

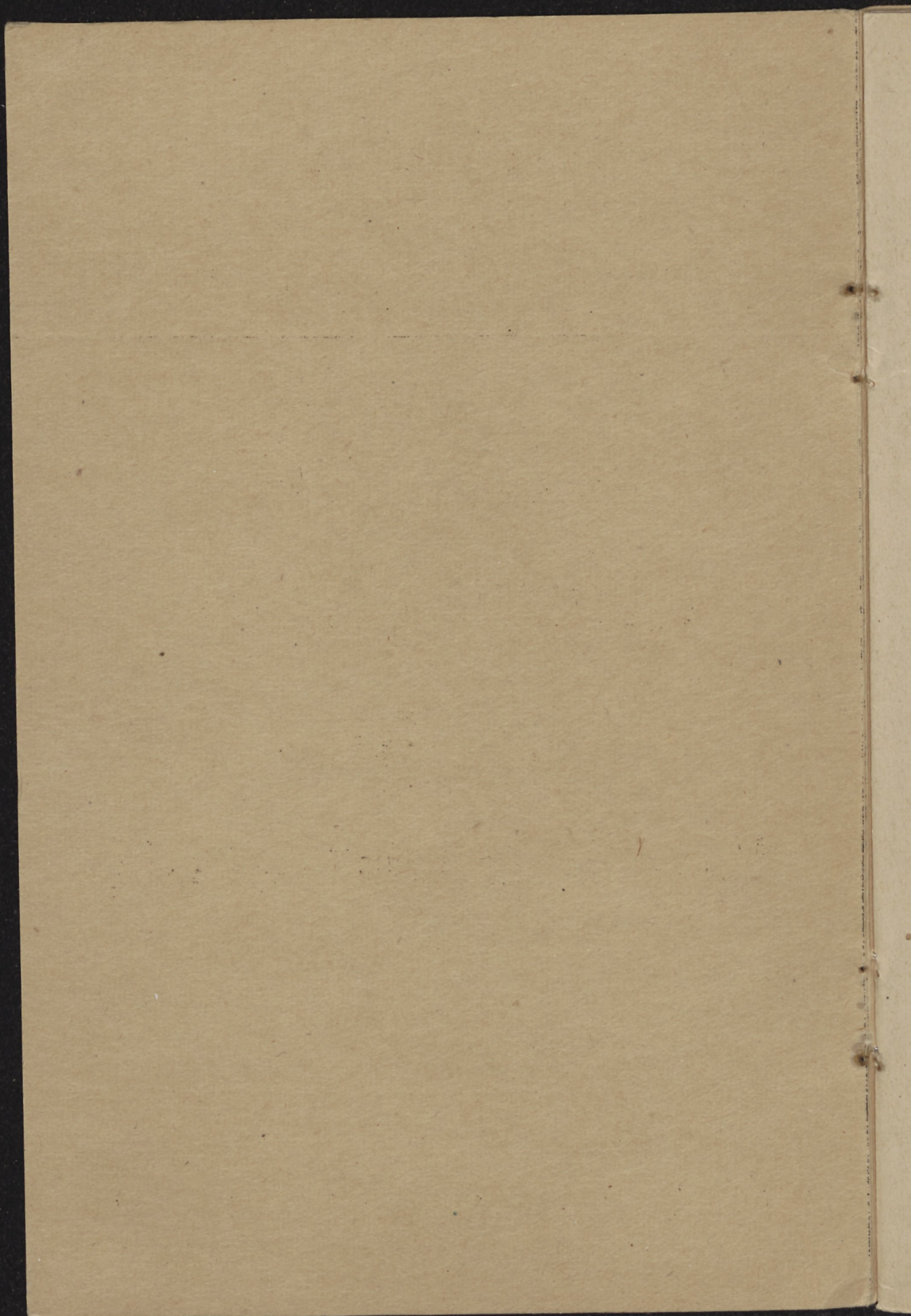
FM 55-50

WAR DEPARTMENT FIELD MANUAL

TRANSPORTATION CORPS

MILITARY RAILROADS AND THE MILITARY RAILWAY SERVICE

WAR DEPARTMENT · 27 MARCH 1944



WAR DEPARTMENT FIELD MANUAL
FM 55-50

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TRANSPORTATION CORPS

MILITARY RAILROADS
AND THE MILITARY
RAILWAY SERVICE



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ID 55: Ry Grand Div

I Bn 55: Ry Operating Bn Ry Shop Bn

IC 55: Base Depot CO

(For explanation of symbols see FM 21-6.)

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Chapter 1

General

Section I

Introduction

1. PURPOSE AND SCOPE. This manual explains the use, organization, and general operation of military railways in war. Operations and maintenance conform closely to the usage and methods employed on the commercial railways of the United States. Information on such operations and maintenance is contained in FM 55-55, 55-60, and TM 55-265, 55-270 (when published), 55-275, 55-280 (when published) and 55-285 (when published), as well as recognized handbooks in common use on commercial railways.

2. MILITARY RAILWAYS. Military railways are defined as those in the theater of operations under military operation or control. They also may include such railways in the zone of the interior as may be turned over to military authorities. Military railways are especially important in the conduct of war because rail transportation provides the most expeditious means of moving large and heavy freight over long distances on land. It insures speed and regularity of delivery, involves a minimum risk of deterioration from weather, costs less, and has high flexibility.

3. ORGANIZATION. The organization for operating and maintaining military railways is referred to as the Military Railway Service (MRS). Organization of the headquarters, Military Railway Service, shown in figure 3, is similar to the organizational set-up usually employed in general office headquarters of commercial railways in the United States. Lower echelon units of the Military Railway Service are likewise set up along the lines of comparable divisions of a commercial railway. To illustrate, a railway operating battalion, the basic unit of the Military Railway Service, corresponds generally in personnel, duties, territory, and operational jurisdiction to the organization, staff, territory, and responsibility of a division superintendent.

4. APPLICATION. Actual operating conditions affecting military railways may vary widely. The problems presented by one short single-track railway will be quite different from those presented by a network of railway systems. Therefore, instructions and information contained in this manual are stated in general terms and should be so construed.

Section II

Tactical Considerations

5. METHODS OF CONTROL. The general methods by which the Chief of Transportation, as the traffic agency for the theater commander, controls and supervises the transportation by rail of individuals, troops and their impedimenta, and military supplies are described in this manual.

RESP
a. The commanding general, theater of operations, is responsible for the administration of rail transportation in the theater.

b. Subordinate commanders and regulating stations are the control agencies of the commander of the theater.

c. Regulating officers are the direct representatives of the commander of the theater. They control the flow of

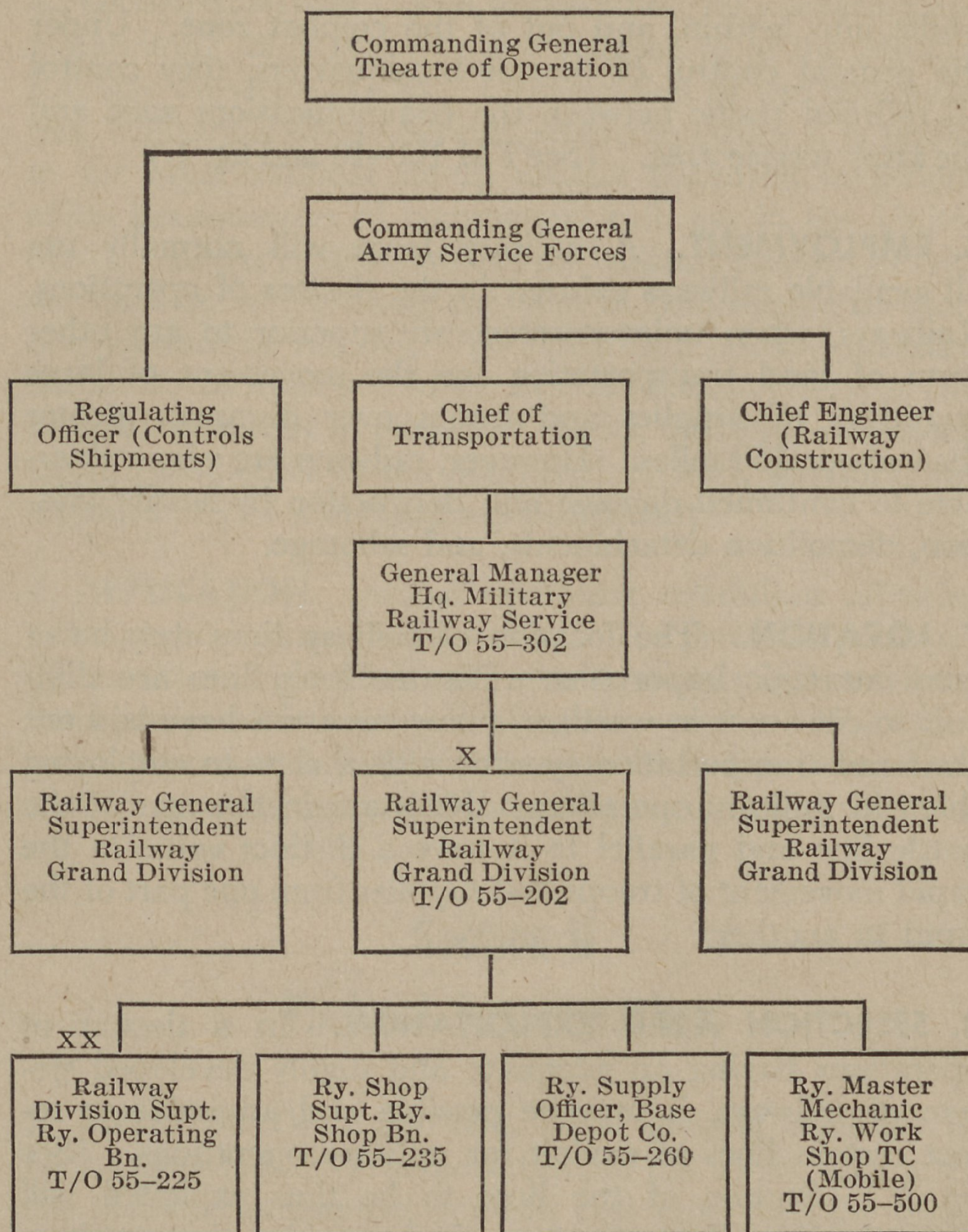
traffic into, within, and out of the combat zone. Under the general control of theater headquarters, they control all railroad traffic between the communications zone and the army service area. (See FM 100-10 and fig. 1.)

6. EMPLOYMENT. A military force will normally use all available railways existent in the theater of operations. Railways, when uninterrupted, are superior to any other form of land transportation for the movement of large quantities of supplies and troops over distances greater than about 150 miles. However, railways are very vulnerable to continued damage and destruction by hostile aviation, demolition detachments, and sabotage.

7. LOCATION. The location of railway lines may be of great strategic importance. Because long lines are difficult to construct in wartime, many countries have laid out their rail transportation systems with a view to employing them in military operations. Railways in the rear of the battle line and parallel to it have a distinct value in the rapid movement of troops and supplies from one part of the front to another.

8. SELECTION AND EXPLOITATION. In a theater of operations having an adequate and highly developed system of railways, it may be possible and advisable to select certain lines to exploit for military operations. (See fig. 2.) Section of the lines to be thus exploited will depend primarily upon strategical considerations such as probable objectives, lines of advance, frontiers, and enemy dispositions. After these have been determined, the more detailed selection of particular railways to be used for supply purposes becomes a traffic problem.

9. ALTERNATE ROUTE. When the main lines for military use have been selected, an alternate route must be devised. This would be used for routing traffic in case part of the main line goes out of service either through



x Two or more railway grand divisions depending on extent of the railroad facilities available in the theatre.

xx Two to four railway operating battalions to each grand division depending on operating conditions and railway mileage assigned to the grand division. Each railway operating battalion is presumed to operate a normal railroad division.

FIGURE 1.—Chain of command, Military Railway Service.

acts of the enemy, from the ordinary accidents of railway operation, or from washouts, landslides, storms, and floods.

Section III

Technical Considerations

10. CLASSIFICATION. Railways are classified by gauge—standard, broad, or narrow. More than half the total railway mileage in the world is laid to 4 feet, 8½ inches which is known as standard gauge. Gauges greater than or less than standard are known as broad or narrow gauge, respectively.

11. DESIRABLE PHYSICAL CHARACTERISTICS. a. The following are important considerations when selecting railways for military use:

- (1) Proper location of terminal, yard, and shop facilities.
- (2) Double or multiple track.
- (3) Seasoned roadbed, heavy rail, and good ballast.
- (4) Light grades and curvature.
- (5) Adequate sidings, yards, and spur and other tracks.
- (6) Bridges of sufficient strength for military loads, including railway artillery.
- (7) Loading and unloading facilities where needed.
- (8) Short mileage between important points. (This is subordinate to the other characteristics enumerated, but must be given consideration if the mileage of a first class line is much in excess of that of a secondary line properly located for military use.)
- (9) Water supply points within 75 to 150 miles apart.

b. One of most vital characteristics is adequate terminal facilities. Regardless of all else the line will become congested, the equipment supply frozen, and plant facilities rendered useless if the cars cannot be and are not unloaded and returned promptly. An increase in terminal capacity can often be secured by adding tracks and vehicular roads to

permit loading or unloading either by hand or mechanically.

12. UNDESIRABLE PHYSICAL CHARACTERISTICS. When selecting railways for military use, care should be taken to decide upon those roads which have the least number of sources for possible interruption to traffic. These potential bottlenecks, which may be caused by enemy action or natural forces, are:

- a. Tunnels.
- b. Long, high bridges or bridges over deep, wide streams.
- c. Deep cuts and high fills.
- d. Terminals so situated or constructed as to become congested. (This difficulty may be overcome in certain cases by construction of a bypass for through traffic.)
- e. Track located immediately adjacent to banks of streams and dry washes, subject to the erosion action of rushing water during floods.
- f. Water supply points.

13. FACILITIES. **a. Loading and unloading.** Railways must have certain facilities for the loading and unloading of supplies and impedimenta, such as team, house, yard and spur tracks; platforms; end and side loading ramps; cranes; hoists; pipe lines for loading and unloading inflammable liquids. Personnel, light vehicles, and light artillery usually can be loaded at any railway station. Heavy trucks, matériel, and equipment require special loading and unloading facilities; when not available, they must be constructed. The number and character of the loading facilities required will be dependent entirely on the size and character of the matériel to be moved.

b. Track. (1) **SIDING.** A siding is a track adjacent, and connected by switches at each end, to a main track. Sidings are normally used for the passage or meeting of trains. Military railway trains vary from 1,600 to 2,400 feet in length, and sidings should be long enough to accommodate the longer trains. (See FM 101-10 for type train lengths.) If sidings are used for entraining or de-

training, they should be long enough to handle the entire train so that there will be no interruption to traffic on the main line. However, when the situation so demands, main line, sidings, and any other available facilities may be used. It is also important that loading and unloading points selected be easily accessible to adjacent highways.

(2) **SPUR TRACK.** This is a track diverging from a main or branch line to serve an industry and over which no regular train service is maintained. A spur track is usually connected to the main line at one end only by a switch; the other end is a stub or dead end.

(3) **TEAM TRACK.** This is a side track on which freight cars are placed for loading or unloading from and to wagons, and trucks.

(4) **HOUSE TRACK.** This is a side track serving a freight depot, warehouse, factory, or similar industry on which freight cars are placed for loading or unloading.

(5) **YARD TRACK.** This is any track of a system of tracks within a prescribed area used for making and breaking up trains. Such an area with its system of tracks is called a yard. A large terminal may contain one or more receiving, classification, outbound, storage, marshalling and repair yards.

c. Entraining (detraining) points and areas. (1) The term "entertaining (or detraining) point" is used to designate the particular place at which troops are to be loaded or unloaded. Large railway stations may have two or more suitable entraining or detraining points; at other stations there may be but one.

(2) An "entraining (or detraining) area" is an area which includes all of the entraining (or detraining) points.

(3) A train is considered to have left the entraining area when it has passed the forward entraining point in that area.

14. CAPACITY. The capacity of a railway line depends on—

- a. Physical characteristics listed in paragraphs 11 and 12.
- b. Train density.

15. TRAIN DENSITY. a. The term "train density" is used to denote the number of trains that run in one direction over a railway line during a 24-hour period. Train densities vary greatly, depending on track conditions, available rolling stock and motive power, terminal facilities, and similar factors. See FM 101-10 for additional information.

b. In a movement of troops by rail, the train density will be announced by the headquarters ordering the movement. Detailed plans for the movement are prepared on the basis of the announced train density.

c. An announced train density of 16 trains does not mean that only 16 trains should be available for the movement. The number of trains to be supplied by the Military Railway Service depends not only on the announced train density, but also on the distance to be traveled and the existence of a suitable rail net permitting the quick return of trains from detraining area to the entraining area for additional trips.

d. There is an influence of train density on speed of movement. The computations required in the movement of troops by rail involve certain factors which can be determined in advance. These factors are the time required for entrainment for the journey and for detraining. In addition to these factors, there are two variables: the time required to assemble the necessary rolling stock, and the train density. The number of trains available every 24 hours for the troop movement exercises a profound influence on the time required for any movement.

16. SPEED OF TRAIN MOVEMENT. Military train schedules are figured at an average speed of 20 miles per hour. It is unlikely that this speed will be exceeded even for limited movements of troops in trains consisting entirely of passenger and baggage cars. On some lines, it will be necessary to figure on an even slower rate.

Chapter 2

Railway Transportation

Section I

Makeup and Equipment of Trains

17. RAILWAY TRAINS (TYPE). **a. General.** To facilitate the assembling of rolling stock and the planning of troop movements, type railway trains may be provided. There are six type trains (A, B, C, D, E, and F) designed for moving the various organizations (transportation groupings). Each train contains a total of 34 cars, if in a theater where the equipment in use is comparable to that used in continental United States.

(1) The composition of these type trains is based on the use of coaches for personnel, box or baggage cars for supplies and equipment, flat cars for vehicles and guns, stock or modified box cars for animals, a box or baggage car for the kitchen car, and a pullman or coach for officers. (See FM 101-10.) This composition refers to continental United States trains, or to comparable equipment. It must be modified where conventional European type of equipment is in use since it is smaller and does not lend itself to such groupings.

(2) It should be emphasized, however, that box cars in lieu of coaches may be used for men, especially in the combat zone. Box cars instead of stock cars may also be used for animals, and in lieu of flat cars, for light vehicles and guns.

b. Availability. In order that they may be quickly available for moving troops, which is the principal reason for resorting to their use, type trains must be able to reach, within a few hours, the point where the troops are to en-train. These trains, accordingly, must be held near the areas where they are likely to be needed. They must be used for no purpose that will interfere materially with the use for which they were intended.

c. Preparation of Box Cars. Box cars require special preparation to fit them for use for the transportation of troops or animals. In either case, ventilation is essential, and other measures for the comfort and well-being of the occupants should receive consideration.

d. Advantages. Type railway trains have the following advantages:

- (1) The types are known, and trains usually can be assembled and made ready for use with little delay.
- (2) They are light and can be handled over any standard gauge railroad.
- (3) Their short lengths readily permit their accommodation on sidings.
- (4) The type composition allows the predetermination of unit loadings.

e. Disadvantages. A disadvantage of type trains is that they must be grouped in considerable numbers when not in use, thus requiring much space in railway yards where traffic congestion is usually the greatest. Moreover, box cars are uncomfortable when it is necessary to use them for transporting men or animals over long distances.

f. Special Cases. It may be necessary, especially in war, to use nonstandard trains in the movement of military units. It may be necessary to move units whose strength in personnel or equipment is below that prescribed in Tables of Organization or it may be necessary to move a combination of troop units. These are exceptional cases and will require special arrangements. It will be necessary in such cases to compute in advance the number and

kinds of cars required by figuring the loading capacities according to official data and preparing special transportation groupings.

18. ASSEMBLY OF ROLLING STOCK. a. Time. The time required by railroad authorities to assemble and spot type trains may eliminate the consideration of troop movements by railway in certain situations. The distribution of flat, box, and other cars, because of economic or military demands, may cause considerable delay in the assembly of type trains.

b. Availability. An infantry division as now organized requires about 55 type trains for its movement by railway if the division is at full strength and carries its full equipment. It has been estimated by railway authorities that the assembly of this amount of rolling stock would normally require from 2 to 5 days at a major terminal. (See FM 101-10.) It is probable that the impetus of war and the priority of military necessity would shorten this time. It is also probable that an unlimited number of trains would not be available when and where needed in the theater of operations. Enemy destruction, civil needs, or military supply requirements would limit the number available. A misunderstanding of the capabilities of railroads in this respect may cause a considerable loss of time in moving troops by railway when they could have marched or been moved by truck more quickly. However, small bodies of troops can cover in a few hours, by rail, a march that would take many days.

c. Shuttling. Where the round trip to the detraining area and back to the starting point can be completed in 24 hours the same trains that make the trip on the first day may, by shuttling, furnish the entire transportation required. Time for inspection and overhaul must be considered.

d. Limitations. In a foreign theater of operations, the demand for rolling stock probably will be so great, and the number of cars available so small, that they will seldom be sufficient to meet the demands. Any unusual demand for

troop trains often will upset existing schedules and thereby throw a heavy strain upon the delivery of supplies.

19. LOADING CAPACITIES. The maximum weight of load on each freight car is determined by subtracting the light weight (furnished by the carrier) of the car from total weight of car and load. This permissible load usually is about 25 to 35 percent greater than the marked capacity of the car.

20. TRANSPORTATION GROUPINGS. Transportation groupings were planned to obtain—

a. Economy in the use of railway equipment.

b. Arrangement of loads so as to facilitate movement of troops in the desired order of their arrival at the detraining point.

Type trains and the groupings of military units moved on them are determined according to FM 101-10.

Section II

Control and Operation

21. AUTHORITY FOR TRAVEL. The commanding general of a theater of operations has authority to issue travel orders covering the rail movements of individuals and troops and their impedimenta. No statement showing procurement authority is necessary, the order directing the movement being sufficient.

22. DUTIES OF TRANSPORTATION CORPS. a. General.

The Transportation Corps is charged with the movement by rail of all troops and supplies in the theater of operations.

The transportation section at a regulating station usually has a troop movement branch and a supply movement branch. These branches receive the requests for rail movements, assemble the requirements for railway transport,

arrange with the superintendent, Military Railway Service, for the necessary movements, and insure that movements to and from the combat zone are in accordance with priorities established by the regulating officer.

b. Control. The Transportation Corps, under the direction of the commanding general of the theater of operations, controls, supervises, and arranges for the transportation by rail of individuals, troops and impedi-menta, and military supplies. An estimate of the transportation required will be furnished the transportation officer by the commanding officer.

c. Rail Transport Duties of Transportation Officers. Normally, transportation officers are assigned as such, and their functions are analogous to those of a traffic manager of a large commercial firm. Transportation Corps officers on the staff of the communications zone commander render assistance to plans and training officers of the staff in preparation for troop movement schedules and tables. They act as advisors to the commander and members of his staff on transportation matters. In the execution of the functions of control, supervision, and regulation of rail transportation, Transportation Corps officers have various duties such as those pertaining to a unit or installation transportation officer, or a communications zone base section transportation officer.

d. Rail Transportation of Individuals. Army Regulations covering the transportation of individuals in the zone of the interior apply in principle to travel in the communications zone. However, travel on railroads controlled and operated by the Army is on orders only, with no necessity for issuing transportation requests.

e. Troop Movements by Rail. In the communications zone, the chief transportation officer makes all arrangements for troop movements by rail. In securing equipment and making arrangements for a movement he operates through the Military Railway Service. Although Army Regulations apply, so far as practicable, to these troop movements, the equipment supplied will depend on its

availability and the local situation at the time the movement is to be made. Type trains will be used whenever possible. Movements are made in strict accordance with the orders directing them and no transportation requests or bills of lading are required. Control of movements is exercised by the transportation division of the communications zone commander's staff.

23. DUTIES OF MILITARY RAILWAY SERVICE. a. General.

The Military Railway Service, Transportation Corps, operates railroads in the theater of operations. In forward areas the MRS actually operates and maintains the railway equipment, while in the rear areas the physical operation may be by civilian operators but under direct control and supervision of the Military Railway Service.

b. Organization. (See ch. 3.)

c. Relation With Transportation Corps. The Transportation Corps arranges for transportation of troops and supplies over military railways in the same manner as over any other transportation system. A transportation officer, detailed from the Transportation Corps, will be on the staff of the commander at each important shipping and receiving point. He arranges with the railway traffic officer (stationmaster), or with the station agent of the Military Railway Service for furnishing and placing cars and for transportation of troops and supplies. He is responsible for the receipt and proper storage of shipments pending their delivery to the consignee. (See ch. 3.)

24. REGULATING STATION (REGULATING STAFF). (See FM 100-10.)

25. REGULATING OFFICERS. (See FM 100-10.)

26. RAILHEAD. (See FM 100-10.)

Chapter 3

Railway Operation

Section I General

27. OPERATION. **a. In a Theater of Operations.** Military railways may be operated by civilians, by troops, or by a combination of both. Joint operation by civilians and troops may exist in friendly territory. Trains for civilian needs and military trains up to a certain distance from the front may be operated by civilians. Military trains beyond that point will be operated by railway troops. Details of operations are worked out by military and civilian authorities jointly. Military trains have priority but the needs of the civilian population must be considered.

b. In Rear Areas of the Theater. (1) With joint operation (or operation under military control) as much of the Military Railway Service organization as may be required is attached to the operating agency to regulate, coordinate, and advise civilian authorities. These officers see that the railways meet the military demand placed upon them. Plans are made to take care of future operations as required by the military situation.

(2) Stationmasters, detailed from the Military Railway Service, are assigned to railway lines operated wholly or in part by civilian agencies. They are located at important shipping and receiving points to expedite movement of troops

and supplies. They are the representatives of the Military Railway Service at their stations. They confer with the civilian operating authorities regarding trains for the movement of troops and supplies, for trackage for loading and unloading of trains, and have general supervision over these activities at their stations. They assist casuals and entraining and detraining officers. Their duties are in connection with railway transportation requirements only. They have no authority over operation and maintenance of railways.

c. In Forward Areas of the Theater. (1) Military railway operation by troops will exist where military necessity is the governing factor, as in a theater of operations near the front. Where civilian or joint operation fails to satisfy military requirements, railway troops will take over.

(2) To expedite movement of troops and supplies, MRS stationmasters, who are members of the staff of the General Superintendent or Superintendent, will be located at important railway stations. They are in addition to the station agents provided for in T/O & E 55-226. The MRS stationmaster will represent the superintendent of the railway division on which he is located. He will keep the superintendent informed of all activities and requirements at his station. He will cooperate with the transportation officer (see par. 30). He arranges for prompt loading, unloading, and release of cars. He furnishes, on proper authority, all railway transportation from his station. He assists casuals and entraining and detraining officers with information. He makes arrangements for refreshments required for troops en route through his station.

28. DISTINCTIVE CHARACTERISTICS. Although the basic principles of operation and maintenance of standard military railways are the same as those of the railways of the United States, there are some distinct differences. Commercial railways are built and operated as a commercial enterprise with the primary object of earning profits for their owners. Economy is considered in monetary terms. Competition with other carriers and the convenience of passengers and shippers

are important factors. Legal requirements and restrictions, and agreements with organized labor, govern operations to a large extent. These factors do not enter into the operation of military railways. Military economy is that of time, material, and manpower. Convenience is sacrificed to military necessity. Manpower is utilized to its maximum capacity and legal requirements may be superseded by military command. Some basic characteristics of military railways are:

a. Location and Construction. In construction of new lines, prompt completion is of primary importance. Therefore earthwork should be reduced to a minimum even at the expense of mileage, curvature, and gradient. No attempt is made to build for permanence beyond the probable duration of the war.

b. Equipment. Equipment existing in the theater of operations will be utilized to the greatest extent feasible. When new equipment is procured, such types are selected as will give the greatest amount of service for the duration of the war with the least amount of maintenance. Standardization is important and simple types are preferable.

c. Roadbed and Track. Roadbed and track will be as light as is consistent with the objects to be obtained. Most of the refinements of the modern railway are eliminated.

d. Operating Rules and Fundamentals. (1) Train operation is governed by TM 55-265, which is based on the Standard Code of Train Rules of the Association of American Railways, as modified to apply to conditions in the theater of operations.

(2) Rolling stock is loaded quickly to its capacity and unloaded and released promptly at its destination. In most cases trains are operated at slow or moderate speeds. Arrival at destination is the primary consideration.

(3) Superimposing the operation of military trains upon an existing civilian train schedule, especially in a foreign theater in a friendly territory, requires careful planning by officers of the railway service. Strict attention and study on the part of train and engine personnel, and use of the greatest tact by all is paramount.

e. Maintenance Standards and Safety Rules. Maintenance standards will be such as opportunity permits, and arbitrary safety rules become secondary to military necessity and the mission. Facilities for maintenance of equipment near the front are limited. Shops are established well in the rear to minimize enemy interference.

29. SUPPLY. Supplies for operation and maintenance of standard railways in the theater of operations are procured through the Chief of Transportation. Supplies for construction in the communications zone are procured through the supply section of the engineer headquarters, communications zone. Supplies for construction and reconstruction, from regulation stations forward in the combat zone, are procured through the supply section, Army engineers headquarters.

30. RELATION TO OTHER ARMS AND SERVICES. **a.** Tact and cooperation are essential in all dealings between military commanders and personnel of the Military Railway Service. Operation of trains is a function solely of the transportation department of the Military Railway Service. No interference by other personnel is permitted.

b. Large movements of troops and supplies are arranged for by commanders directly with the General Manager, Military Railway Service.

c. The regulating officer controls all movements by rail into and out of the regulating station in accordance with instructions received from the commander of the theater of operations. In the rear of the line of advance depots in the communications zone, movements are controlled by priorities indicated by the commanding general, communications zone.

d. Railway Artillery. (1) The Coast Artillery Corps (see FM 100-10 and 4-51) is charged with the operation and maintenance of railway artillery except when in transit, at which time the railway operation and maintenance are handled by the Military Railway Service.

(2) Trackage assigned to or constructed by the Coast Artillery Corps for railway artillery use will be maintained by Coast Artillery Corps troops or attached personnel. Railway artillery trains will not operate on or foul tracks under military railway control without permission of military railway authorities. Military railway trains will not operate on or foul tracks under Coast Artillery Corps control except under authority of the latter.

(3) Military railway authorities will control all movements of railway artillery trains when operated over military railway tracks. This includes schedules, routing, dispatchments, and conduct of transportation. Engines and train and engine crews for such operation will normally be furnished by the Military Railway Service. When motive power is furnished by the Coast Artillery Corps, pilots will be furnished by the railway operating battalion over whose trackage the movement is made.

(4) Engines and crews may be furnished by the Military Railway Service and attached to the Coast Artillery Corps for the operation of railway artillery on tracks under Coast Artillery Corps control. The Coast Artillery Corps will be responsible for the maintenance of such equipment.

(5) Repairs to railway equipment of Coast Artillery Corps or other arms normally will be made at military railway shops by military railway troops.

31. ARMORED TRAINS. a. Armored trains may be used for patrolling track in open country in hostile territory when depredations may be expected on the part of small units of the enemy.

b. Armored trains are usually attached to armies or sections of the communications zone. They operate under orders of the appropriate military commander. The officer in command of the train is in command of the garrison and directs movements of the train in combat. As the operation of an armored train is quite different from that of other trains, the Military Railway Service will assign a specially selected train crew.

32. FORMS, REPORTS, AND STATISTICS. **a.** Forms and reports will be kept at a minimum. No reports will be required that are not necessary for the satisfactory operation of railways. Reports will normally be confined to—

- (1) **OPERATIONS.** (a) Train operation.
 - (b) Car.
 - (c) Waybill and transportation requests.
- (2) **EQUIPMENT.** (a) Individual equipment.
 - (b) Bad order equipment.
 - (c) Shop.
 - (d) Material and requisitions.
- (3) **MAINTENANCE OF WAY.** (a) Work.
 - (b) Water station.
 - (c) Material and requisitions.
 - (d) Track charts and maps.

b. In general, some of the forms and reports used on commercial railways can be adapted to requirements in the theater of operations.

Section II

Organization

33. RESPONSIBILITY. The Military Railway Service, Transportation Corps, is responsible for the operation and maintenance of military railways. The Military Railway Service is organized for these purposes along lines parallel to those in common usage on the principal commercial railroads of the United States.

34. UNITS OF THE MILITARY RAILWAY SERVICE. **a.** In a major theater, the Military Railway Service is commanded by a General Manager. He is usually designated Director General of Railways by the theater commander. The General Manager, Military Railway Service, reports to the Chief of Transportation, theater of operations. He is directly responsible to him for operation and maintenance

of military railways in the theater. The general manager is in command of all personnel assigned to duty with the Military Railway Service. His immediate organization is the first echelon of the Military Railway Service. It is known as headquarters and headquarters company, Military Railway Service (T/O 55-302) and includes his personal and technical staff (see fig. 3). Members of the technical staff are heads of their respective departments and exercise technical supervision over their respective activities on the operating divisions. They are:

(1) ASSISTANT GENERAL MANAGER, TRANSPORTATION. He designates the limits of the grand divisions and divisions. He supervises all train service and coordinates train service between the grand divisions and the divisions. He submits recommendations for construction and reconstruction of railway facilities necessary for adequate railway service. He is assisted by—

(a) *General Superintendent, Transportation.* He is responsible for coordinating schedules between grand divisions and assignment of motive power and cars to grand divisions. He recommends improvements or enlargements of existing transportation facilities as requirements necessitate. He issues such transportation rules and instructions as are necessary to insure uniform practices and methods. He issues general instructions as to priority of movements in conformity with instructions from higher authority.

(b) *General Superintendent, Terminals.* He is responsible for technical supervision over MRS operations within depots, ports, and other large terminals. He is charged with assembling, assorting, classifying, and relaying trains, and with prompt handling and release of cars. He prepares recommendations for construction and reconstruction of terminal depot, port loading, and unloading facilities (both track and structures) necessary for adequate railway service.

(c) *Superintendent of Car Service.* He is responsible for technical supervision over car distribution. He issues general instructions as to load limits, clearances, embargoes,

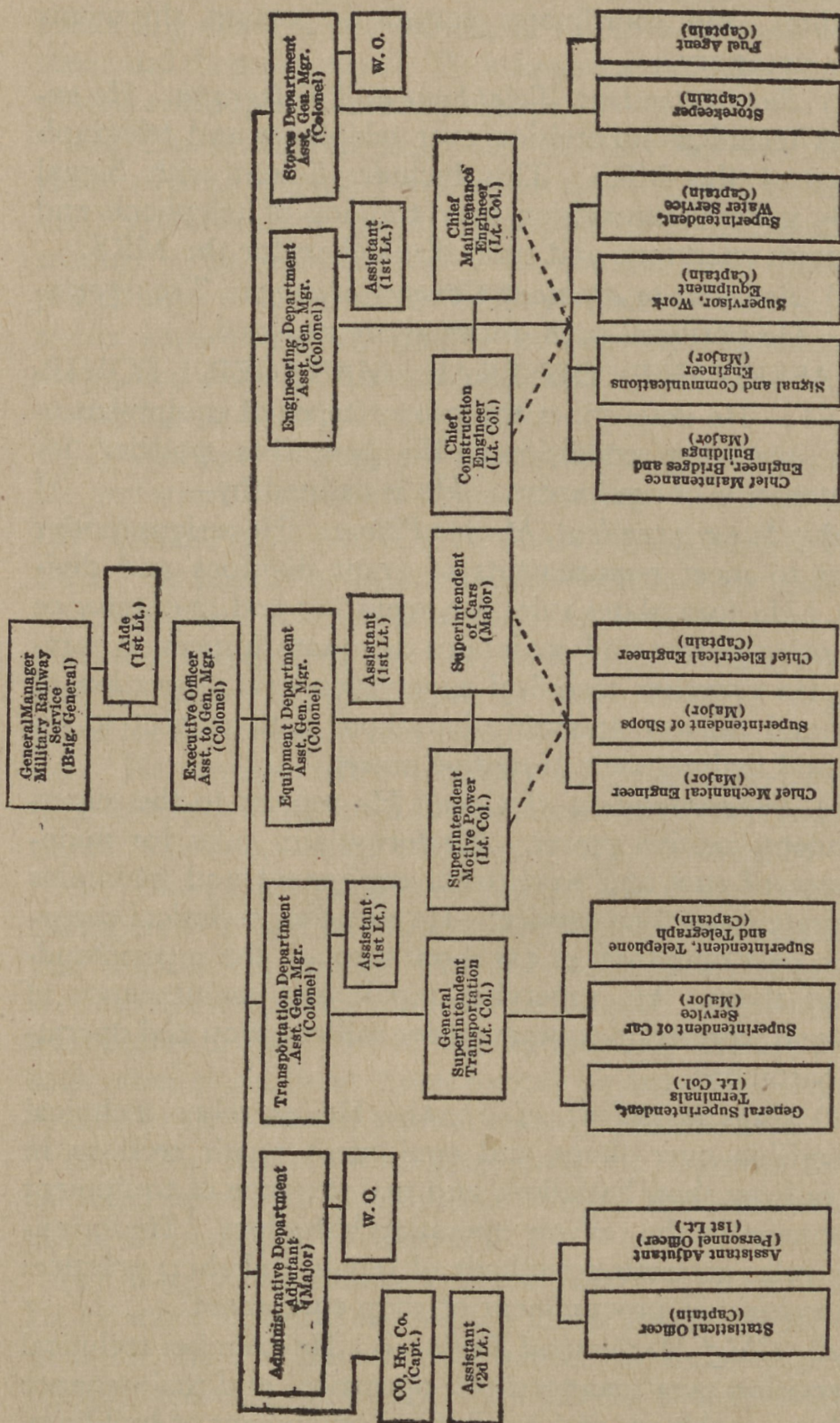


FIGURE 3.—Headquarters and Headquarters Company, Military Railway Service (T/O 55-302).

and other matters pertaining to car services. He traces, expedites, and coordinates certain important shipments when necessary.

(d) *Superintendent, Telephone and Telegraph.* He exercises technical supervision over telephone and telegraph service of the MRS. This includes liaison with Signal Corps, general supervision over training of telephone and telegraph operators, and train dispatchers for the MRS.

(e) *Assistant to Assistant General Manager, Transportation.* He performs such duties as are assigned.

(2) ASSISTANT GENERAL MANAGER, EQUIPMENT. He determines the proper types of equipment to meet operating conditions. He prescribes policies for maintenance of equipment. He is assisted by—

(a) *Superintendent, Motive Power.* He assigns motive power to meet requirements of grant divisions and divisions. He formulates rules for operating and maintenance of motive power and maintains adequate inspection service. He exercises technical supervision over operation of shop and railway operating battalions with respect to repair and maintenance of motive power.

(b) *Superintendent of Cars.* He reports to the superintendent, motive power. He formulates rules for maintenance of cars and work train equipment and maintains adequate inspection service. He exercises technical supervision over operation of car shops through the superintendent of shops. He supervises repair and maintenance of cars and work-train equipment for railway shop and operating battalions.

(c) *Superintendent of Shops.* He exercises technical supervision over shops and equipment repair sections in the railway shop battalions and maintenance of equipment companies in the railway operating battalions. He formulates rules governing methods of repair and shop practices and supervises procurement of shop equipment.

(d) *Chief Mechanical Engineer.* He exercises technical supervision over arrangement, operation, and maintenance of shop machinery and mechanical equipment of buildings.

He formulates designs for locomotives and cars. He determines any changes, alterations, or improvements to equipment and shop practices. He assists superintendent, motive power, and superintendent of shops.

(e) *Chief Electrical Engineer.* He exercises direct supervision over all electrical equipment used by shop battalions and maintenance of equipment companies of operating battalions. This includes Diesel locomotives and stationary power units assigned to the Military Railway Service. He assists superintendent, motive power, superintendent of shops, and chief mechanical engineer, in technical matters pertaining to electrical equipment.

(f) *Assistant to Assistant General Manager, Equipment.* He performs administrative and other duties as directed.

(3) ASSISTANT GENERAL MANAGER, ENGINEERING. He prescribes standards of maintenance for track and structures, and provides materials, supplies, and work-train appliance as required. He cooperates with the assistant general manager, transportation, in preparation of detailed plans for construction and reconstruction of railway facilities. He arranges when necessary for general service engineer troops to be assigned for maintenance beyond capabilities of railway operating battalions. He is assisted by—

(a) *Chief Construction Engineer.* He exercises technical supervision over all extraordinary repairs and reconstruction work in cooperation with the commanders of general service engineer troops who may be assigned to this work on the request of the Chief of Transportation. He attends to such other engineering duties as may be assigned from time to time by the assistant general manager, engineering.

(b) *Chief Maintenance Engineer.* He exercises technical supervision over maintenance of track and structures on grand divisions and divisions.

(c) *Chief Maintenance Engineer, Buildings and Bridges.* He exercises technical supervision under and in cooperation with the chief maintenance engineer on maintenance of bridges, culverts, buildings, snow sheds, coaling stations, structural elements of water stations, and all other railway

structures on grand divisions and divisions. He also prepares plans and exercises technical supervision for such bridges and railway structures under construction as may be assigned from time to time by the chief construction engineer.

(d) *Signal and Communications Engineer.* He exercises technical supervision over maintenance of signals, control tower apparatus, interlocking plants, track circuits, and telephone and telegraph lines on grand divisions and divisions.

(e) *Supervisor, Work Equipment.* He exercises technical supervision over the acquisition, movement, assignment, maintenance, and operation of all work equipment assigned to or being used by troops coming under the technical supervision of the engineering department in grand divisions and divisions.

(f) *Superintendent, Water Service.* He arranges for adequate supply of water, coordinating railway requirements through the general manager, Military Railway Service, with the supply section, Engineer Headquarters, communications zone. He exercises technical supervision over distribution and operation of all water stations and maintenance of all piping and mechanical appliances connected therewith on grand divisions and divisions.

(g) *Assistant to Assistant General Manager, Engineering.* He performs administrative and such other duties as directed.

(4) ASSISTANT GENERAL MANAGER, STORES. He coordinates supply requirements of the railway divisions. He exercises technical supervision over all stores personnel of the Military Railway Service through the general storekeepers of the grand divisions to the division storekeepers of operating and shop battalions. He prepares Tables of Allowances and Tables of Supplies required by the units of the Military Railway Service. He assists operating and shop battalions in locating sources of supply. He insures that procurement policies are in line with proper military procedure. He is assisted by—

(a) *Storekeeper*. He is a general assistant in all of these functions.

(b) *Fuel agent*. He exploits sources of supply and maintains adequate fuel reserves on railway divisions where needed.

b. Headquarters and Headquarters Company, Railway Grand Division (T/O 55-202). This is the second echelon of command. It is composed of a general superintendent and his staff. The general superintendent commands the grand division headquarters and is responsible to the general manager, Military Railway Service, for its efficient operation. In a major theater where the railways are supervised by a general manager, there are usually two or more railway grand division headquarters. In a lesser theater, or in a major theater where the railroad facilities are limited, railway operations may be under the supervision of a single railway grand division headquarters. Each grand division headquarters normally supervises two or more railway operating battalions, one or more shop battalions, one railway mobile workshop, and one or more base depot companies. The technical staff of the railway grand division headquarters (see fig. 4) will comprise—

(1) **ASSISTANT GENERAL SUPERINTENDENT, TRANSPORTATION.** He coordinates time tables, supervises movements of trains, operation of terminals, and telephone and telegraph service for the grand division. He is assisted by—

(a) *Assistant Superintendent, Car Service*. He is responsible for car distribution, load limits, clearances, embargoes, and car tracing.

(b) *Stationmasters*. They are assigned to important stations on the grand division.

(2) **ENGINEER, TRACK, AND STRUCTURES.** He exercises technical supervision over track and track equipment maintenance. He coordinates all maintenance of way activities on the grand division. He assigns maintenance of way supplies and equipment to railway divisions as required. He is assisted by—

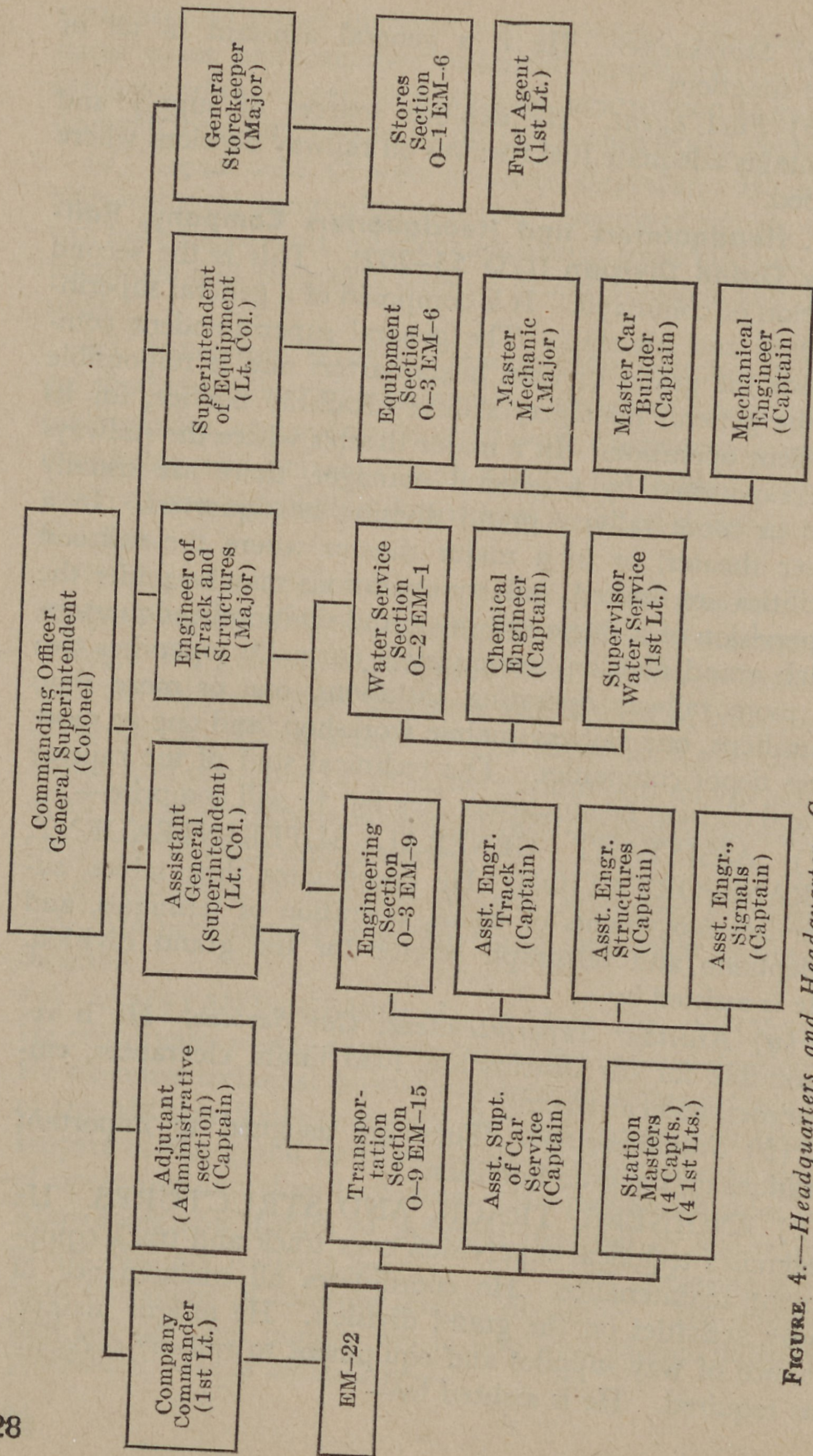


FIGURE 4.—Headquarters and Headquarters Company, Railway Grand Division (T/O 55-202).

(a) *Assistant Engineer, Structures.* He exercises technical supervision over maintenance of bridges, buildings, and other structures on the grand division.

(b) *Assistant Engineer, Track.* He exercises technical supervision over all track and roadbed maintenance on the grand division.

(c) *Assistant Engineer, Signals.* He exercises technical supervision over signals, control tower apparatus, interlocking plants, track circuits, and telephone and telegraph lines on the grand division.

(d) *Chemical Engineer.* He exercises technical supervision over water supply and treatment of boiler water.

(e) *Supervisor, Water Service.* He exercises supervision over distribution and operation of water stations and maintenance of all piping and mechanical appliances connected therewith on the grand division. He coordinates railway requirements with those of other units in his area.

(3) **SUPERINTENDENT OF EQUIPMENT.** He exercises technical supervision over maintenance and operation of motive power, maintenance of cars and work train equipment, and operation of engine terminals on the grand division. He is assisted by—

(a) *Master Mechanic.* He exercises technical supervision over maintenance of motive power assigned to the grand division.

(b) *Master Car Builder.* He exercises technical supervision over maintenance of cars under the jurisdiction of the grand division.

(c) *Mechanical Engineer.* He exercises technical supervision over arrangement, operation, and maintenance of mechanical equipment of buildings on the grand division.

(4) **GENERAL STOREKEEPER.** He coordinated supply requirements of railway divisions. He exercises technical supervision over activities of the division storekeepers on the grand division. He is assisted by—

Fuel Agent. He coordinates fuel requirements of railway divisions. He maintains adequate reserves of fuel properly located on the grand division.

c. The railway operating battalion (T/O 55-225) is the basic unit of the Military Railway Service. It is the operating unit for a railway division. It corresponds to an operating division on a domestic commercial railroad and is commanded by a division superintendent. Limits of the division are determined by length of main line, number and location of branch lines, density of traffic, and terminal facilities. The length of a division will vary considerably but averages approximately 100 miles. The railway operating battalion has the necessary personnel and equipment to maintain track and structures, to make running repairs to equipment, and to operate trains and yards of a division. It is not equipped for railway construction or heavy repairs to equipment. The commanding officer (division superintendent) reports to the general superintendent of a grand division or to the general manager, Military Railway Service, when his division is not part of a grand division. (See FM 55-55.) The railway operating battalion is composed of—

- (1) HEADQUARTERS COMPANY. It is responsible for administration, billeting, messing, and supply of the battalion. In addition, it contains a train movement section under a chief dispatcher. This section corresponds to the dispatcher's office of a division superintendent's office on a commercial domestic railroad.
- (2) COMPANY A, MAINTENANCE OF WAY COMPANY. This company is commanded by an engineer, maintenance of way. It is responsible for bridge, building, track, and signal maintenance on the division.
- (3) COMPANY B, MAINTENANCE OF EQUIPMENT COMPANY. This company is commanded by a master mechanic. It is responsible for running repairs to the cars and locomotives of the division. This company will contain a Diesel and/or electric section, activated whenever Diesel and/or electric motive power maintenance are involved.
- (4) COMPANY C, TRANSPORTATION COMPANY. This company is commanded by a trainmaster. It is com-

posed of 50 train crews, whose responsibility is the actual operation of the trains over the division.

(5) **COMPANY D, ELECTRIC POWER TRANSMISSION COMPANY.** This company is commanded by an electrical engineer. It is activated only where the battalion is to operate electric railways.

d. The railway shop battalion (T/O 55-235) performs heavy repairs (3rd and 4th echelon) on locomotives and cars for the several railway operating battalions in its area. It is commanded by a general shop superintendent and is directly under the general manager, Military Railway Service. It is assigned by him, or the senior MRS officer of the theater, to a grand division. (See FM 55-60.) The railway shop battalion is composed of—

(1) Headquarters company, responsible for administration and supply of the battalion. It contains, in addition, the technical sections for plant maintenance and salvage.

(2) Company A, erecting and machine shop company, which is responsible for erecting and machine shop functions. This company contains an attached Diesel electric platoon, which will be activated only where Diesel and/or electric motive power maintenance are involved.

(3) Company B, boiler and smith shop company, which is responsible for boiler repairs and blacksmith shop functions.

(4) Company C, car repair company, which is responsible for heavy repairs to both freight and passenger cars.

Each of the three letter companies is commanded by a shop superintendent.

e. The railway workshop (Mobile) (T/O & E 55-500), is a small mobile unit commanded by a master mechanic. Its equipment and shop machinery are permanently set up in freight cars. This unit is also directly under the general manager, MRS, or the senior MRS officer in the theater, and may be assigned by him to a grand division. It is designed for employment at points distant from the back shop, or at forward positions for the rehabilitation of equipment, or at ports for the erection of equipment as it is unloaded from transports.

f. The base depot company (T/O 55-260) contains the personnel for a depot organization adequate to handle Transportation Corps supplies. It is commanded by a railway supply officer. It is under the jurisdiction of the senior transportation officer of the theater. Normally one base depot company will be assigned to each railway grand division.

35. PERSONNEL. Personnel assigned to railway organizations should be selected from among those who have had similar experience in operation of railways in civil life. This is a practical necessity so far as officer personnel is concerned. (See pertinent T/O & E 55-series, and FM 55-55 and FM 55-60).

Section III

Facilities

36. USE OF EXISTING FACILITIES. a. Construction of new main track in the theater of operations is unusual. Existing trackage and facilities are utilized and exploited to the fullest extent. At times it will be found that new facilities must be provided and existing facilities adjusted to meet the conditions of war. These facilities will include yards, rail sidetracks, fuel and water stations, signal systems, including telephone and telegraph lines, and engine houses.

b. As the army advances, captured enemy lines will be reconstructed as required. Availability for immediate service, rather than performance, is the controlling factor in the type and character of construction.

c. The following general regulations will govern in construction or rehabilitation of facilities in the theater of operations:

(1) **YARDS AND SIDETRACKS.** Care must be exercised in the location and plan of lay-outs to secure facilities required by existing military operations and future

needs. In their construction, necessity governs. Ballasting is used only when, without it, tracks will not carry rolling stock. General track surface should be good enough to meet immediate requirements. It is improved only as needed.

(2) WATER AND FUEL STATIONS. Water and fuel stations in the theater of operations will consist of any suitable facilities which are available or which can be adapted or improvised.

(3) SIGNALS, TELEPHONE AND TELEGRAPH. The signal system on new or rehabilitated lines will be of the simplest kind. Automatic block signals and interlocked switches may be used and maintained when already existent. A crossing may be protected by a manually operated gate. A telegraph office may be provided with a manually operated board or flag. Train dispatchment is preferably accomplished by telephone because of its simplicity and the fact that trained operators are not required at outlying stations. Dispatchment by telephone has the added advantage that, by equipping isolated sidings with a telephone box for use of train crews, movement of trains frequently is facilitated in emergencies. When existing telegraph lines are taken over wholly for military use, it is of advantage to convert them to telephone lines if it is expected to use them for any considerable time. Wire circuits are constructed and maintained by the Signal Corps, except when used exclusively by the Military Railway Service. Maintenance is then taken over by military railway units. (See FM 100-10 and AR 55-650.)

(4) ENGINE HOUSES. The roundhouse with its usual adjunct, the turntable, is to be avoided in any area subject to bombardment by enemy aircraft because of the ease with which it can be recognized from the air. New engine houses should be simple, rectangular frame structures without complicated doors or windows. Provision should be made for turning locomotives on wyes or loops. In cases in which a roundhouse or turntable is part of existing facilities taken over for military use, precautionary measures should

be taken to insure that engines will not be cut off and rendered useless in case the turntable is disabled.

37. CONSTRUCTION. (See FM 100-10 and AR 55-650).

a. Railway construction and reconstruction in the combat zone is a function of the army engineer. Detail plans are prepared by the railway section of army engineer headquarters. Construction and reconstruction are executed under the supervision of the construction section, Army engineer headquarters, as recommended by the chief of transportation.

b. Similarly, railway construction and reconstruction in the communications zone are functions of the engineer, communications zone. Detail plans are prepared by the railway section of the headquarters of the engineer communications zone. Construction and reconstruction are executed by the section engineers under supervision of the construction division of that headquarters, as recommended by the chief of transportation.



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