bottom.

■ 260. CARRYING CAPACITY OF ICE:[b]

3 inches ---------- Small groups of men
4 to 5 inches ---------- Horse cavalry in small groups
7 inches ---------- Wagons and 75-mm guns
9 to 12 inches ---------- Division loads (10 tons)
12 inches ---------- Light tanks (singly)
16 inches ---------- Twelve-ton loads
20 inches ---------- Army loads (approximately 20 tons)

b New sound ice in floating contact with the water.

■ 261. CHARACTERISTICS OF METHODS OF EXPRESSING DIRECTIONS OF ANGULAR MEASUREMENTS:

Designation	*Units of angular measurement used*	*Base direction*	*Direction of measurement*	*Method of expression*
Azimuth	Degrees or mils	True, magnetic or grid (Y) north unless otherwise stated (south may be used)	Clockwise	True (magnetic) (grid) (Y) azimuth -- mils (--° --′)
Bearings	Degrees	True or magnetic north and south; whichever is designated	Direction which gives smallest arc (must not exceed 90°) is used and is designated	N (S) --° --′ E (W)
Compass	Points (11° 15′ each)	Magnetic or true north and south	Direction which gives smallest arc	(N E by E)
Clock face, horizontal	Hours on a clock face	12 o'clock, observer at center	From 12 o'clock to the hour indicated	At ---- o'clock
Clock face, vertical	Hours on a clock face	Vertical, target or reference point at center	From 12 o'clock to the hour indicated	At ---- o'clock
Vertical angle	Degrees or mils Per cent or ratio (slopes and roads)	Horizontal	Vertically	Elevation, + (−) --mils (-- ° --′) slope, 10%, gradient 1:10
Air and forward observers (FA)	Yards R or L Yards O and S	Line of fire	Right or left and short or over and from observed point	----R (L) ----O (S)

NOTE

For military purposes, exact directions should normally be expressed as azimuths measured from grid, true, or rarely, magnetic north.

■ 262. WEIGHTS—(approximate) GASOLINE, OIL AND WATER:

	Pounds per gallon *a*	Pounds per cubic foot	Pounds per barrel (42 gallons)
Gasoline	6.1	45.6	256.2
Oil, lubricating	7.0	52.4	294.0
Water, fresh	8.345	62.4	350.5

NOTE

a. Weight of container not included. Commercial 10-gallon milk cans weigh approximately 27 pounds.

■ 263. SPEED OF SOUND.—*a. In air.*—At 50° Fahrenheit equals 1,107.6 feet per second, in still air. With a 10 mile per hour wind against or in the direction of sound travel, the speed of sound decreases or increases about 15 feet per second; for a cross-wind, no effect. Speed increases one foot per second for each degree Fahrenheit. Humidity has little effect on speed.

b. In water.—At 33° Fahrenheit equals 4,938 feet per second.

■ 264. JOINT ARMY AND NAVY OPERATIONS.—See FM 31-5 for information concerning joint operations and data in regard to the following:

a. Boat nomenclature.
b. Types of navy ships and aircraft.
c. Small boat types.
d. Definitions of sea terms.

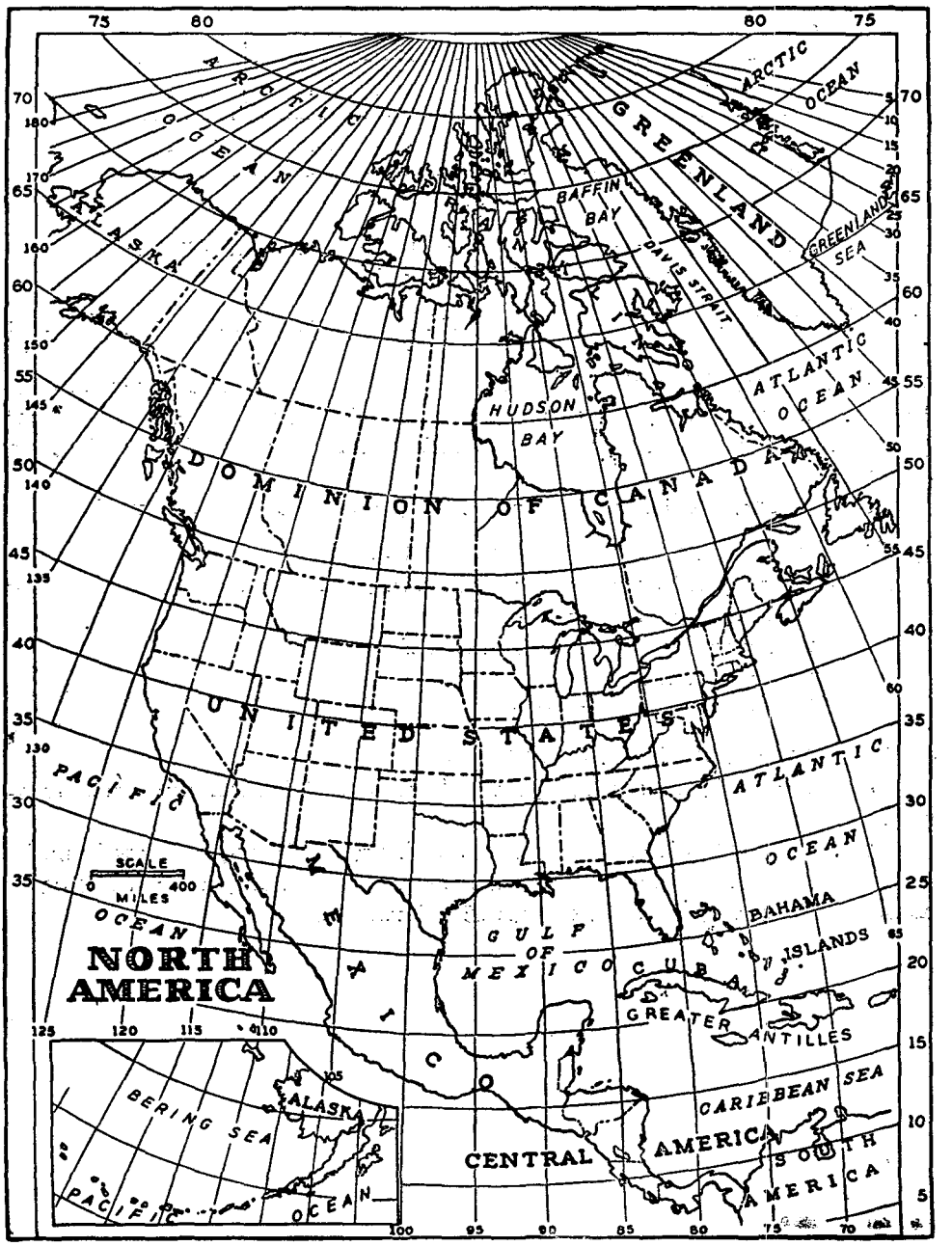
■ 265. METHODS OF DESIGNATING TIME.

a. NAVY.—Hours are designated from 0 to 24 beginning with midnight.

b. AIR CORPS.—Hours are designated from 0 to 24 beginning with midnight except that four figures are always used. For example: 8:00 AM becomes 0800 hour; 1:15 PM becomes 1315 hour, etc.

266. Map of North America Showing Latitude and Longitude.

Figure 59
LATITUDE AND LONGITUDE, NORTH AMERICA



■ 267 TABLES OF DAYLIGHT, DARKNESS, SUNRISE AND SUNSET.—Use tables as given to obtain the hour of daylight, darkness, sunrise or sunset in Local Civil Time. For greater accuracy when the station is not on one of the following standard meridians: 15, 30, 45, 60, 75, 90, 105, 120, 135, 150, 165, or 180 degrees *east* or *west* of *Greenwich, increase* the time given by four minutes for each degree the *station* is *west* of the *standard meridian,* or *decrease* the given time by four minutes for each degree the *station* is *east* of the *standard meridian.*

a. NORTHERN HEMISPHERE.—Use following Tables.

b. SOUTHERN HEMISPHERE.—Use the time as taken from the table of the corresponding latitude, not for the given date but for a date six months earlier or later, and make a total correction to the time as given (plus or minus).

EXAMPLE.—To find the hour of daylight for May 12, latitude 35 degrees South. The date six months from May 12, gives the hour of daylight as 5:24 AM and a correction of plus 12 minutes. Thus 5:24 plus 12 equals 5:36 AM, the hour required.

NOTE: Times of daylight and darkness are based on nautical twilight, i.e., when the sun is 12 degrees below the horizon.

LATITUDE 0°

Date	Daylight h m	Sunrise h m	Sunset h m	Darkness h m	Hours of daylight h m	Hours of darkness h m	Correction for south latitude m
January							
1	5 09	6 00	6 07	6 58	13 49	10 11	− 1
11	5 14	6 04	6 12	7 02	13 48	10 12	− 4
21	5 18	6 08	6 15	7 04	13 44	10 16	− 6
31	5 22	6 10	6 17	7 05	13 43	10 17	− 9
February							
10	5 24	6 11	6 18	7 05	13 41	10 19	−11
20	5 24	6 10	6 17	7 03	13 39	10 21	−12
March							
2	5 24	6 09	6 16	7 01	13 37	10 23	−14
12	5 22	6 07	6 13	6 58	13 36	10 24	−15
22	5 19	6 04	6 10	6 55	13 36	10 24	−15
April							
1	5 16	6 01	6 07	6 52	13 36	10 24	−15
11	5 13	5 58	6 05	6 50	13 37	10 23	−15
21	5 09	5 55	6 02	6 48	13 39	10 21	−14
May							
1	5 07	5 54	6 00	6 48	13 41	10 19	−13
11	5 05	5 53	6 00	6 48	13 43	10 17	−11
21	5 04	5 53	6 00	6 49	13 45	10 15	− 9
31	5 04	5 54	6 01	6 51	13 47	10 13	− 7
June							
10	5 05	5 56	6 03	6 54	13 49	10 11	− 5
20	5 06	5 58	6 05	6 56	13 50	10 10	− 2
30	5 09	6 00	6 07	6 58	13 49	10 11	0
July							
10	5 11	6 02	6 09	6 59	13 48	10 12	+ 3
20	5 13	6 03	6 10	6 59	13 46	10 14	+ 5
30	5 14	6 03	6 10	6 58	13 44	10 16	+ 8
August							
9	5 14	6 02	6 09	6 56	13 42	10 18	+10
19	5 14	6 00	6 07	6 54	13 40	10 20	+12
29	5 12	5 58	6 04	6 50	13 38	10 22	+13
September							
8	5 10	5 54	6 01	6 46	13 36	10 24	+14
18	5 06	5 51	5 58	6 42	13 36	10 24	+15
28	5 03	5 48	5 54	6 39	13 36	10 24	+16
October							
8	5 00	5 44	5 51	6 36	13 36	10 24	+15
18	4 56	5 42	5 49	6 34	13 38	10 22	+15
28	4 54	5 41	5 47	6 34	13 40	10 20	+14
November							
7	4 53	5 40	5 47	6 35	13 42	10 18	+12
17	4 53	5 41	5 48	6 37	13 42	10 18	+10
27	4 54	5 44	5 51	6 41	13 47	10 13	+ 8
December							
7	4 57	5 48	5 55	6 46	13 49	10 11	+ 6
17	5 01	5 52	6 00	6 51	13 40	10 20	+ 3
27	5 06	5 57	6 05	6 56	13 50	10 10	+ 1

LATITUDE 10° NORTH

Date	Daylight h m	Sunrise h m	Sunset h m	Darkness h m	Hours of daylight h m	Hours of darkness h m	Correction for south latitude m
January							
1	5 25	6 17	5 50	6 41	13 16	10 44	− 1
11	5 30	6 20	5 56	6 46	13 16	10 44	− 4
21	5 33	6 22	6 00	6 50	13 17	10 43	− 6
31	5 34	6 23	6 04	6 53	13 19	10 41	− 9
February							
10	5 34	6 21	6 08	6 55	13 21	10 39	−11
20	5 32	6 18	6 10	6 56	13 24	10 36	−12
March							
2	5 28	6 14	6 11	6 57	13 33	10 27	−14
12	5 24	6 09	6 11	6 57	13 33	10 27	−15
22	5 18	6 03	6 11	6 57	13 39	10 21	−15
April							
1	5 12	5 58	6 11	6 57	13 45	10 15	−15
11	5 06	5 52	6 10	6 57	13 51	10 09	−15
21	4 59	5 47	6 11	6 59	14 00	10 00	−14
May							
1	4 54	5 43	6 11	7 01	14 07	9 53	−13
11	4 50	5 40	6 13	7 03	14 13	9 47	−11
21	4 47	5 38	6 15	7 07	14 20	9 40	− 9
31	4 45	5 38	6 17	7 10	14 25	9 35	− 7
June							
10	4 45	5 38	6 20	7 13	14 28	9 32	− 5
20	4 46	5 40	6 22	7 16	14 30	9 30	− 2
30	4 49	5 42	6 24	7 18	14 29	9 31	0
July							
10	4 52	5 45	6 25	7 18	14 26	9 34	+ 3
20	4 55	5 47	6 25	7 17	14 22	9 38	+ 5
30	4 58	5 49	6 23	7 14	14 16	9 44	+ 8
August							
9	5 00	5 50	6 20	7 10	14 10	9 50	+10
19	5 03	5 51	6 16	7 04	14 01	9 59	+12
29	5 04	5 51	6 11	6 58	13 54	10 06	+13
September							
8	5 04	5 50	6 05	6 52	13 48	10 12	+14
18	5 04	5 50	5 59	6 45	13 41	10 19	+15
28	5 03	5 49	5 53	6 38	13 35	10 25	+16
October							
8	5 02	5 48	5 47	6 33	13 31	10 29	+15
18	5 02	5 49	5 42	6 28	13 26	10 34	+15
28	5 03	5 50	5 38	6 25	13 22	10 38	+14
November							
7	5 04	5 52	5 36	6 24	13 20	10 40	+12
17	5 06	5 55	5 35	6 24	13 18	10 42	+10
27	5 09	6 00	5 36	6 26	13 17	10 43	+ 8
December							
7	5 13	6 04	5 38	6 29	13 16	10 44	+ 6
17	5 18	6 10	5 42	6 34	13 16	10 44	+ 3
27	5 23	6 15	5 47	6 39	13 16	10 44	+ 1

LATITUDE 20° NORTH

Date	Daylight h m	Sunrise h m	Sunset h m	Darkness h m	Hours of daylight h m	Hours of darkness h m	Correction for south latitude m
January							
1	5 40	6 35	5 32	6 26	12 46	11 14	— 1
11	5 44	6 38	5 38	6 32	12 48	11 12	— 4
21	5 45	6 38	5 45	6 38	12 53	11 07	— 6
31	5 44	6 36	5 51	6 43	12 59	11 01	— 9
February							
10	5 42	6 32	5 57	6 48	13 06	10 54	—11
20	5 37	6 27	6 01	6 51	13 14	10 46	—12
March							
2	5 31	6 20	6 05	6 55	13 24	10 36	—14
12	5 23	6 12	6 09	6 58	13 35	10 25	—15
22	5 14	6 03	6 12	7 01	13 47	10 13	—15
April							
1	5 05	5 54	6 14	7 04	13 59	10 01	—15
11	4 55	5 46	6 17	7 08	14 13	9 47	—15
21	4 46	5 38	6 20	7 12	14 26	9 34	—14
May							
1	4 38	5 31	6 23	7 17	14 39	9 21	—13
11	4 31	5 26	6 27	7 23	14 52	9 08	—11
21	4 25	5 22	6 31	7 28	15 03	8 57	— 9
31	4 21	5 20	6 35	7 34	15 13	8 47	— 7
June							
10	4 20	5 20	6 39	7 38	15 18	8 42	— 5
20	4 21	5 21	6 42	7 42	15 21	8 39	— 2
30	4 23	5 23	6 43	7 43	15 20	8 40	0
July							
10	4 28	5 27	6 43	7 42	15 14	8 46	+ 3
20	4 33	5 30	6 42	7 39	15 06	8 54	+ 5
30	4 38	5 34	6 38	7 34	14 56	9 04	+ 8
August							
9	4 43	5 38	6 33	7 27	14 44	9 16	+10
19	4 48	5 41	6 26	7 19	14 31	9 29	+12
29	4 52	5 43	6 18	7 10	14 18	9 42	+13
September							
8	4 55	5 46	6 10	7 00	14 05	9 55	+14
18	4 58	5 48	6 00	6 50	13 52	10 08	+15
28	5 00	5 50	5 51	6 41	13 41	10 19	+16
October							
8	5 03	5 52	5 43	6 32	13 29	10 31	+15
18	5 06	5 56	5 35	6 24	13 18	10 42	+15
28	5 09	6 00	5 28	6 18	13 09	10 51	+14
November							
7	5 13	6 04	5 23	6 14	13 01	10 59	+12
17	5 17	6 09	5 20	6 12	12 55	11 05	+10
27	5 22	6 16	5 19	6 13	12 51	11 09	+ 8
December							
7	5 28	6 22	5 20	6 15	12 47	11 13	+ 6
17	5 33	6 28	5 24	6 18	12 45	11 15	+ 3
27	5 38	6 33	5 29	6 24	12 46	11 14	+ 1

LATITUDE 30° NORTH

Date	Daylight h m	Sunrise h m	Sunset h m	Darkness h m	Hours of daylight h m	Hours of darkness h m	Correction for south latitude m
January							
1	5 55	6 56	5 11	6 12	12 17	11 43	— 1
11	5 57	6 57	5 19	6 20	12 23	11 37	— 4
21	5 56	6 56	5 27	6 27	12 31	11 29	— 6
31	5 54	6 51	5 36	6 34	12 40	11 20	— 9
February							
10	5 48	6 45	5 44	6 41	12 53	11 07	—11
20	5 40	6 36	5 52	6 48	13 08	10 52	—12
March							
2	5 31	6 26	6 00	6 55	13 24	10 36	—14
12	5 20	6 14	6 06	7 02	13 42	10 18	—15
22	5 07	6 02	6 13	7 08	14 01	9 59	—15
April							
1	4 54	5 50	6 18	7 15	14 21	9 39	—15
11	4 41	5 38	6 24	7 23	14 42	9 18	—15
21	4 28	5 28	6 30	7 31	15 03	8 57	—14
May							
1	4 15	5 18	6 37	7 40	15 25	8 35	—13
11	4 05	5 10	6 43	7 49	15 44	8 16	—11
21	3 56	5 04	6 50	7 58	16 02	7 58	— 9
31	3 50	5 00	6 56	8 06	16 16	7 44	— 7
June							
10	3 46	4 58	7 00	8 12	16 26	7 34	— 5
20	3 46	4 59	7 04	8 16	16 30	7 30	— 2
30	3 49	5 02	7 05	8 17	16 28	7 32	0
July							
10	3 55	5 06	7 04	8 15	16 20	7 40	+ 3
20	4 02	5 11	7 01	8 10	16 08	7 52	+ 5
30	4 10	5 17	6 55	8 01	15 51	8 09	+ 8
August							
9	4 19	5 23	6 47	7 51	15 32	8 28	+10
19	4 28	5 29	6 38	7 39	15 11	8 49	+12
29	4 35	5 35	6 27	7 26	14 51	9 09	+13
September							
8	4 43	5 40	6 15	7 12	14 29	9 31	+14
18	4 49	5 46	6 02	6 58	14 09	9 51	+15
28	4 55	5 51	5 50	6 45	13 50	10 10	+16
October							
8	5 01	5 57	5 38	6 33	13 32	10 28	+15
18	5 07	6 04	5 27	6 23	13 16	10 44	+15
28	5 14	6 11	5 17	6 13	12 59	11 01	+14
November							
7	5 20	6 18	5 09	6 07	12 47	11 13	+12
17	5 27	6 26	5 03	6 02	12 35	11 25	+10
27	5 34	6 35	5 00	6 00	12 26	11 34	+ 8
December							
7	5 41	6 43	5 00	6 01	12 20	11 40	+ 6
17	5 48	6 50	5 03	6 04	12 16	11 44	+ 3
27	5 53	6 54	5 08	6 09	12 16	11 44	+ 1

LATITUDE 35° NORTH

Date	Daylight h	Daylight m	Sunrise h	Sunrise m	Sunset h	Sunset m	Darkness h	Darkness m	Hours of daylight h	Hours of daylight m	Hours of darkness h	Hours of darkness m	Correction for south latitude m
January													
1	6	02	7	08	4	59	6	05	12	03	11	57	— 1
11	6	03	7	09	5	08	6	13	12	10	11	50	— 4
21	6	02	7	06	5	17	6	21	12	19	11	41	— 6
31	5	58	7	00	5	27	6	30	12	32	11	28	— 9
February													
10	5	51	6	52	5	37	6	39	12	48	11	12	—11
20	5	41	6	41	5	47	6	48	13	07	10	53	—12
March													
2	5	30	6	29	5	56	6	56	13	24	10	36	—14
12	5	16	6	16	6	05	7	05	13	49	10	11	—15
22	5	02	6	02	6	13	7	14	14	12	9	48	—15
April													
1	4	47	5	48	6	21	7	23	14	36	9	24	—15
11	4	31	5	34	6	29	7	33	15	02	8	58	—15
21	4	15	5	21	6	37	7	43	15	28	8	32	—14
May													
1	4	01	5	10	6	45	7	55	15	54	8	06	—13
11	3	47	5	00	6	53	8	06	16	19	7	41	—11
21	3	36	4	53	7	01	8	17	16	41	7	19	— 9
31	3	28	4	48	7	08	8	27	16	59	7	01	— 7
June													
10	3	23	4	45	7	13	8	35	17	12	6	48	— 5
20	3	23	4	46	7	17	8	40	17	17	6	43	— 2
30	3	26	4	49	7	18	8	40	17	14	6	46	0
July													
10	3	33	4	54	7	16	8	37	17	04	6	56	+ 3
20	3	42	5	00	7	12	8	30	16	48	7	12	+ 5
30	3	52	5	07	7	05	8	19	16	27	7	33	+ 8
August													
9	4	03	5	15	6	56	8	06	16	03	7	57	+10
19	4	14	5	22	6	44	7	52	15	38	8	22	+12
29	4	24	5	30	6	32	7	36	15	12	8	48	+13
September													
8	4	34	5	37	6	18	7	20	14	46	9	14	+14
18	4	43	5	44	6	04	7	04	14	21	9	39	+15
28	4	52	5	52	5	49	6	49	13	57	10	03	+16
October													
8	4	59	6	00	5	35	6	35	13	36	10	24	+15
18	5	07	6	08	5	22	6	22	13	15	10	45	+15
28	5	15	6	17	5	11	6	12	12	56	11	04	+14
November													
7	5	24	6	26	5	01	6	03	12	39	11	21	+12
17	5	32	6	35	4	54	5	57	12	25	11	35	+10
27	5	40	6	46	4	49	5	54	12	14	11	46	+ 8
December													
7	5	48	6	54	4	48	5	54	12	06	11	54	+ 6
17	5	55	7	02	4	50	5	57	12	02	11	58	+ 3
27	6	00	7	07	4	55	6	02	12	02	11	58	+ 1

LATITUDE 40° NORTH

Date	Daylight h	Daylight m	Sunrise h	Sunrise m	Sunset h	Sunset m	Darkness h	Darkness m	Hours of daylight h	Hours of daylight m	Hours of darkness h	Hours of darkness m	Correction for south latitude m
January													
1	6	09	7	22	4	45	5	58	11	49	12	11	− 1
11	6	09	7	22	4	55	6	07	11	58	12	02	− 4
21	6	07	7	18	5	06	6	16	12	09	11	51	− 6
31	6	02	7	10	5	17	6	26	12	24	11	36	− 9
February													
10	5	53	7	00	5	29	6	37	12	44	11	16	−11
20	5	41	6	47	5	41	6	48	13	07	10	53	−12
March													
2	5	28	6	33	5	52	6	58	13	30	10	30	−14
12	5	12	6	18	6	03	7	09	13	57	10	03	−15
22	4	55	6	01	6	13	7	21	14	26	9	43	−15
April													
1	4	37	5	45	6	24	7	33	14	56	9	04	−15
11	4	19	5	29	6	34	7	45	15	26	8	34	−15
21	4	00	5	14	6	44	7	59	15	59	8	01	−14
May													
1	3	42	5	01	6	54	8	13	16	31	7	29	−13
11	3	26	4	49	7	04	8	28	17	02	6	58	−11
21	3	11	4	40	7	13	8	43	17	32	6	28	− 9
31	3	00	4	34	7	21	8	56	17	56	6	04	− 7
June													
10	2	53	4	31	7	28	9	06	18	13	5	47	− 5
20	2	51	4	31	7	32	9	11	18	20	5	40	− 2
30	2	55	4	34	7	33	9	11	18	16	5	44	0
July													
10	3	03	4	40	7	30	9	06	18	03	5	57	+ 3
20	3	15	4	47	7	25	8	56	17	41	6	19	+ 5
30	3	29	4	56	7	16	8	42	17	13	6	47	+ 8
August													
9	3	44	5	05	7	05	8	26	16	42	7	18	+10
19	3	58	5	14	6	52	8	08	16	10	7	50	+12
29	4	11	5	24	6	37	7	50	15	39	8	21	+13
September													
8	4	23	5	34	6	21	7	31	15	08	8	52	+14
18	4	35	5	43	6	05	7	12	14	37	9	23	+15
28	4	46	5	53	5	48	6	54	14	08	9	52	+16
October													
8	4	56	6	02	5	32	6	38	13	42	10	18	+15
18	5	06	6	13	5	17	6	23	13	17	10	43	+15
28	5	16	6	24	5	03	6	10	12	54	11	06	+14
November													
7	5	26	6	35	4	52	6	00	12	34	11	26	+12
17	5	36	6	46	4	43	5	53	12	17	11	43	+10
27	5	46	6	58	4	37	5	49	12	03	11	57	+ 8
December													
7	5	55	7	08	4	35	5	48	11	53	12	07	+ 6
17	6	02	7	16	4	36	5	50	11	48	12	12	+ 3
27	6	07	7	21	4	41	5	55	11	48	12	12	+ 1

LATITUDE 45° NORTH

Date	Daylight h	Daylight m	Sunrise h	Sunrise m	Sunset h	Sunset m	Darkness h	Darkness m	Hours of daylight h	Hours of daylight m	Hours of darkness h	Hours of darkness m	Correction for south latitude m
January													
1	6	16	7	38	4	29	5	51	11	35	12	25	− 1
11	6	16	7	37	4	39	6	00	11	44	12	16	− 4
21	6	12	7	31	4	52	6	11	11	59	12	01	− 6
31	6	05	7	22	5	06	6	23	12	18	11	42	− 9
February													
10	5	55	7	09	5	20	6	36	12	41	11	19	−11
20	5	42	6	54	5	34	6	48	13	06	10	54	−12
March													
2	5	26	6	37	5	48	7	02	13	36	10	24	−14
12	5	07	6	19	6	01	7	15	14	08	9	52	−15
22	4	47	6	01	6	14	7	30	14	43	9	17	−15
April													
1	4	25	5	42	6	27	7	45	15	20	8	40	−15
11	4	03	5	24	6	40	8	01	15	58	8	02	−15
21	3	41	5	06	6	52	8	19	16	38	7	22	−14
May													
1	3	18	4	50	7	05	8	38	17	20	6	40	−13
11	2	57	4	36	7	17	8	58	18	01	5	59	−11
21	2	37	4	25	7	28	9	18	18	41	5	19	− 9
31	1	20	4	17	7	38	9	37	20	17	3	43	− 7
June													
10	2	07	4	13	7	45	9	52	19	45	4	15	− 5
20	2	03	4	13	7	50	9	59	19	52	4	08	− 2
30	2	08	4	16	7	50	9	58	19	50	4	10	0
July													
10	2	20	4	22	7	47	9	49	19	29	4	31	+ 3
20	2	38	4	31	7	40	9	33	18	55	5	05	+ 5
30	2	57	4	42	7	30	9	14	18	17	5	43	+ 8
August													
9	3	16	4	54	7	16	8	58	17	42	6	18	+10
19	3	36	5	06	7	01	8	29	16	53	7	07	+12
29	3	53	5	17	6	44	8	07	16	14	7	46	+13
September													
8	4	10	5	29	6	25	7	44	15	34	8	26	+14
18	4	25	5	41	6	06	7	22	14	57	9	03	+15
28	4	39	5	53	5	47	7	01	14	22	9	38	+16
October													
8	4	52	6	06	5	29	6	42	13	50	10	10	+15
18	5	04	6	19	5	11	6	25	13	21	10	39	+15
28	5	17	6	32	4	55	6	10	12	53	11	07	+14
November													
7	5	29	6	46	4	41	5	57	12	28	11	32	+12
17	5	41	6	58	4	30	5	48	12	07	11	53	+10
27	5	52	7	13	4	22	5	42	11	50	12	10	+ 8
December													
7	6	02	7	24	4	19	5	40	11	38	12	22	+ 6
17	6	09	7	33	4	20	5	42	11	33	12	27	+ 3
27	6	15	7	38	4	24	5	47	11	32	12	28	+ 1

LATITUDE 50° NORTH

Date	Daylight h m	Sunrise h m	Sunset h m	Darkness h m	Hours of daylight h m	Hours of darkness h m	Correction for south latitude m
January							
1	6 24	7 59	4 08	5 43	11 19	12 41	− 1
11	6 23	7 56	4 20	5 53	11 30	12 30	− 4
21	6 18	7 48	4 35	6 06	11 48	12 12	− 6
31	6 09	7 36	4 52	6 20	12 11	11 49	− 9
February							
10	5 56	7 21	5 09	6 35	12 39	11 21	−11
20	5 39	7 03	5 26	6 50	13 11	10 59	−12
March							
2	5 20	6 43	5 43	7 06	13 46	10 14	−14
12	4 59	6 22	5 59	7 23	14 24	9 36	−15
22	4 35	6 00	6 15	7 42	15 07	8 53	−15
April							
1	4 10	5 38	6 31	8 01	15 51	8 09	−15
11	3 43	5 17	6 46	8 22	16 39	7 21	−15
21	3 14	4 56	7 02	8 46	17 32	6 28	−14
May							
1	2 44	4 38	7 18	9 13	18 29	5 31	−13
11	2 12	4 21	7 33	9 44	19 32	4 28	−11
21	1 37	4 07	7 46	10 20	20 43	3 17	− 9
31	12 47	3 57	7 58	11 18	22 31	1 29	− 7
June							
10		3 51	8 07		24 00	0 0	− 5
20		3 50	8 12		24 00	0 0	− 2
30		3 54	8 13		24 00	0 0	0
July							
10		4 01	8 08		24 00	0 0	+ 3
20	1 28	4 12	7 59	10 40	21 12	2 48	+ 5
30	2 05	4 25	7 46	10 02	19 57	4 03	+ 8
August							
9	2 39	4 40	7 30	9 29	18 50	5 10	+10
19	3 06	4 54	7 12	8 59	17 53	6 07	+12
29	3 30	5 09	6 52	8 29	16 59	7 01	+13
September							
8	3 52	5 24	6 30	8 02	16 10	7 50	+14
18	4 11	5 39	6 08	7 36	15 25	8 35	+15
28	4 29	5 54	5 46	7 11	14 42	9 18	+16
October							
8	4 46	6 10	5 25	6 48	14 02	9 58	+15
18	5 01	6 26	5 04	6 27	13 26	10 34	+15
28	5 17	6 42	4 45	6 10	12 53	11 07	+14
November							
7	5 31	6 59	4 28	5 55	12 24	11 36	+12
17	5 45	7 14	4 14	5 43	11 58	12 02	+10
27	5 58	7 30	4 04	5 36	11 38	12 22	+ 8
December							
7	6 09	7 44	3 59	5 33	11 24	12 36	+ 6
17	6 17	7 53	3 59	5 34	11 17	12 43	+ 3
27	6 23	7 58	4 04	5 39	11 16	12 44	+ 1

LATITUDE 52° NORTH

Date	Daylight h m	Sunrise h m	Sunset h m	Darkness h m	Hours of daylight h m	Hours of darkness h m	Correction for south latitude m
January							
1	6 27	8 08	3 59	5 40	11 13	12 47	− 1
11	6 26	8 05	4 12	5 50	11 24	12 36	− 4
21	6 20	7 56	4 27	6 04	11 44	12 16	− 6
31	6 10	7 43	4 45	6 18	12 08	11 52	− 9
February							
10	5 56	7 26	5 04	6 34	12 38	11 22	−11
20	5 38	7 06	5 22	6 51	13 13	10 47	−12
March							
2	5 18	6 45	5 41	7 09	13 51	10 09	−14
12	4 55	6 23	5 58	7 27	14 32	9 28	−15
22	4 29	6 0	6 16	7 47	15 18	8 32	−15
April							
1	4 02	5 36	6 33	8 09	16 07	7 53	−15
11	3 32	5 14	6 50	8 33	17 01	6 59	−15
21	3 00	4 52	7 07	9 01	18 01	5 59	−14
May							
1	2 25	4 31	7 24	9 33	19 11	4 49	−13
11	1 44	4 13	7 40	10 13	20 29	3 31	−11
21	12 26	3 58	7 55	.....	23 34	0 26	− 9
31	.....	3 47	8 08	.....	24 00	0 0	− 7
June							
10	.....	3 40	8 18	.....	24 00	0 0	− 5
20	.....	3 39	8 23	.....	24 00	0 0	− 2
30	.....	3 43	8 24	.....	24 00	0 0	0
July							
10	.....	3 51	8 18	.....	24 00	0 0	+ 3
20	.....	4 03	8 08	.....	24 00	0 0	+ 5
30	1 31	4 17	7 54	10 36	21 05	2 55	+ 8
August							
9	2 17	4 33	7 37	9 51	19 34	4 26	+10
19	2 50	4 49	7 17	9 14	18 24	5 36	+12
29	3 18	5 06	6 55	8 41	17 23	6 37	+13
September							
8	3 43	5 22	6 33	8 10	16 27	7 33	+14
18	4 04	5 38	6 09	7 43	15 39	8 21	+15
28	4 25	5 55	5 46	7 15	14 50	9 10	+16
October							
8	4 42	6 12	5 23	6 51	14 09	9 51	+15
18	5 00	6 29	5 01	6 29	13 29	10 31	+15
28	5 16	6 47	4 40	6 10	12 54	11 06	+14
November							
7	5 32	7 05	4 22	5 54	12 22	11 38	+12
17	5 47	7 21	4 07	5 42	11 55	12 05	+10
27	6 01	7 39	3 56	5 33	11 32	12 28	+ 8
December							
7	6 12	7 53	3 50	5 30	11 18	12 42	+ 6
17	6 21	8 03	3 49	5 31	11 10	12 50	+ 3
27	6 26	8 08	3 54	5 36	11 10	12 50	+ 1

LATITUDE 54° NORTH

Date	Daylight h	Daylight m	Sunrise h	Sunrise m	Sunset h	Sunset m	Darkness h	Darkness m	Hours of daylight h	Hours of daylight m	Hours of darkness h	Hours of darkness m	Correction for south latitude m
January													
1	6	31	8	19	3	48	5	36	11	05	12	55	− 1
11	6	29	8	15	4	02	5	48	11	19	12	41	− 4
21	6	22	8	05	4	19	6	01	11	39	12	21	− 6
31	6	11	7	50	4	38	6	17	12	06	11	54	− 9
February													
10	5	56	7	32	4	58	6	34	12	38	11	22	−11
20	5	37	7	11	5	18	6	53	13	16	10	44	−12
March													
2	5	15	6	48	5	38	7	12	13	57	10	03	−14
12	4	50	6	24	5	57	7	32	14	42	9	18	−15
22	4	23	5	59	6	16	7	54	15	31	8	29	−15
April													
1	3	53	5	34	6	35	8	18	16	25	7	35	−15
11	3	20	5	10	6	53	8	46	17	26	6	34	−15
21	2	44	4	47	7	12	9	18	18	34	5	26	−14
May													
1	2	00	4	25	7	30	9	58	19	58	4	02	−13
11	12	54	4	05	7	48	11	13	22	19	1	41	−11
21			3	49	8	05			24	00	0	0	− 9
31			3	36	8	19			24	00	0	0	− 7
June													
10			3	29	8	30			24	00	0	0	− 5
20			3	27	8	36			24	00	0	0	− 2
30			3	54	8	13			24	00	0	0	0
July													
10			3	40	8	30			24	00	0	0	+ 3
20			3	53	8	18			24	00	0	0	+ 5
30			4	09	8	03			24	00	0	0	+ 8
August													
9	1	44	4	26	7	44	10	21	20	37	3	23	+10
19	2	31	4	44	7	23	9	33	19	02	4	58	+12
29	3	04	5	01	6	59	8	55	17	51	6	09	+13
September													
8	3	32	5	19	6	35	8	23	16	51	7	09	+14
18	3	57	5	37	6	10	7	49	15	52	8	08	+15
28	4	19	5	55	5	45	7	21	15	02	8	58	+16
October													
8	4	39	6	14	5	21	6	55	14	16	9	44	+15
18	4	58	6	32	4	57	6	31	13	33	10	27	+15
28	5	16	6	52	4	35	6	11	12	55	11	05	+14
November													
7	5	33	7	11	4	16	5	53	12	20	11	40	+12
17	5	49	7	28	3	59	5	40	11	51	12	09	+10
27	6	03	7	48	3	46	5	31	11	28	12	32	+ 8
December													
7	6	15	8	03	3	39	5	27	11	12	12	48	+ 6
17	6	25	8	14	3	38	5	27	11	02	12	58	+ 3
27	6	30	8	19	3	43	5	32	11	02	12	58	+ 1

LATITUDE 56° NORTH

Date	Daylight h	Daylight m	Sunrise h	Sunrise m	Sunset h	Sunset m	Darkness h	Darkness m	Hours of daylight h	Hours of daylight m	Hours of darkness h	Hours of darkness m	Correction for south latitude m
January													
1	6	34	8	32	3	36	5	33	10	59	13	01	— 1
11	6	32	8	26	3	50	5	44	11	12	12	48	— 4
21	6	27	8	26	3	58	5	57	11	34	12	26	— 6
31	6	13	7	58	4	30	6	16	12	03	11	57	— 9
February													
10	5	56	7	38	4	52	6	35	12	39	11	21	—11
20	5	36	7	15	5	14	6	54	13	18	10	42	—12
March													
2	5	12	6	51	5	35	7	15	14	03	9	57	—14
12	4	45	5	25	5	56	7	37	14	52	9	08	—15
22	4	15	6	59	6	17	8	02	15	47	8	13	—15
April													
1	3	42	5	32	6	37	8	29	16	47	7	13	—15
11	3	06	5	06	6	57	9	01	17	55	6	05	—15
21	2	23	4	41	7	18	9	40	19	17	4	43	—14
May													
1	1	24	4	17	7	38	10	39	21	15	2	45	—13
11	12	30	3	56	7	58			23	30	0	30	—11
21			3	38	8	16			24	00	0	0	— 9
31			3	24	8	32			24	00	0	0	— 7
June													
10			3	15	8	44			24	00	0	0	— 5
20			3	12	8	50			24	00	0	0	— 2
30			3	17	8	50			24	00	0	0	0
July													
10			3	27	8	43			24	00	0	0	+ 3
20			3	41	8	30			24	00	0	0	+ 5
30			3	58	8	13			24	00	0	0	+ 8
August													
9			4	18	7	52			24	00	0	0	+10
19	2	04	4	37	7	29	9	58	19	54	4	06	+12
29	2	47	4	57	7	04	9	11	18	24	5	36	+13
September													
8	3	20	5	16	6	38	8	32	17	12	6	48	+14
18	3	48	5	36	6	11	7	58	16	10	7	50	+15
28	4	12	5	56	5	45	7	27	15	15	8	45	+16
October													
8	4	34	6	16	5	19	6	59	14	25	9	35	+15
18	4	55	6	36	4	53	6	33	13	38	10	22	+15
28	5	15	6	57	4	30	6	11	12	56	11	04	+14
November													
7	5	33	7	18	4	08	5	53	12	20	11	40	+12
17	5	50	7	37	3	50	5	38	11	48	12	12	+10
27	6	06	7	59	3	36	5	28	11	22	12	38	+ 8
December													
7	6	19	8	15	3	27	5	23	11	04	12	56	+ 6
17	6	29	8	27	3	25	5	23	10	54	13	06	+ 3
27	6	34	8	32	3	30	5	28	10	54	13	06	+ 1

LATITUDE 58° NORTH

Date	Daylight h	Daylight m	Sunrise h	Sunrise m	Sunset h	Sunset m	Darkness h	Darkness m	Hours of daylight h	Hours of daylight m	Hours of darkness h	Hours of darkness m	Correction for south latitude m
January													
1	6	38	8	46	3	21	5	29	10	51	13	09	— 1
11	6	35	8	39	3	37	5	41	11	06	12	54	— 4
21	6	27	8	26	3	58	5	57	11	30	12	30	— 6
31	6	14	8	07	4	21	6	15	12	01	11	59	— 9
February													
10	5	56	7	45	4	45	6	35	12	39	11	21	—11
20	5	34	7	20	5	08	6	56	13	22	10	38	—12
March													
2	5	08	6	54	5	32	7	19	14	11	9	49	—14
12	4	39	6	26	5	55	7	44	15	07	8	53	—15
22	4	07	5	58	6	17	8	11	16	04	7	56	—15
April													
1	3	30	5	30	6	40	8	42	17	12	6	48	—15
11	2	48	5	02	7	02	9	19	18	31	5	29	—15
21	1	54	4	35	7	24	10	10	20	16	3	44	—14
May													
1			4	09	7	46			24	00	0	0	—13
11			3	45	8	08			24	00	0	0	—11
21			3	25	8	29			24	00	0	0	— 9
31			3	09	8	47			24	00	0	0	— 7
June													
10			2	59	9	00			24	00	0	0	— 5
20			2	56	9	07			24	00	0	0	— 2
30			3	00	9	06			24	00	0	0	0
July													
10			3	12	8	58			24	00	0	0	+ 3
20			3	28	8	43			24	00	0	0	+ 5
30			3	47	8	24			24	00	0	0	+ 8
August													
9			4	09	8	01			24	00	0	0	+10
19	1	20	4	30	7	36	10	37	21	17	2	43	+12
29	2	26	4	52	7	09	9	32	19	06	4	54	+13
September													
8	3	05	5	13	6	41	8	47	17	42	6	18	+14
18	3	37	5	35	6	13	8	08	16	31	7	29	+15
28	4	05	5	56	5	44	7	34	15	29	8	31	+16
October													
8	4	30	6	18	5	16	7	03	14	33	9	27	+15
18	4	52	6	40	4	49	6	36	13	44	10	16	+15
28	5	14	7	03	4	23	6	12	12	58	11	02	+14
November													
7	5	34	7	27	4	00	5	52	12	18	11	42	+12
17	5	52	7	47	3	39	5	36	11	44	12	16	+10
27	6	09	8	11	3	23	5	25	11	16	12	44	+ 8
December													
7	6	22	8	29	3	13	5	19	10	57	13	03	+ 6
17	6	33	8	42	3	10	5	19	10	46	13	14	+ 3
27	6	38	8	47	3	16	5	24	10	46	13	14	+ 1

LATITUDE 60° NORTH

Date	*Daylight* h m	*Sunrise* h m	*Sunset* h m	*Darkness* h m	*Hours of daylight* h m	*Hours of darkness* h m	*Correction for south latitude* m
January							
1	6 42	9 03	3 05	5 25	10 43	13 17	— 1
11	6 39	8 54	3 22	5 38	10 59	13 01	— 4
21	6 30	8 39	3 45	5 54	11 24	12 36	— 6
31	6 15	8 18	4 10	6 14	11 59	12 01	— 9
February							
10	5 56	7 53	4 37	6 35	12 39	11 21	—11
20	5 32	7 26	5 03	6 59	13 27	10 33	—12
March							
2	5 04	6 58	5 28	7 24	14 20	9 40	—14
12	4 32	6 28	5 53	7 51	15 29	8 31	—15
22	3 57	5 58	6 18	8 22	16 25	7 35	—15
April							
1	3 15	5 27	6 42	8 57	17 42	6 18	—15
11	2 25	4 57	7 07	9 43	19 18	4 42	—15
21	1 04	4 28	7 31	11 13	22 09	1 51	—14
May							
1	12 24	3 59	7 56		23 36	0 24	—13
11		3 33	8 21		24 00	0 0	—11
21		3 10	8 44		24 00	0 0	— 9
31		2 51	9 04		24 00	0 0	— 7
June							
10		2 39	9 20		24 00	0 0	— 5
20		2 35	9 27		24 00	0 0	— 2
30		2 40	9 26		24 00	0 0	0
July							
10		2 53	9 16		24 00	0 0	+ 3
20		3 12	8 59		24 00	0 0	+ 5
30		3 34	8 37		24 00	0 0	+ 8
August							
9		3 58	8 11		24 00	0 0	+10
19		4 22	7 44		24 00	0 0	+12
29	1 55	4 46	7 14	10 00	20 05	3 55	+13
September							
8	2 47	5 10	6 44	9 04	18 17	5 43	+14
18	3 24	5 33	6 14	8 20	16 56	7 04	+15
28	3 56	5 57	5 44	7 42	15 46	8 14	+16
October							
8	4 24	6 20	5 14	7 09	14 45	9 15	+15
18	4 49	6 45	4 44	6 39	13 50	10 10	+15
28	5 12	7 10	4 16	6 13	13 01	10 59	+14
November							
7	5 34	7 36	3 50	5 51	12 17	11 43	+12
17	5 54	7 59	3 27	5 34	11 40	12 20	+10
27	6 12	8 25	3 09	5 22	11 10	12 50	+ 8
December							
7	6 26	8 45	2 57	5 16	10 50	13 10	+ 6
17	6 37	8 59	2 53	5 15	10 38	13 22	+ 3
27	6 42	9 04	2 58	5 20	10 38	13 22	+ 1

268. MOON'S PHASES:

1	2	3	4	5	6	7	8	9
	1941				*1942*			
Month	*New moon*	*First quarter*	*Full moon*	*Last quarter*	*New moon*	*First quarter*	*Full moon*	*Last quarter*
January	27	5	13	20	16	24	2	10
February	25	4	11	18	15	22	1	8
March	27	6	13	19	16	24	2	9
April	26	4	11	18	15	23	1 30	7
May	26	4	11	17	15	23	30	7
June	24	2	9	16	13	21	28	5
July	24	1 31	8	16	13	21	27	5
August	22	29	7	14	11	19	25	3
September	20	27	5	13	10	17	24	2
October	20	27	5	13	9	16	23	2
November	18	25	3	11	8	15	22	1 30
December	18	25	3	11	7	14	22	30

MOON'S PHASES (continued):

1	2	3	4	5	6	7	8	9
	1943				*1944*			
Month	*New moon*	*First quarter*	*Full moon*	*Last quarter*	*New moon*	*First quarter*	*Full moon*	*Last quarter*
January	6	13	21	29	25	2	10	18
February	4	11	20	27	23	1	9	17
March	6	13	21	28	24	1 31	9	17
April	4	12	20	27	22	30	8	15
May	4	12	19	26	22	29	8	15
June	2	10	18	24	20	28	6	13
July	2 31	10	17	23	20	28	5	12
August	30	8	15	22	18	26	4	10
September	29	7	13	21	17	25	2	9
October	28	6	13	20	17	24	1 31	8
November	27	4	11	19	15	23	29	7
December	26	4	11	19	15	22	29	7