

WAR DEPARTMENT
OFFICE OF THE QUARTERMASTER GENERAL
CONSTRUCTION DIVISION

REPORT ON THE ACTIVITIES
of the
CONSTRUCTION DIVISION

July 1, 1940 to July 1, 1941

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Compiled by
CONTROL SECTION

WAR DEPARTMENT
OFFICE OF THE QUARTERMASTER GENERAL
WASHINGTON

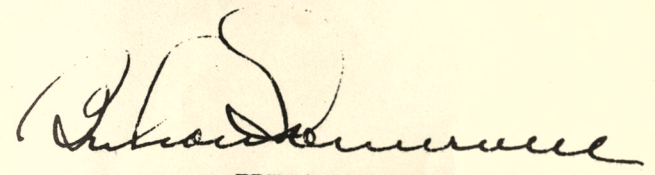
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October 6, 1941.

SUBJECT: Activities of the Construction Division During
the Fiscal Year of 1941.

TO: The Quartermaster General.

1. Transmitted herewith is a Report on the Activities
of the Construction Division during the period July 1, 1940
to July 1, 1941.


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Brigadier General, U. S. A.,
Assistant.

1 Incl.
Report on the Activities of the
Construction Division, July 1, 1940
to July 1, 1941.

REPORT ON THE ACTIVITIES
of the
CONSTRUCTION DIVISION

JULY 1, 1940 TO JULY 1, 1941

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PART I - THE NATIONAL EMERGENCY AND THE ARMY'S NEW CONSTRUCTION PROGRAM

1. THE ARMY'S NEW CONSTRUCTION PROGRAM was necessary to implement the legislation passed during the first few months of the fiscal year, 1941.

2. THE AUTHORIZED STRENGTH of the Regular Army had been increased. A call to active duty for members of the National Guard and the Organized Reserves had been authorized. An Army of unprecedented peace-time strength had been created by the Selective Service Act.

3. TROOP HOUSING and facilities for over 1,200,000 men had to be built rapidly. New ordnance manufacturing plants, chemical warfare plants and other defense projects had to be started. This emergency construction work had to be carried through regardless of seasonal and other handicaps.

BUILDING THE NEW ARMY CAMPS

4. America's new Army camps and cantonments were built for the purpose not only of sheltering troops but of facilitating their instruction in modern mechanized warfare. Study of the campaigns in Europe resulted in decisions modifying the organization of troops and the allotment of weapons. These decisions directly affected both the construction plans and actual building operations of the camps and cantonments as well as the other defense projects.

5. Camp sites were selected where essential field maneuver training could be provided. This in itself was a contrast to the World War camp building program, when it was unnecessary to provide large training areas, as our Divisions were trained overseas. Under the present program, America needs artillery and other ranges, and training areas for large tactical organizations, all of which must be provided in the United States. This meant more ground--more roads--more facilities--and necessarily, more expense.

6. Winter approached rapidly--a winter, incidentally, which turned out to be one of the worst possible for an emergency construction program. Nevertheless, work went forward. Projects had to be undertaken in many cases without detailed reconnaissances and surveys. Funds had not been provided to make such surveys nor did time permit them.

7. The magnitude of the task when dirt began to fly is evident from the fact that the Army then had housing and facilities for about 300,000 troops. For an Army of 1,500,000 troops, therefore, the Construction Division had to build housing and provide facilities for over 1,200,000 men--and do it in a hurry.

8. The Army achieved its camp building objective. This objective was achieved by the Construction Division, office of the Quartermaster General, in the face of many factors and circumstances which need to be recalled in appraising the job which the War Department has done.

9. The Congressional requirement in the Selective Service Act--that adequate shelter, hospitalization, and other facilities be provided before any selectee could be inducted into the Service--has been met.

10. Ample facilities for the repair, maintenance, and operation of mechanical equipment were required. Furthermore, the increased motorization and mechanization brought about other changes which made it necessary that troops be so placed on the ground that they could be readily supplied, administered, and maintained. It was important that organizations in the camps could get out quickly and in orderly manner to adequate nearby training areas.

11. Extensive training areas were provided in the new Army construction program. This meant a greater dispersion of buildings and units, with the resulting extension of all utilities. It also meant more roads--better and wider--within the cantonment area, and adequate access roads to training areas.

12. The camps and cantonments have all the utilities necessary for efficient operation of a modern city--water supply, heating plants, streets, lighting, hospitals, laundries, bakeries, warehouses, pipe lines, sewage disposal plants, garages, and motor repair shops. Like any other modern city, problems of traffic management, safety control, and many other factors are involved.

OTHER VITAL DEFENSE PROJECTS

13. Not only was the Army housing with its necessary facilities built, but other projects vital to America's defense were undertaken at the same time. The Construction Division of the Quartermaster Corps is charged with a substantial portion of Army construction work, including the building of camps, cantonments and industrial plants.

14. New ordnance manufacturing plants and chemical warfare plants were started. Ordnance storage depots, general depots, and Quartermaster depots were constructed. Construction of new air fields in Alaska, Panama, and Hawaii, as well as in the Continental United States, was begun by the Construction Division.

15. When the scope of the entire construction program was realized, it became evident to the War Department that the services of all existing agencies should be utilized. Consequently, much of the construction incident to the increase of the Air Corps was transferred to the Chief of Engineers who had in being an efficient construction agency in its Rivers and Harbors organization.

WHAT HAD TO BE DONE

16. Problems naturally arose in the execution of the emergency construction program. The procurement of materials alone was a job in itself. The Central Purchasing Office of the Construction Division, in addition to materials purchased by contractors, bought over a billion board feet of lumber--enough to girdle the globe more than four times with 2" x 12" plank.

17. The importance of labor in the construction program can be appreciated by the fact that at the peak of employment, reached about February 1, 1941, almost half a million men were on the job.

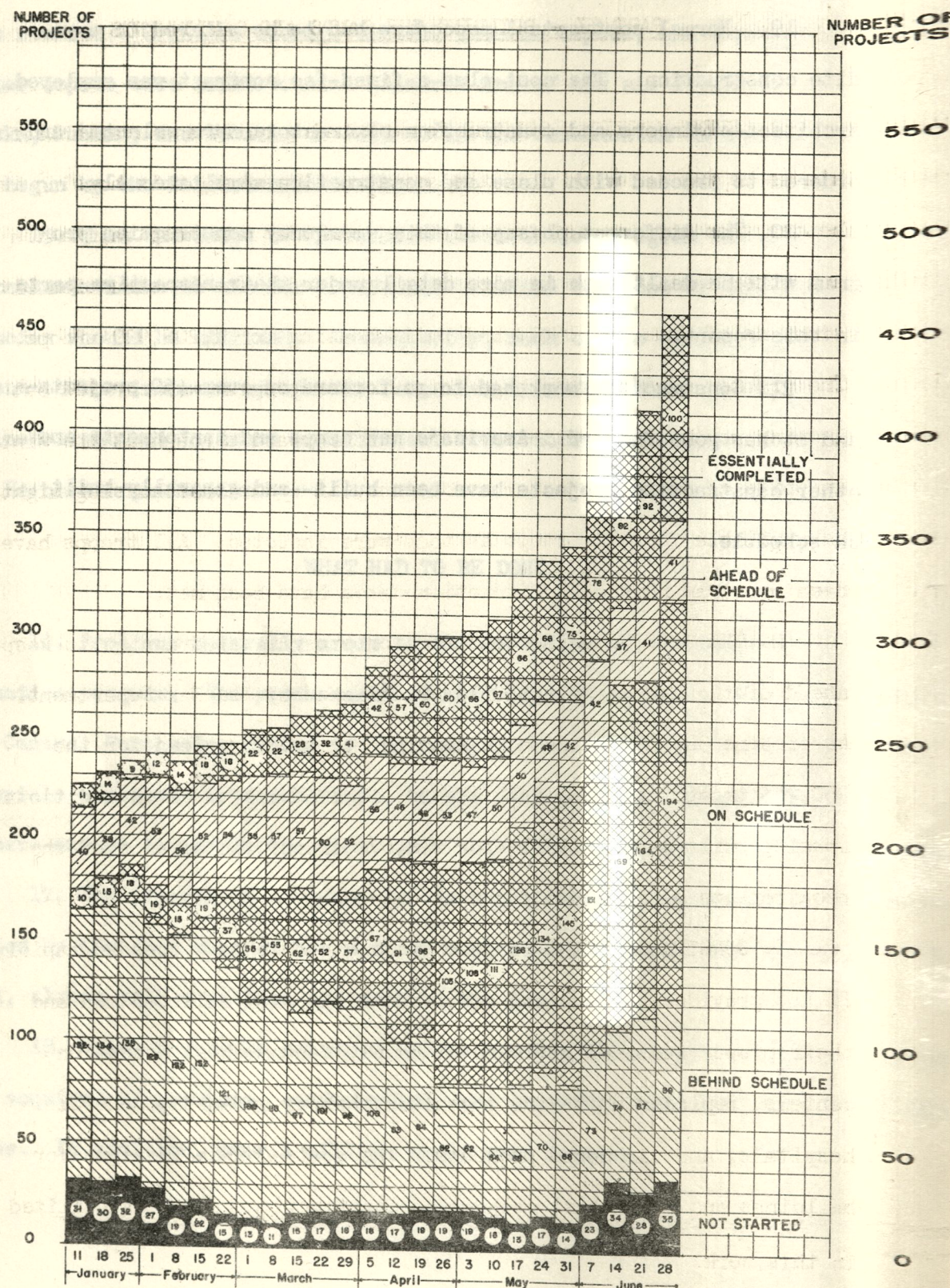
18. Sites had to be acquired before construction could proceed. Land was acquired by purchase, condemnation, and transfer, amounting to 7,600,000 acres. In addition, over a million acres were leased.

19. Normal contractual procedure had to be altered to expedite construction. The cost-plus-a-fixed-fee contract was employed. Architect-engineers and construction contractors were selected and ordered to proceed with plans and construction simultaneously.

20. The different phases of this emergency construction program will be dealt with in more detail under their respective parts in this report.

21. Construction work had to go forward on over 450 projects--and it has gone forward. America's new camps and cantonments and other construction projects have been built--and generally built on schedule.

STATUS OF ALL PROJECTS



Revised: August 2, 1941

Compiled by Control Section

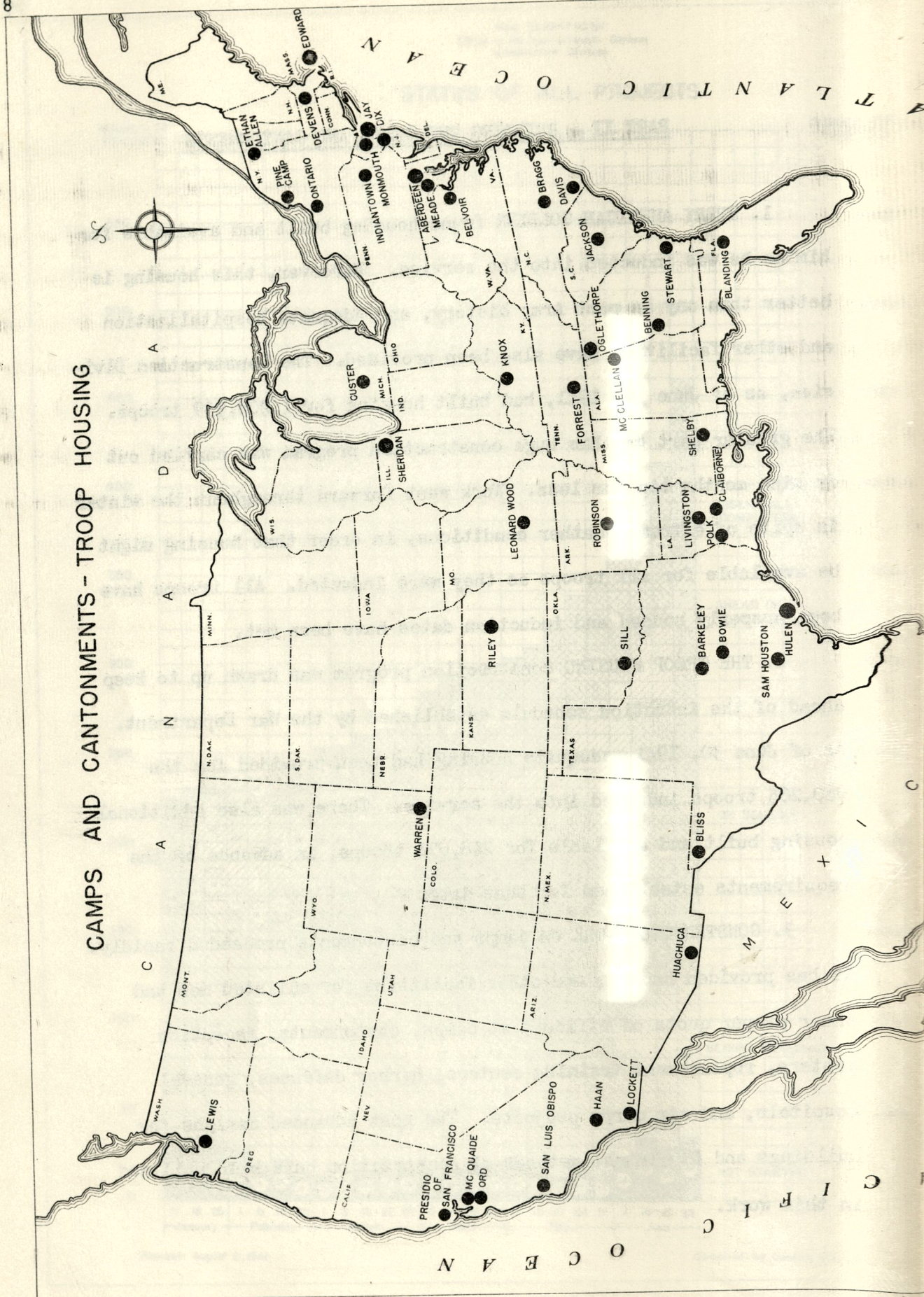
PART II - BUILDING THE CAMPS AND CANTONMENTS

1. EVERY AMERICAN SOLDIER found housing built and available for him as he was inducted into the service. Moreover, this housing is better than any in past Army history, and adequate hospitalization and other facilities have also been provided. The Construction Division, as of June 30, 1941, had built housing for 1,208,939 troops. The greater part of this huge construction program was carried out in nine months time or less. Work went forward throughout the winter in spite of extreme weather conditions, in order that housing might be available for all troops as they were inducted. All troops have been properly housed and induction dates have been met.

2. THE TROOP HOUSING construction program was drawn up to keep ahead of the induction schedule established by the War Department. As of June 30, 1941, adequate housing had been provided for the 960,265 troops inducted into the service. There was also additional housing built and available for 248,674 troops, in advance of the requirements established for that date.

3. CONSTRUCTION WORK on camps and cantonments proceeded rapidly. It has provided housing and other facilities for enlisted men and their proper quota of officers at camps, cantonments, reception centers, replacement training centers, harbor defenses, general hospitals, and air corps projects. The most advanced designs for buildings and the latest methods of construction have been utilized in this work.

CAMPS AND CANTONMENTS - TROOP HOUSING



4. Buildings totaling 49,450, and tent frames totaling 90,146, had been built as of June 30, 1941. This housing and other facilities--available for immediate use--provided a total floor area of 169,628,973 square feet.

MAGNITUDE OF TROOP HOUSING PROGRAM

5. The magnitude of the troop housing program is difficult to visualize. The Army population, for which housing and all facilities have been provided in less than a year, exceeds the combined population of Dallas, Seattle, New Haven, Richmond, and Nashville, each representing the building efforts of generations.

6. The population of some of the individual camps alone, exceed in size, important cities in the same States. For example, the camp constructed at Fort Bragg, North Carolina, has a population which far exceeds that of Raleigh, the capital of the State. Camp Blanding's population is five times that of Florida's capital city, Tallahassee. The two camps constructed in the immediate vicinity of Alexandria, Louisiana, (Camp Livingston and Camp Claiborne), have a combined population about double that of Baton Rouge, the capital of the State.

PROBLEMS AND HANDICAPS

7. An unprecedented speed of construction, many times the speed of normal construction, was maintained in this emergency program. This high speed, combined with the great magnitude of the work, increased in ascending ratio the problems and difficulties usually encountered in any construction program.

8. If complete plans and engineering surveys had been made in advance, many problems and difficulties could have been avoided. However, the sudden and complete shift in world events which brought about the emergency had not been anticipated in either civilian or military circles.

9. Some construction projects, of course, did not encounter unusual situations relating to sites and construction. But many of the following problems and difficulties were present in some degree at least at a number of the projects.

- a. Rough Terrain - At some sites the existing topography required heavy grading. This grading was necessary in order to provide suitable areas for the location of the buildings and for other uses of the ground. At the site of every large project, the size of the area required made extensive grading almost inevitable. A sufficient acreage without rough terrain could rarely be found in one locality.
- b. Rock - The work involved in excavation for foundations and in general grading for underground facilities, railroads, roads, and parking areas, was greatly increased due to rock formations, often immediately underlying the top soil.
- c. Soil - Sometimes the soil at the site was unstable and could not be relied upon to stand at the sides

of excavations (for foundations, pipe trenches, etc.) even for a short time during construction. Extensive shoring of these excavations was therefore necessary.

- d. Absence of Natural Drainage - Wherever the original sites did not drain naturally, artificial drainage systems were required. Under such conditions the projects were subject to handicap and delay by floods during construction, before the artificial drainage systems could be completed and operated.
- e. Lack of Transportation - Many camp sites were located at some distance from railroad connections and main highways. These locations were often necessary because of the difficulty in securing inexpensive land suitable for training purposes nearer to transportation facilities. Construction of connecting railroad lines and roads was required therefore, to provide service both for the building and operation of these camps. Where sites were located at considerable distances from existing transportation lines this construction attained corresponding size.
- f. Inadequate Unloading Facilities - In some cases, new sidings and new unloading platforms had to be built before any considerable amount of construction

material for the main job could be unloaded at the site. This tended to handicap the work by causing delays in starting construction.

g. Insufficient Land - At some sites the land originally acquired was found to be insufficient and delays occurred while awaiting the acquisition of necessary additional parcels.

h. Adequate Water Supply - The difficulty in finding an adequate water supply would sometimes require lengthy investigations, causing delaying handicaps. Extensive construction to provide adequate water supply included dams, reservoirs, wells, long pipe lines, storage tanks, treatment plants, etc. Even where an adequate and suitable existing source was found available, it might be located at a considerable distance, thus increasing materially the lengths of the main supply lines.

i. Sewage Disposal Plants - Local conditions frequently required the construction of new and independent sewage disposal plants. In many cases the work was increased considerably because of the great lengths of collection and disposal sewage lines made necessary by the layout of the project.

j. Pumping Stations - Where natural topography did not lend itself to complete gravity systems, the installation of pumping stations became necessary.

k. Distance from Source of Electricity - Sometimes transmission lines for power and light had to be constructed for considerable distances. Frequently, new and independent sub-stations were required. Relocation of existing high tension lines was sometimes necessary as the most economical method of bringing power and light to the site.

l. Climate - Rain, snow, storms, floods, extreme cold and extreme heat all added to the handicaps of the work. At a number of the projects the annual precipitation of rain or snow exceeded the records for many years preceding. Where projects were located in extremely cold climates, heating installations were increased and the depths of foundations, water supply lines, and all other items which must be located below the frost line, were increased. Where projects were located in extremely hot climates, refrigeration had to be increased.

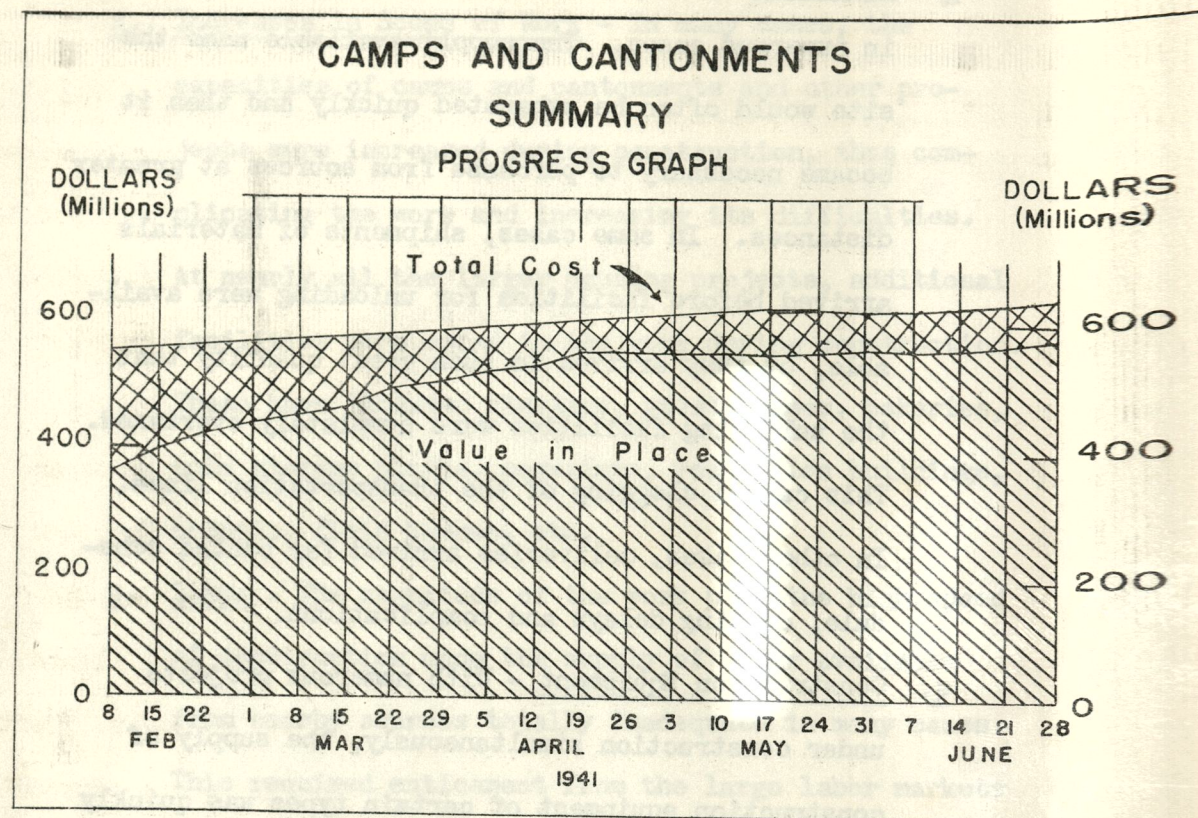
m. Changing Requirements - Requirements at some projects, such as cantonments for armored divisions, underwent extensive changes during construction to conform to new army developments. These changes were reflected in new departures from layout plans previously adopted, and included the construction of new facilities, such as extensive parking areas. Field maneuver training and increased mechanization--vital to America's defense--were taken into consideration in these changes.

- n. Increases in Scope of Work - In many cases, the capacities of camps and cantonments and other projects were increased during construction, thus complicating the work and increasing its difficulties. At nearly all the larger housing projects, additional facilities were added to the work during construction. These have included theaters, guest houses, bakeries, cold storage plants, magazines, recreation buildings, chapels, field houses, etc.
- o. Labor - The magnitude of the work plus the high speed of construction made the supply of labor available from nearby sources totally inadequate in many cases. This required enticement from the large labor markets at a distance from the projects, by higher wage rates, increased overtime, transportation allowances, etc. The quick assembly of large labor forces, running into tens of thousands at many projects, had the inevitable result of causing difficulty in weeding out incompetent men, with the hiring and firing of large numbers. The high speed of construction required large amounts of overtime work, oftentimes at reduced efficiency. Similarly, in many cases multiple shifts were required, necessitating outdoor work at night, with its inevitable inefficiency and difficulties from inadequate lighting.

- p. Materials - Shortages of materials delayed the work in numerous cases. The supply available near the site would often be exhausted quickly and then it became necessary to purchase from sources at greater distances. In some cases, shipments of materials arrived before facilities for unloading were available, or they arrived in such great quantity that the unloading facilities were completely overtaxed. This caused clogging of the transportation lines. In other cases, deliveries arrived far behind schedule, causing delays and complications.
- q. Construction Equipment - With numerous projects under construction simultaneously, the supply of construction equipment of certain types was quickly exhausted in some areas. This necessitated going far afield to obtain the equipment by rental or purchase. The high speed of construction often necessitated the operation of machines and other items for longer hours than those of normal construction projects--the operation periods sometimes approached actual continuous use--and this produced difficulties in maintenance.

CANTONMENTS AND TENT CAMPS

10. Two principal types of troop housing have been built--cantonments and tent camps. A total of 50 cantonments and tent camps were built as of June 30, 1941. Forty-six of these were within the Continental limits of the U. S. A. The typical cantonment contains soldier



barracks, each the home of 63 men. These barracks are two-story wooden structures, well lighted, heated, and ventilated. Depending on the size of the cantonment, these barracks are built in such number and place that they are most readily available for tactical purposes. An important factor in locating and building these barracks is the necessity for the daily training of the troops. The barracks must be so situated in the cantonment area that a minimum of time will be lost in getting the troops out to and returning from the training grounds.

11. Many buildings necessary to the efficient operation of the cantonments have also been provided. The primary purpose of cantonments and camps--to train and toughen the troops as rapidly as

possible without sacrificing modern necessities of life--has been kept in mind. Hospital areas with their ward buildings and connecting covered walkways have been provided. Fire stations, post offices, dental clinics, theaters and service clubs have been built. In addition to these typical buildings which would be found at any cantonment project, special buildings have been provided where there are Armored Divisions.

12. The principal distinction between standard cantonments and tent camps is that troop housing for the latter have been provided by tents instead of barracks. The other typical buildings provided at cantonments have also been built at tent camps, but tent floors and frames were constructed at tent camps instead of barracks. Tent floors are of either wood or concrete, while the frames are of wood or metal. Screens and heating facilities have been provided depending upon climatic conditions. The tents are of pyramidal type, 16' x 16', each capable of accommodating five men.

13. Reception Centers - As the name implies, a reception center is an installation primarily for the purpose of receiving personnel. Before the untrained men reach the cantonments or tent camps, they go to a reception center where they are given preliminary examinations. Reception centers might be compared to railroad stations where troops are assembled and later sent to their destinations. Work was in progress at 47 reception centers, and a total of 512 buildings had been completed and were ready for occupancy at 28 of these reception centers as of June 30, 1941.

14. Replacement Training Centers are primarily training camps where the troops receive their basic instruction and later are sent to various combat units. Replacement training centers might be compared to modern trade schools where special training along particular lines is stressed. The Construction Division as of June 30, 1941, had completed 5,537 buildings at 19 replacement training centers.

15. Air Corps Troop Housing - The housing necessary for troops at various air bases was begun by the Construction Division, Office of the Quartermaster General. Most of the projects have been transferred to the Corps of Engineers, while the Construction Division has completed or is completing some of the others. The troop housing being built at these air bases is similar to that provided at regular cantonments and camps.

16. Harbor Defense Facilities - Housing for troops at harbor defense projects is also built by the Construction Division. The types of structures built are similar to those found at the camps and cantonments although in some cases existing structures have been remodeled.

OTHER BUILDING PROJECTS

17. The Construction Division is also building various other projects. Construction work is going forward outside the Continental limits of the United States as well as within our borders. For obvious reasons of national defense due to the present unsettled world conditions, it is desirable only to make general statements at this time, regarding building projects outside the Continental

limits of the United States. However, it can be stated that the Construction Division is building in the Canal Zone, Hawaii, and Puerto Rico.

18. An example of some of the difficulties encountered in this construction work may be visualized from the following: a huge slab of concrete was poured recently at one of Panama's newest air fields.

19. From start to finish, nature interposed obstacles to the task. The thick, tangled jungle offered every sort of impediment to the plotting of an air field by ordinary surveying methods, and the impending rainy season threatened to break down the work.

20. The first problem was to plot the course of the runway. A new twist was given to the ancient art of surveying by the idea of "surveying" the site from the air.

21. Translating the wishes of the Air Corps relative to the position of the runway to the Constructing Quartermaster's surveyors in the bush was almost impossible, because the pilots could not recognize the plot except when flying over it. So the decision was made to "survey" from the air.

22. The idea was carried out. Several flights were made over the area, prevailing winds were studied and seasonal changes noted. Through the camera's opening in the floor of a bomber, 100 pound bags of powdered lime were dropped at regularly timed intervals. Surveying parties on the ground located the white limebursts. After a second trial, they set up their instruments, mapped the route of the bomber by triangulation, and thus the runway's position was established. The entire

contract, including aprons, runway and taxi strips, required the pouring of over 180,000 square yards of concrete.

23. This is only one of many examples that could be cited showing how problems encountered meant opportunities to exercise originality and adaptability in solving them. Thus America built for its defense.

PART III - PROVIDING FACILITIES FOR THE ARMY

1. JUST AS THE MODERN CIVILIAN CITY must be supplied not only with residences but with all accompanying facilities, so must the modern military city.

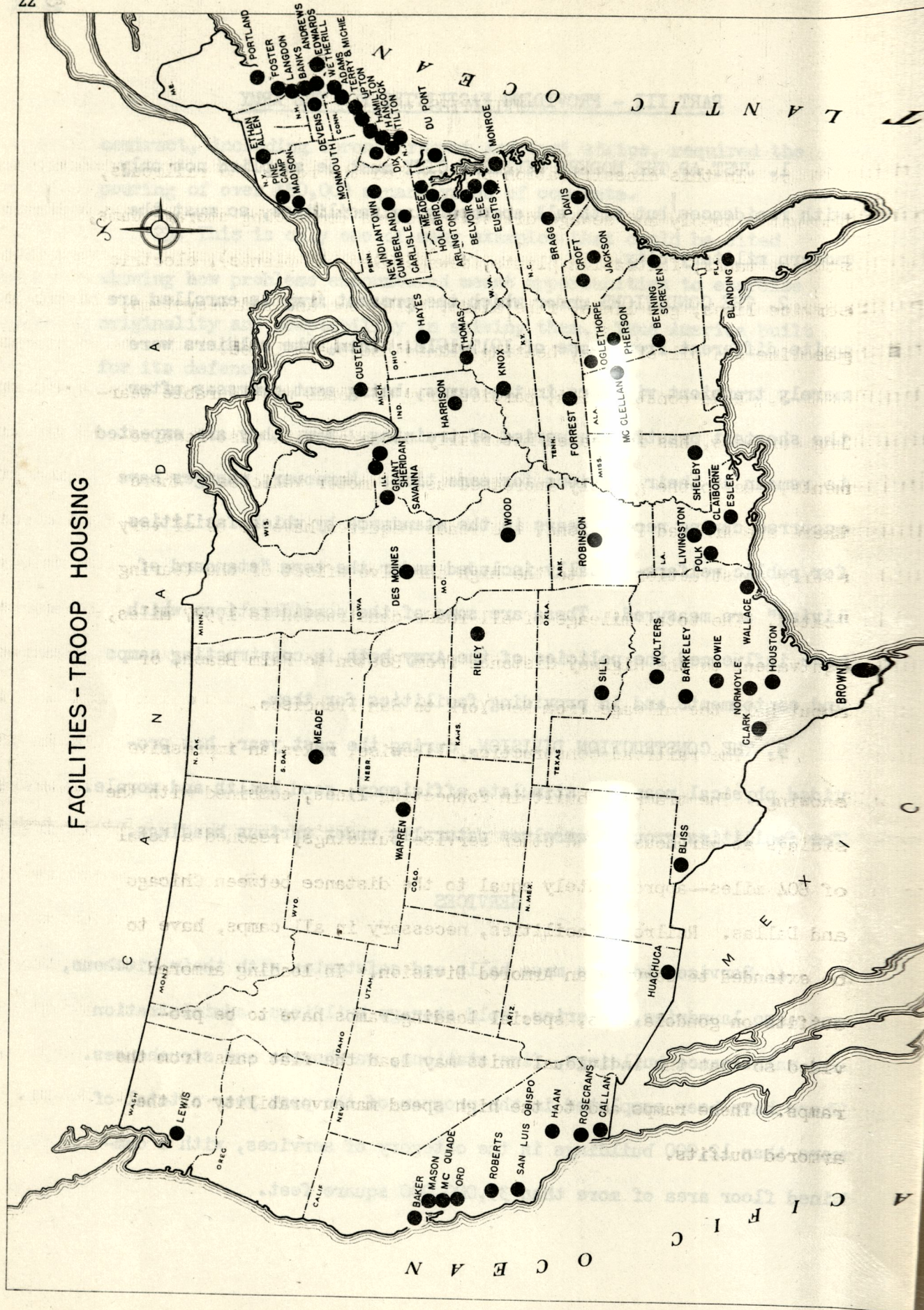
2. THE CONDITIONS under which the present Army is enrolled are quite different from those of 1917-1918. Then, the soldiers were merely transient visitors in the camps, being sent overseas after the shortest practicable period of training. Now, they are expected to remain at their stations for some time. Moreover, changes have occurred during recent years in the standards by which facilities for public welfare--usually included under the term "standard of living" are measured. These are some of the considerations which have influenced the policies of the Army both in constructing camps and cantonments and in providing facilities for them.

3. THE CONSTRUCTION DIVISION, during the past year, has provided physical means to stimulate efficiency, good health and morale. The facilities group themselves naturally under various headings.

SERVICES

4. Services include mess halls and cafeterias with their kitchens, and also laundries, bakeries, cold storage buildings, administration and maintenance buildings, fire stations, warehouses and storehouses. There have been completed in the program of the past year a total of more than 12,000 buildings in the category of services, with a combined floor area of more than 35,000,000 square feet.

FACILITIES - TROOP HOUSING



UTILITIES

5. In this classification are grouped the roads and railroads, the water supply and sewage disposal systems (including storage dams, storage tanks, filtration plants, sewage disposal plants), electric service lines, gas lines, fire alarm, telephone and radio systems, gasoline and oil storage, heating plants and steam lines.

6. Road construction, particularly of roads with durable wearing surfaces, has increased materially compared with past requirements, due to the greatly increased use of motor vehicles. Where there are Armored Divisions, the roads required have to be of very sturdy construction due to the high abrasive effect of the tearing "cats". The total mileage of all roads constructed is 1,577 miles, equivalent to the highway distance from Boston to Palm Beach, or about half the mileage from New York to San Francisco.

7. The railroad construction, likewise, makes an impressive showing. The trackage built in connecting lines, combined with the sidings at warehouses and other service buildings, reached a total of 804 miles—approximately equal to the distance between Chicago and Dallas. Railroad facilities, necessary in all camps, have to be extended to service an Armored Division. In loading armored outfits on gondola cars, special loading ramps have to be provided so that the individual units may load the flat cars from the ramps. These ramps add to the high speed maneuverability of the armored outfits.

8. The completed water supply lines total over 10,000,000 feet, or nearly 2,000 miles in length. The sewer lines total more than 1,500 miles; the gas lines more than 700 miles. All these lines are laid underground, sometimes at considerable depths, and require a great amount of trenching and back-fill.

9. More than 3,500 miles of electric service lines have been strung over farm lands and rough terrain furnishing electricity to the camps in all parts of the country.

10. The sewage disposal plants have a combined capacity of 86,729,866 gallons per day. Sewage disposal tanks, providing for scientific treatment of camp sewage, eliminate the pollution of nearby streams. The dams already built for impounding water supply to care for dry seasons, in connection with the sewage disposal projects, have a total storage capacity of more than 4,000 acre feet, and this capacity will be increased more than ten times according to plans for future construction.

11. The water storage tanks and reservoirs which have been built have a total storage capacity of 118,570,600 gallons--or enough to supply the entire city of Philadelphia with water for all purposes.

12. Gasoline storage facilities with a total capacity of 7,988,122 gallons have been installed. Heating equipment purchased and installed has included 430 boilers, for heating hospitals and other large buildings, and 45,108 furnaces and tent heaters.

MILITARY TRAINING

13. Some military training facilities at camps and cantonments have been built by the Construction Division. Rifle ranges designed to develop expert use of arms have been constructed. Parachute training towers have been erected, among other military training facilities.

HEALTH

14. The health of the soldier during his stay in camp is a vital responsibility of the Army for many compelling reasons, including the efficiency and morale of the men themselves, and also the morale of the general public. Considerations of health influence the activities of the Army. Many of the health facilities form physical parts of the camps and cantonments. These facilities include proper heating and general comfort of the barracks and other buildings; proper provision for food storage and cooking; incinerator plants providing for the prompt disposal of camp garbage and refuse; adequacy and purity of water supply for drinking, cooking and washing; adequate laundry facilities; adequate facilities for the care of the sick. All except the last named are included in other classifications, leaving the all-important hospitals to be dealt with generally here, and in greater detail in another part of this report.

15. The general policy for all housing projects is to provide hospital bed capacity at each station approximately equal to 4 per cent of the Army population, which experience has shown to be reasonably

adequate. Thirty-five hundred hospital buildings, with a total floor area of 12,801,122 square feet, including operating rooms, covered passage ways, etc., have been built during the past year. These provide a present bed capacity of 50,344.

16. Mental hygiene is receiving considerable attention under the health program of the Army. For a wholesome change of pace from the routine work of the day, facilities for sports and athletic activities, as well as facilities for theatrical, musical and motion picture entertainment have been provided.

RECREATION

17. Under this heading are included facilities for sports--for both players and spectators--theatrical, musical and motion picture entertainment; accommodations for reading, lounging, dancing and entertaining visiting friends and relatives.

18. Just before the fiscal year ended, work was started on the construction of 28 large field houses, which will provide facilities for such indoor sports as basketball, boxing and wrestling. The total number of spectators which these field houses will accommodate is about 84,000.

19. In addition, plans have been made, and are being carried out at individual stations, for a variety of outdoor sports and recreational activities, including baseball, football, track, softball, volley ball, soccer, badminton, tennis, horseshoe pitching and shuffleboard.

20. Providing facilities for the presentation of stage productions and motion pictures, 138 theatres with a total floor area of 1,201,916 square feet, have been constructed. Other recreation buildings, including "dayrooms", reading rooms, guest houses, cafeterias, etc., totaling 3,493, have also been constructed with a total floor area of 6,430,809 square feet.

CHAPELS

21. The spiritual welfare of troops in camps and cantonments has always been a concern of the American Army. During the emergency mobilizations, when the ranks of the Army have been swollen suddenly, the chaplain set up his altar in any spare space that was available. When church call sounded, the men marched for prayer to theatres, mess halls, recreation buildings, tents, the parade ground or a clearing in the woods. In some cases, men of a command have themselves built out of salvaged materials a place designed solely for worship.

22. To further the high purpose of prayer and religious worship, the Army is now building many chapels. Plans have been instituted for the erection of 478 chapels, with a total floor area of 2,524,318 square feet, in addition to chapels already constructed by the Construction Division, and at the close of the fiscal year 1941, work had been started on 196 of these chapels. In appearance, they will look like the typical small church found in every community in America--the slant-roofed frame building with steeple at the front. Every

chapel will have an electric organ and will have seats for 400 soldiers. These chapels are so designed and equipped that they can be used for the services of all denominations.

23. Construction of the chapels will enable the chaplains to develop a full time program, stressing religious activities and also providing a center for cultural and pastoral activities. Added to the present recreational and welfare facilities of the Army, the chapel program is expected to contribute considerably toward maintaining the high morale of the troops.

PART IV - PROVIDING HOSPITALS FOR THE ARMY

1. TO INSURE ADEQUATE MEDICAL attention for the soldiers the policy of the War Department has been to provide hospitals as well as infirmaries.

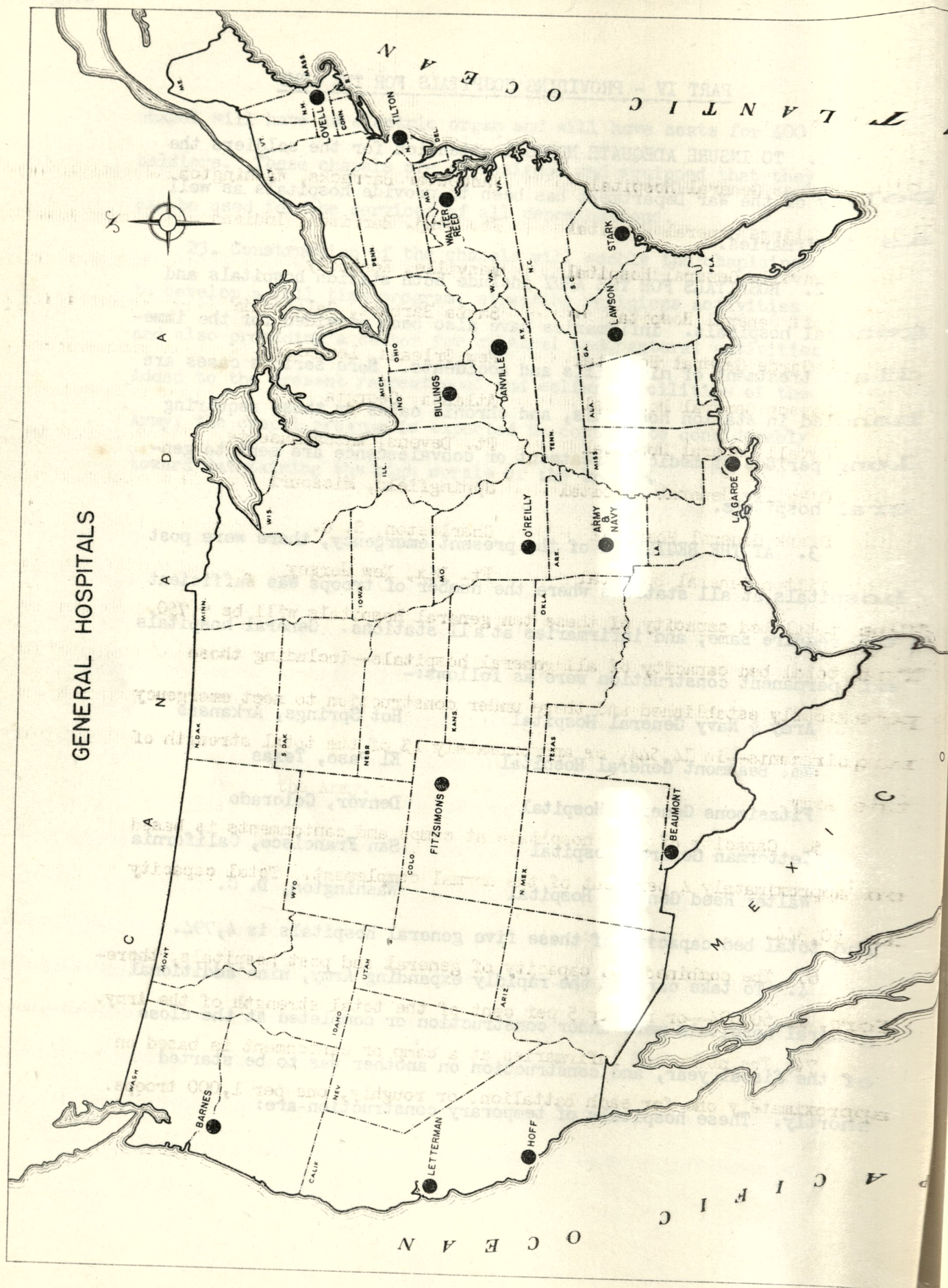
2. HOSPITALS FOR THE ARMY include both station hospitals and general hospitals. Infirmaries have also been provided for the immediate treatment of minor ills and accidents. More serious cases are handled in station hospitals, and chronic cases or those requiring long periods of medical treatment or convalescence are sent to general hospitals.

3. AT THE BEGINNING of the present emergency, there were post hospitals at all stations where the number of troops was sufficient to require same, and infirmaries at all stations. General hospitals of permanent construction were as follows:-

| | |
|-------------------------------|---------------------------|
| Army & Navy General Hospital | Hot Springs, Arkansas |
| Wm. Beaumont General Hospital | El Paso, Texas |
| Fitzsimons General Hospital | Denver, Colorado |
| Letterman General Hospital | San Francisco, California |
| Walter Reed General Hospital | Washington, D. C. |

The total bed capacity of these five general hospitals is 4,794.

4. To take care of the rapidly expanding Army, nine additional general hospitals were under construction or completed at the close of the fiscal year, and construction on another was to be started shortly. These hospitals of temporary construction are:



GENERAL HOSPITALS

- | | |
|-----------------------------|--------------------------------|
| 9 Barnes General Hospital | Vancouver Barracks, Washington |
| 5 Billings General Hospital | Ft. Benj. Harrison, Indiana |
| Danville General Hospital | Danville, Kentucky |
| 9 Hoff General Hospital | Santa Barbara, California |
| 4 LaGarde General Hospital | New Orleans, Louisiana |
| 4 Lawson General Hospital | Atlanta, Georgia |
| 1 Lovell General Hospital | Ft. Devens, Massachusetts |
| 7 O'Reilly General Hospital | Springfield, Missouri |
| 4 Stark General Hospital | Charleston, S. C. |
| 2 Tilton General Hospital | Ft. Dix, New Jersey |

The total bed capacity of these ten general hospitals will be 9,750. The total bed capacity of all general hospitals—including those previously established and those under construction to meet emergency requirements—is 14,544, or approximately 1% of the total strength of the Army.

5. Capacity of post hospitals at camps and cantonments is based on approximately 4 per cent of the normal complement. Total capacity is 50,344.

6. The combined bed capacity of general and post hospitals, therefore, is 60,094—or nearly 5 per cent of the total strength of the Army.

7. The number of infirmaries at a camp or cantonment is based on approximately one for each battalion, or roughly, one per 1,000 troops.

TYPES OF CONSTRUCTION

8. General hospitals are of two types of construction--permanent and temporary. General hospitals of permanent construction compare favorably from the standpoint of equipment and facilities afforded, as well as of construction, with modern up-to-date hospitals in any large community.

9. General hospitals of temporary construction have equipment and facilities equally as good. Cantonment type, one-story buildings have been constructed. Briefly, the buildings are as follows:-

Administration Building

Officers' Quarters

Nurses' Quarters

Recreation Building for Officers

Recreation Building for Nurses

Recreation Building for Patients

Wards for Normal Patients

Wards for Patients with

Communicable Diseases

Wards for Mental Patients

Dental Clinics

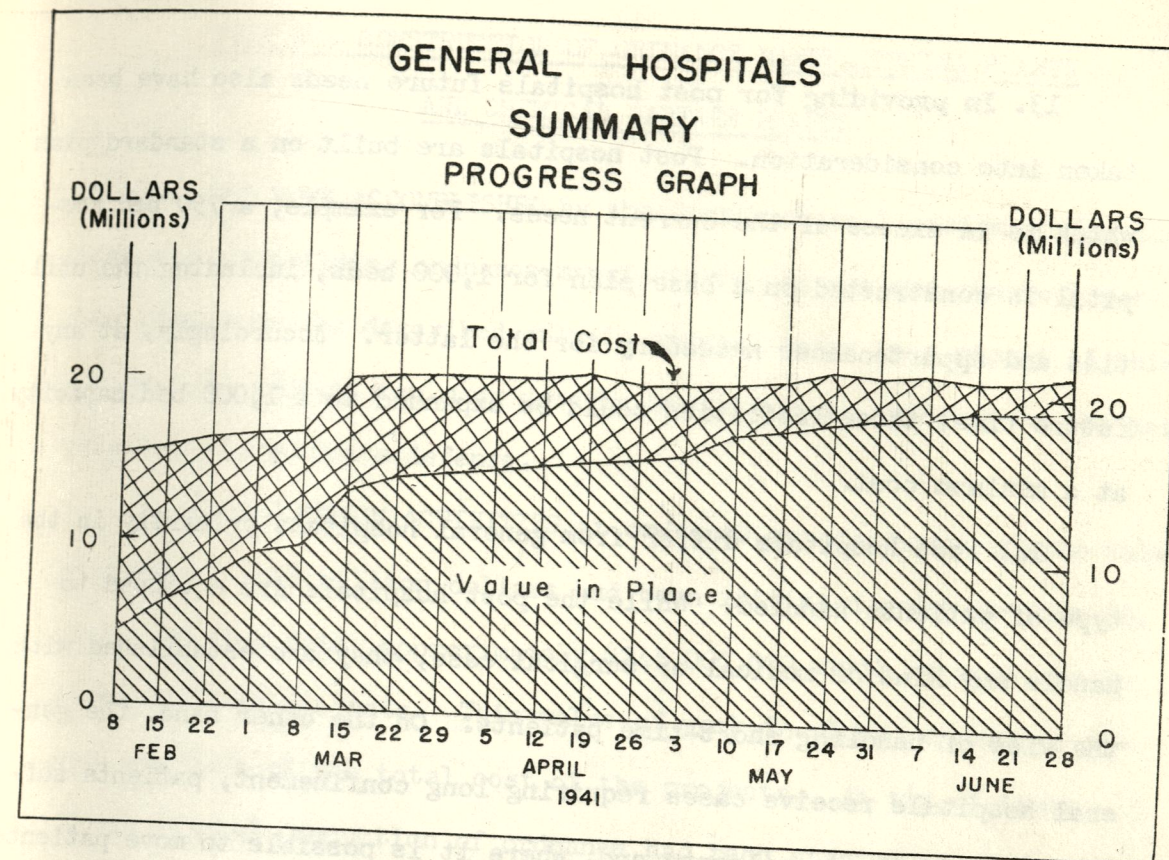
Morgues

Storehouses and Warehouses

Boiler House and Steam Distribution
System

Connecting Covered, Closed and Open

Walks between buildings



10. A complete system of utilities, including water, sewer, gas, and electricity has been installed at these hospitals.

11. The construction of permanent general hospitals differs from that of temporary general hospitals insofar as material may be brick instead of wood, and buildings may be multi-story instead of single story. Sheltered passage ways, facilitating the movement of patients, medical attendants and supplies from one ward to another have been provided at the temporary hospitals.

12. Infirmarys are definitely for minor ills and accidents. Cases requiring greater attention are transferred first to post hospitals, and later, if conditions so require, to a general hospital.

13. In providing for post hospitals future needs also have been taken into consideration. Post hospitals are built on a standard plan which is in excess of the current needs. For example, a 750 bed hospital is constructed on a base plan for 1,000 beds, including the utilities and appurtenances necessary for the latter. Accordingly, at any future time, these facilities could be expanded to a 1,000 bed capacity at a minimum cost.

14. Post hospitals differ from general hospitals primarily in the type of patients handled. While the post hospitals are equipped to handle any kind of medical or surgical case, they are established with the view of handling short-time patients. On the other hand, the general hospitals receive cases requiring long confinement, patients suffering from chronic ailments and, where it is possible to move patients from a post hospital, major surgical cases.

15. The general hospitals are located in important cities or Army posts which are easily accessible to troops stationed in their particular part of the country.

PART V - CONSTRUCTION OF ORDNANCE MANUFACTURING PLANTS AND CHEMICAL WARFARE PLANTS

1. THE WORK ACCOMPLISHED by the Construction Division during the past year in building ordnance manufacturing plants and chemical warfare plants can be described only in general terms in a report of this nature. To present too many details here would be contrary to the best interest of America's defense.

2. CONSTRUCTION ACTIVITIES at ordnance manufacturing plants valued at almost a half billion dollars had been initiated prior to June 30, 1941. By that date, approximately \$245,000,000 worth of work was in place at these projects. This value of work in place represents almost one half of the total cost of the projects. At six of these plants initial production of ordnance had been started as of June 30, 1941.

3. ORDNANCE MANUFACTURING PLANTS being built by the Construction Division as of June 30, 1941 include: 5 shell loading plants, 3 TNT plants, 3 small arms ammunition plants, 3 smokeless powder plants, 3 bag loading plants, 2 ammonia plants, a Toluol plant, an M-1 rifle plant, a tank arsenal, an armor plate plant, a shell forging plant, as well as miscellaneous plants and additions to existing arsenals.

4. To provide ordnance for the rapidly expanding Army, new construction authorized includes: 3 shell loading plants, 3 small arms plants, a picric acid plant, a detonator plant, 2 smokeless powder plants, 2 ammonia plants, and a bag loading plant. The total estimated cost of these new construction projects is approximately

5. While not applicable to all ordnance manufacturing plants, nor indeed to all shell loading plants, the following description gives some idea as to the layout, construction, facilities, and operation of a shell loading plant.

6. A shell loading plant occupies an area of approximately 15,000 acres--such expanse being necessary in the interest of safety--so that ample space may be provided between buildings and groups of buildings. The entire area is enclosed by a heavy wire fence with gates protected by armed guards at all times. A railroad, as well as roads, services every portion of the plant area. The roads are used not only for transportation and hauling but also for regular police patrols in radio equipped cars. Every facility to increase speed of operation is provided, and every possible precaution to assure safety of workers is taken at these shell loading plants.

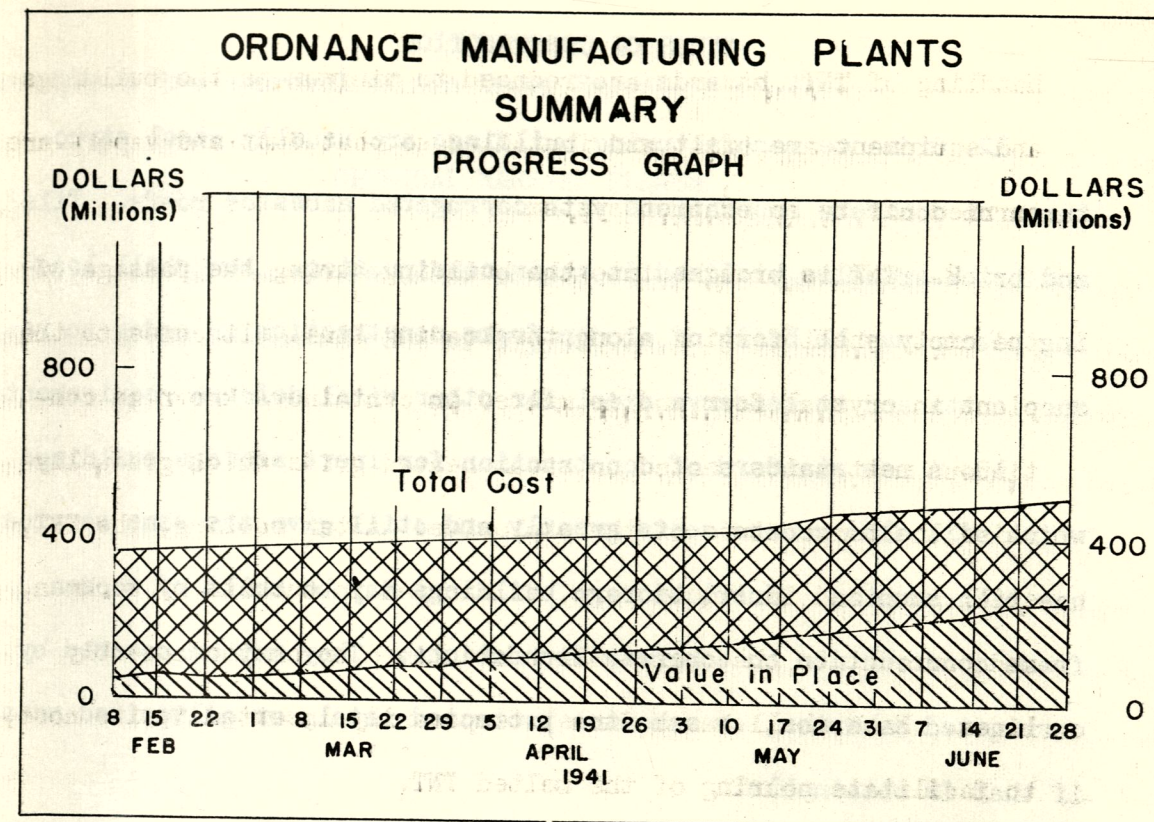
7. The inert storage building where empty shell forgings are kept is where shell loading actually starts. The shell forging is first cleaned, and all threads and tappings inspected. It then goes down the line to the melt-load building, where TNT is melted and poured into the shell. Although care must be constantly exercised in the

handling of TNT, hazards are reduced to minimum as the buildings and equipment are built and installed so that dust and vapors are carried off by an exhaust system.

8. TNT is brought into the building during the passage of the empty shell forging along the loading line. It comes to the plant in crystal form and is melted in containers known as continuous melt units seated on steam heated grids which gradually raise the temperature of the explosive. After cooling, the TNT, still warm and in liquid form, is carried in buckets by workmen, and poured into the shells which are lined up on the assembly lines. Each shell has a funnel temporarily inserted in its nose, to facilitate pouring of the melted TNT.

9. The shell stays in the melt-loading building until the TNT has thoroughly cooled. Workmen then remove the funnel. Pieces of TNT which may cling to the neck of the funnel, are carefully gathered together and put back into the melting units for re-melting with other TNT. A cavity is then bored in the hardened TNT at the mouth of the shell, and in this cavity is set the metal container called a "booster"—containing a charge of tetryl—which amplifies the flame and detonates the TNT.

10. The fuse is then placed in the upper portion of the shell and this, with the booster are auxiliaries for exploding the bursting charge within the shell itself. The bursting charge of a shell is so accurately balanced that the immense propelling charge when fired will not explode the bursting charge within the shell. This bursting charge can be made to explode upon striking the target or



after it hits the target. The fuses and boosters are manufactured in other buildings within the plant area. Explosives are not kept in the same building in which loading operations are conducted. After the shell is loaded, it is stored in warehouses known as magazines.

11. A shell loading plant is really a complete living unit in itself. It is like a small city, with fire and police protection, water and sewage system, hospital, first aid stations, telephone and railroad signal service, etc. There is, also, a commissary for the use of permanent personnel, as well as recreational and rest rooms, and sleeping quarters. Other buildings include an administration group. Fencing of areas in which ordnance is manufactured or stored has been provided.

TYPES OF CONSTRUCTION

12. Ordnance manufacturing buildings are usually steel structures on concrete foundations with corrugated asbestos roofs. Tile and brick are also utilized in their construction. New shell loading plants may be built of wooden frame construction in order to reduce costs and to conserve steel for other vital defense requirements.

13. A new standard of construction for inert storage buildings which will also reduce costs greatly and still give the same service has been adopted. Inert storage buildings may be built of wooden frame construction on concrete foundations. They may be covered by corrugated asbestos, or asbestos protected metal, or galvanized metal if that is obtainable.

RELATIONSHIP WITH USING SERVICES

14. When the Quartermaster Corps supervises the architect-engineering and construction functions for the Ordnance Department or the Chemical Warfare Service the contract is approved by the authorized contracting officer for the Quartermaster General and Chief of Ordnance or Chief of Chemical Warfare as the case may be. In the past these contracts took the form of collateral agreements in which the functions of the two branches were set forth. The collateral contract method has been superseded by a procedure wherein the Ordnance Department or the Chemical Warfare Service selects a contractor to operate the proposed plant, with a provision in this operating contract for the subcontracting of the architect-engineering and construction services as prescribed by the Quartermaster General,

subject to the approval of the Under Secretary of War.

CHEMICAL WARFARE PLANTS

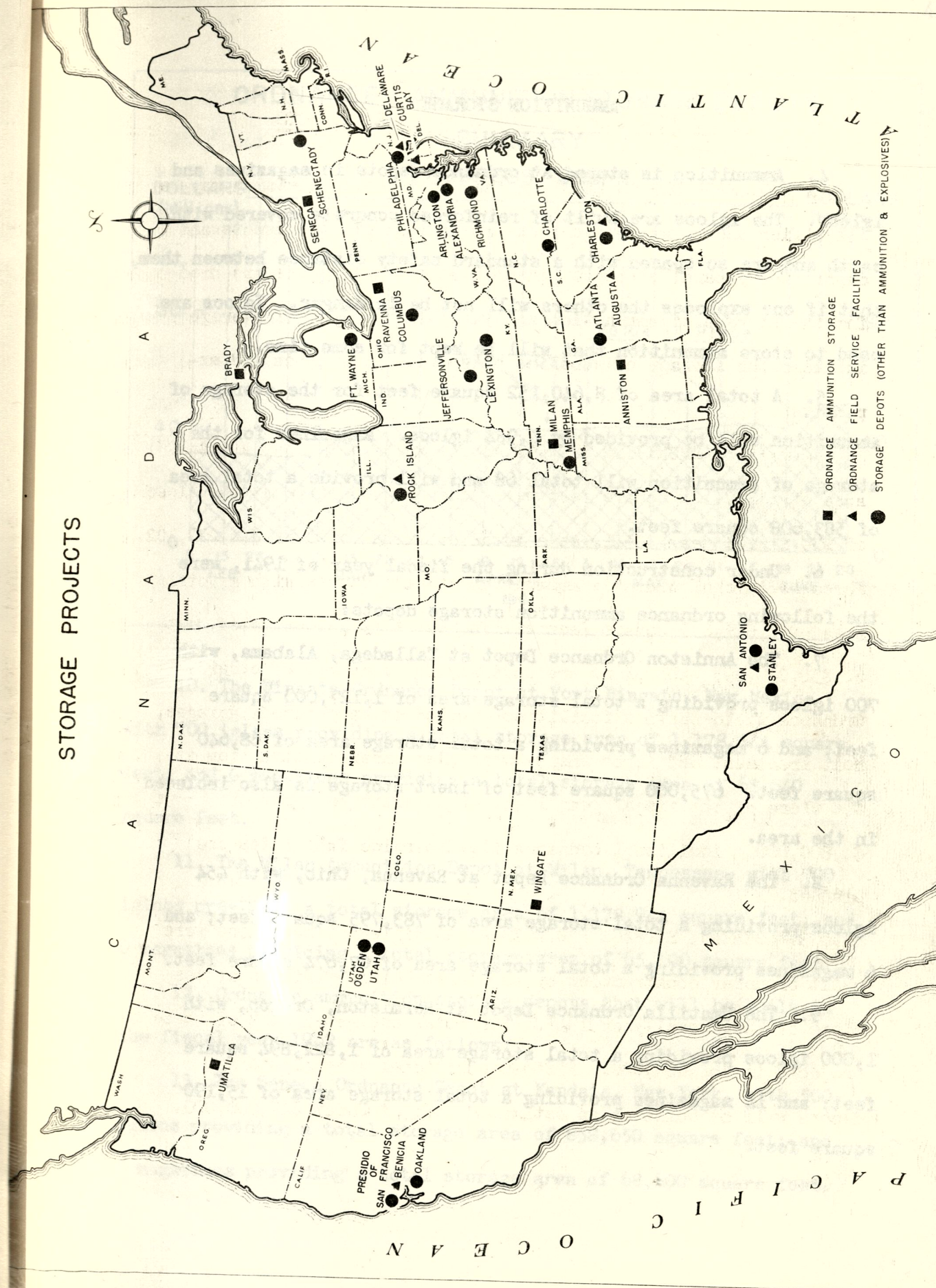
15. Ten projects are under construction for the Chemical Warfare Service at an estimated cost of \$7,380,000.

PART VI - CONSTRUCTION OF STORAGE PROJECTS

1. STORAGE DEPOTS BUILT by the Construction Division may be classified under two categories: ammunition storage depots and depots for general storage. Ammunition storage depots are used for the storage of ammunition and explosives. General storage includes the storage of supplies other than ammunition and explosives.

2. FIVE AMMUNITION STORAGE depots which will have a total area of 6,377,121 square feet were under construction at the close of the fiscal year 1941, at a total estimated cost of \$44,299,102. Three additional ordnance ammunition storage depots with a total area of 2,847,639 square feet will be built at an estimated cost of \$30,259,393, and plans are underway for a number of others. Ordnance field service facilities—including warehouses, garages, heat treatment and forge shops—were also under construction at the close of the fiscal year 1941, at an estimated cost of \$4,800,000. Additional ordnance field service facilities are planned.

3. GENERAL STORAGE PROJECTS at 22 different locations were built or under construction by the Construction Division at the close of the fiscal year 1941. The total estimated cost of these projects is \$64,065,000. Fifteen additional general storage depots will be built at an estimated cost of about \$49,000,000.



AMMUNITION STORAGE

4. Ammunition is stored at ordnance depots in magazines and igloos. The igloos are built of reinforced concrete covered with earth and are so spaced with a standard safety distance between them, that if one explodes the others will not be in danger. Igloos are used to store ammunition that will be kept for some time.

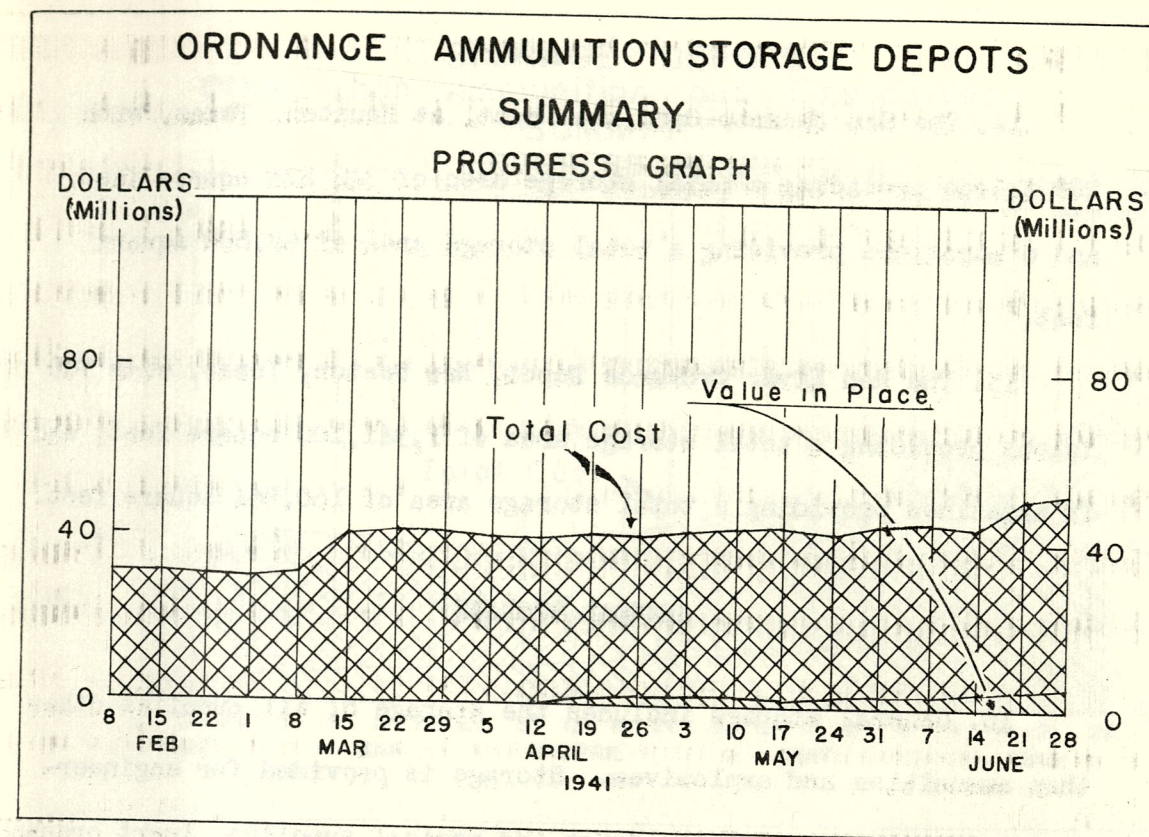
5. A total area of 8,640,152 square feet for the storage of ammunition will be provided by 4,954 igloos. Magazines for the storage of ammunition will total 68 and will provide a total area of 583,608 square feet.

6. Under construction during the fiscal year of 1941, were the following ordnance ammunition storage depots:

7. The Anniston Ordnance Depot at Talladega, Alabama, with 700 igloos providing a total storage area of 1,127,000 square feet; and 6 magazines providing a total storage area of 68,640 square feet. 675,000 square feet of inert storage is also included in the area.

8. The Ravenna Ordnance Depot at Ravenna, Ohio, with 454 igloos providing a total storage area of 783,795 square feet; and 6 magazines providing a total storage area of 67,674 square feet.

9. The Umatilla Ordnance Depot at Hermiston, Oregon, with 1,000 igloos providing a total storage area of 1,822,894 square feet; and 14 magazines providing a total storage area of 15,190 square feet.



10. The Wingate Ordnance Depot at Fort Wingate, New Mexico, with 700 igloos providing a total storage area of 1,178,944 square feet; and 6 magazines providing a total storage area of 68,640 square feet.

11. The Milan Ammunition Depot at Milan, Tennessee, with 700 igloos providing a total storage area of 1,178,944 square feet; and 6 magazines providing a total storage area of 65,400 square feet.

12. Ordnance ammunition storage depots that will be built in the fiscal year 1942 are as follows:

13. The Seneca Ordnance Depot at Kendaia, New York, with 500 igloos providing a total storage area of 858,650 square feet; and 6 magazines providing a total storage area of 68,600 square feet.

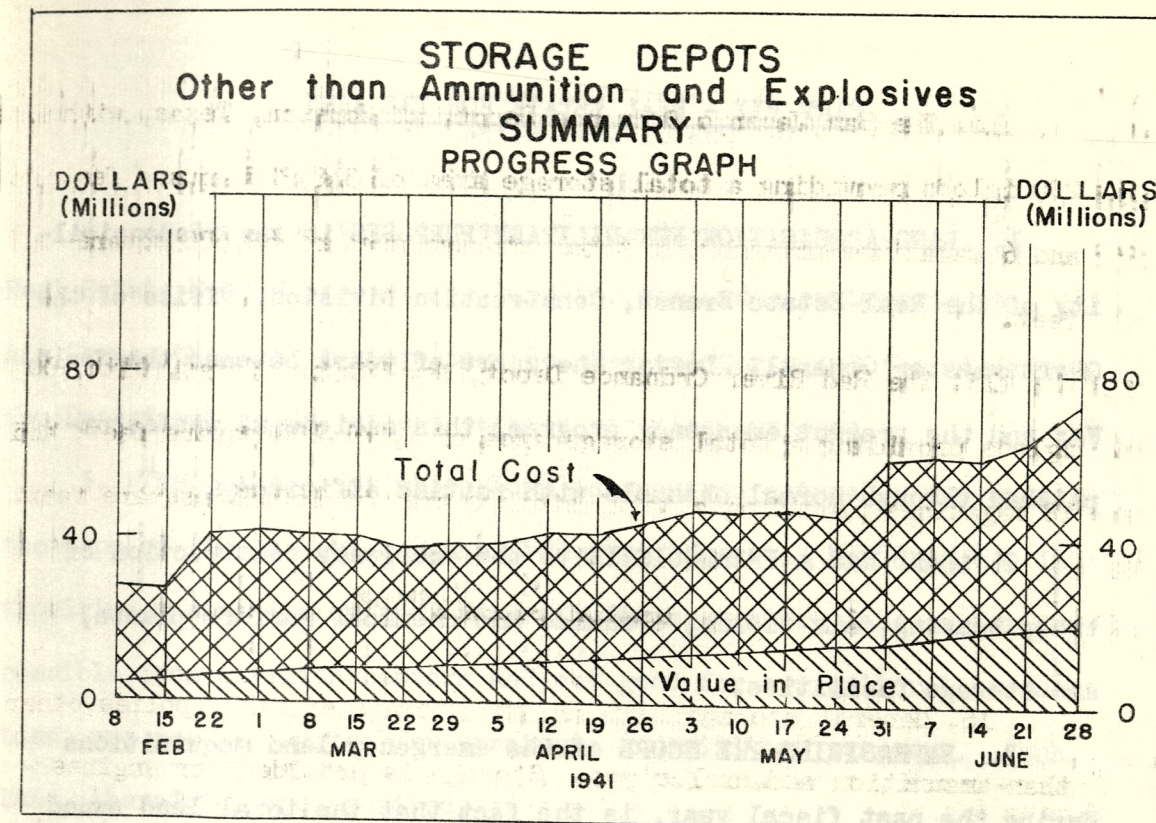
14. The San Jacinto Ordnance Depot, at Houston, Texas, with 200 igloos providing a total storage area of 348,825 square feet; and 6 magazines providing a total storage area of 68,600 square feet.

15. The Red River Ordnance Depot, New Boston, Texas, with 700 igloos providing a total storage area of 1,341,100 square feet; and 18 magazines providing a total storage area of 160,864 square feet.

GENERAL STORAGE

16. General storage includes the storage of all supplies other than ammunition and explosives. Storage is provided for engineering equipment and supplies, drugs and medical supplies, inert ordnance materials, clothing, non-perishable foods, transportation equipment, stationery and office supplies, and maintenance and replacement items such as ranges, stoves, furnace grates, plumbing fixtures, piping, electrical fixtures, fencing, roofing materials, etc.

17. General depots furnish storage facilities for two or more of the following using services: Quartermaster Corps, Corps of Engineers, Chemical Warfare Service, Signal Corps and Medical Corps. Where a depot is used by one branch or service only, it is designated as a Quartermaster depot, Signal depot, etc., as the case may be.



18. During the past fiscal year a substantial portion of the emergency storage facilities required was obtained through leasing by the Real Estate Branch. This phase of the storage program is discussed in the part of this report pertaining to real estate. It has been considered desirable, however, for the War Department to expand its own storage facilities with the aim of continuing leases only where they are economically advantageous to the Government. The above storage construction program, therefore, has been undertaken.

PART VII - REAL ESTATE FOR THE ARMY

1. LAND ACQUISITION FOR MILITARY PURPOSES is the responsibility of the Real Estate Branch, Construction Division, Office of the Quartermaster General. During the score of years between the World War and the present emergency program, this assignment was accomplished through normal channels with routine efficiency.

2. LAND WAS A PREREQUISITE to the emergency construction of troop housing, air fields, ordnance and chemical warfare plants, and storage facilities.

3. EMPHASIZING THE SCOPE of the emergency land acquisitions during the past fiscal year, is the fact that the total land owned by the War Department at the end of the World War amounted to 1,618,573 acres, of which 571,286 acres were acquired during the War period. Total acreage of War Department land as of June 30, 1940, amounted to 1,981,000. In contrast, by June 30, 1941, this acreage, inclusive of transfers of public domain, had been increased to 9,628,551. The total land to which the War Department thus acquired ownership during the year amounts to 7,647,551 acres. In addition to these purchases in fee simple, the Army has acquired a leasehold interest in 1,177,506 acres for camp sites and Air Corps fields during the past year.

PURPOSES FOR WHICH LAND IS ACQUIRED

4. In addition to the needs of the Quartermaster Corps, the Real Estate Branch secures the land for the Ordnance Department, Air Corps, Chemical Warfare Service, Medical Corps and for all other War Department needs, except certain civilian purposes.

5. The purpose for which land is acquired naturally determines the type of land sought and the price paid for it. For example, in acquiring a site for an anti-aircraft firing center, land as far as possible from civilian centers and not good for agricultural production, was ideally suited for strategic and military purposes. Such land, therefore, was acquired.

6. If good agricultural land had been purchased with the resultant extensive relocation of civilian life, it would have cost several million dollars more. The Government saved this money by acquiring remote, poor land for anti-aircraft firing centers, even though the construction costs were increased considerably because of distance to labor and material markets.

7. On the other hand, in acquiring land on which to build ordnance plants and storage depots, the situation was entirely different. Such elements as integration with other plants having connected activities, accessibility to sources of labor and material and transportation facilities, were of prime importance. These considerations required the purchasing of land in industrial areas regardless of costs and inconvenience to civilian life. Bitter

criticism often resulted from the acquisition of such land, but the needs of national defense demanded that this land be acquired. The efficient operation of the completed plants and economies in construction, dependent on the location, were vitally important factors that should also be taken into consideration in evaluating the situation.

Camps and Cantonments

8. Sites for some 40 camps and cantonments have been acquired during the fiscal year, 1941. Over \$22,500,000 was allotted for the acquisition of this land, of which approximately \$15,500,000 has been obligated thus far. These camp and cantonment projects include additions to existing camps, replacement centers, artillery ranges, maneuver areas, target ranges, and firing ranges.

Hospitals

9. Hospital sites have been acquired for three general hospitals and the acquisition of three more hospital sites is in progress. The allotment of \$111,000 has been made for these lands, of which \$101,000 has been obligated to date.

Storage Depots

10. Sites have been acquired for storage depots in various parts of the country. There are 40 of these depot sites, some of which include warehouses suitable for almost immediate use. Allotments for the acquisition of this property, amounting to \$19,200,000 have been made, of which \$16,000,000 has been obligated.

Ordnance Plants

11. Sites for 45 ordnance plants have been and are being acquired for various purposes, such as manufacturing smokeless powder, small arms, tanks, TNT and armor plate, and for bag loading. In several instances they are for the expansion of ordnance plants already in use. Allotments for this purpose aggregate approximately \$40,500,000, of which \$29,200,000 has been obligated during this fiscal year. In addition to the acquisition of land for those plants, the Real Estate Branch has been directed to acquire sites for several new ordnance plants.

Air Corps Sites

12. Sites for air fields, bombing ranges, and aerial gunnery ranges have been or are being acquired for the Air Corps. Approximately \$2,500,000 has been allotted during the fiscal year 1941 for these purposes, and approximately \$2,150,000 has been obligated to date. The acquisition of land for a number of Air Corps projects authorized prior to this fiscal year has been continued throughout the year, chiefly by the prosecution of condemnation suits to exclude mineral or other rights in land already possessed by the Government. Almost \$4,500,000 was appropriated late in the fiscal year for sites to be used for the training of 30,000 pilots. The acquisition of these sites is underway and it is anticipated that a considerable saving will be realized through the cooperative action of local municipalities in donating the necessary areas.

Other Sites

13. The Real Estate Branch has also acquired numerous sites for radio beacon ranges and communication stations for the Signal Corps, Harbor and Seacoast Defenses of the Coast Artillery, a large Medical Corps depot, and various sites for manufacturing plants for the Chemical Warfare Service.

SELECTION OF SITES

14. The Corps Area Site Board appointed to deal with the specific case ordinarily consists of four or five officers who inspect prospective sites and make a recommendation based upon the requirements of the particular Using Service. This recommendation goes to the General Staff. The Real Estate Branch, in the meantime, is engaged in making an appraisal of the land. Immediately upon the final determination of a site, funds are appropriated, and the Real Estate Branch proceeds to acquire the land.

LAND ACQUISITION PROBLEMS

15. Land acquisition involves problems relating to appraisal, disposition of improvements and payment of funds as well as the relocation of roads, public utilities and cemeteries.

Appraisals

16. A sound appraisal policy in War Department land acquisition is essential. The fundamental requisite is a determination of the fair market value of the land. It is important to ascertain which items are compensable and which are non-compensable. Such factors as the value of land and improvements, severance damages, crops, and structures erected by tenants as well as by landowners, must be carefully evaluated. On the other hand, equal care must be exercised to exclude such non-compensable items as disturbance damages, cost of moving, loss of business or anticipated profits, and purely speculative or hypothetical values placed on the premises. The report must include a statement regarding such outstanding rights of third parties as mineral leases, public utilities, easements, and cemeteries.

17. All appraisals are conducted by experienced personnel familiar with the various problems presented in different sections of the country. The appraisal reports of these experts are carefully reviewed and are then the basis of negotiations with owners. In the event that condemnation proceedings must be resorted to, the amount of just compensation is established by the court.

Disposition of Improvements

18. Another problem is the disposition of improvements not susceptible to use by the War Department. Where the improvements are clearly a part of the realty, as in the case of dwellings, barns, silos, and the like, they ordinarily pass with the realty and are

carefully evaluated in fixing the amount of compensation. Substantial structures frequently are usable by the War Department.

Whenever the War Department cannot use the improvements and the owner desires to reserve and remove them for his own use, such improvements are excluded in the ascertainment of value of the property.

19. Occasionally, situations arise wherein military use of the land makes it necessary to remove all improvements and the nature of the improvements is such that they are practically valueless to the owner upon removal from the land. In those instances, every effort is made to sell or salvage as much as possible in disposing of the improvements. In other instances, the properties may be pipelines, electric power lines, or other utilities. These are usually relocated outside the military area.

Infrequently, it is necessary due to the inability to sell, the lack of time, and the character of the improvements, to destroy structures on the land, but even here an effort is made to recover salvage values.

Distribution of Funds

20. Difficulty has been experienced in accomplishing the prompt distribution of money deposited in court in payment for lands acquired by condemnation. The principal cause of delay is the inability to obtain satisfactory title evidence in a short period of time. Distribution of funds cannot be made until the evidence establishes the owner properly entitled to the money.

The unsatisfactory condition of country land records and the tremendous burden placed on local abstractors and title companies by large Government orders has in the past given rise to extensive delays in the production of title evidence. In an effort to reduce the delay and to expedite the distribution of funds deposited, the Department of Justice has relaxed the rigid standards formerly required in the procurement of title evidence. An example is the reduction of the period of title search required from 80 years to a maximum of 50 years. Further speed has been obtained by the policy of soliciting title evidence often available in the possession of owners.

21. The Government, in addition, has attempted to forestall delay in payments to owners through the initiation of negotiations, and preparation of the necessary stipulations and orders of distribution in each case.

Roads, Public Utilities, and Cemeteries

22. The closure of state and county roads running through areas acquired is another general problem arising in connection with land acquisition. In some instances, the cooperation of local county officials is readily obtained and the closure is effected at little or no cost to the Government. In other cases, however, the county authorities have declined to cooperate and excessive demands have been made upon the Government for payment of the value of the roads

or of the cost to the county of the rearrangement of its road system.

In the latter instances, condemnation proceedings are instituted to obtain possession of such roads, and an attempt is then made to work out an agreement for the county to be paid in amount sufficient to relocate and reconstruct road facilities in substantially the condition that existed prior to the acquisition of the site.

23. An analogous situation is encountered whenever it becomes necessary to relocate cemeteries, pipelines, light and power lines, and other utilities within an area being acquired. It is the policy of the War Department, whenever possible, to leave cemeteries undisturbed and to provide protection by fencing them. In most instances, however, it is necessary to relocate the cemetery and transfer the bodies. This task presents a delicate problem of public relations. The bodies must be removed in a manner consistent with due respect for the dead and the sensibilities of living relatives.

Loss of Municipal Tax Revenue

24. In the course of this nation-wide program of land acquisition, it has been found that numerous communities have been deprived of tax revenue on real estate acquired for defense purposes. The War Department has no statutory authority to reimburse such communities for the loss; consequently, numerous efforts have been made by local governmental agencies to obtain legislation that would provide a measure of compensation for their loss in tax revenue.

25. Such legislation has been opposed for the reason that the Federal Real Estate Board, a body established by the President in 1939, was specifically directed to study the problem of diminished local tax revenues and to determine the most appropriate action to be taken in individual cases.

26. Every reasonable effort, consistent with military needs is made to acquire cheap lands, which yield the minimum of tax revenue. In most cases, federal assumption of the local tax burden would be unwarranted, since the benefits that will accrue to the affected communities by reason of the expenditures incident to the establishments erected by the War Department will more than effect the loss of real estate tax revenue. Thus, in some instances, counties are relieved of the burden of maintaining schools and roads in large areas appropriated for military uses. In some cases, the Federal acquisition of land operates to liquidate frozen public assets of land acquired through tax sales.

METHOD OF ACQUISITION

27. Upon the reorganization of the Real Estate Branch in February, 1941, the emergency practice of employing private brokers was discarded and a Zone Real Estate Director was placed in each construction zone to supervise land acquisition, and more particularly to obtain preliminary planning data, direct negotiations and appraisals, and obtain title evidence. Project managers have also been

appointed for each project to take direct charge of appraisals, negotiations, and all field work. By means of adequate advance planning, an accurate estimate is made as to the amount of money that will be needed for real estate acquisition in connection with a given project.

28. As soon as a site is definitely decided upon, a tract by tract appraisal including sales values in the area is made by qualified independent appraisers, whose reports are reviewed first in the field and then in Washington. Upon approval of the appraisal reports, negotiations are entered into with the owners of the land.

29. Where possession of the land is needed and time limited, or where title defects or unreasonably high prices prohibit acquisition by direct purchase, condemnation proceedings are immediately instituted. Whether the acquisition is by purchase or by condemnation, however, every effort is made to negotiate a settlement with the owner.

30. In most cases, immediate possession of the land has been required by the Army so that construction or occupancy could be started without delay, and every effort was made to compensate the owner at the earliest practicable date in order to enable him to move from the premises. Generally, these people were without adequate resources to effect their relocation promptly. In such instances, the Farm Security Administration and local Farm Bureaus

have rendered valuable service in aiding farmers and their tenants to move from the areas being acquired.

31. When, because of the need for immediate possession, condemnation proceedings must be instituted, appraisers and negotiators are sent to the field in order that negotiations may be entered into with the landowners and payment expedited. The Department of Justice has endeavored to reduce the period required for disbursement of funds in condemnation proceedings. Under the Declaration of Taking procedure, ordinarily used by the Real Estate Branch in acquiring land by condemnation, title vests in the United States immediately upon filing the Declaration and depositing the amount of estimated compensation, but the Federal District Court having jurisdiction of the proceedings determines the time at which the United States may take possession of the lands. Efforts to obtain stipulated settlements are continued down to the time of trial by agents both of the War Department and the Department of Justice, and upon proof that they are the proper persons to receive the money, the Court will release to the landowner the funds deposited by the Government.

32. While the District Courts have been very cooperative in issuing decrees of immediate possession to the Government whenever requested to do so, in some instances it is necessary to obtain possession of land for immediate construction purposes so rapidly that

there is insufficient time to make the necessary appraisals, descriptions and tract maps which are required under the Declaration of Taking Act. In such instances, the provisions of the so-called "Imminence of War" Statute, (50 U.S.C.A. 171), are available. Under this measure, the Attorney General files a Petition in Condemnation in the proper District Court giving a perimeter description of the land needed and the Government then is entitled to possession of the land. As in the procedure followed in connection with the Declaration of Taking, the Courts have been appreciative of the need for immediate possession by the War Department, and have invariably cooperated with the Government.

LAND ACQUIRED FOR NATIONAL DEFENSE

33. The Real Estate Branch during the fiscal year handled approximately 220 land acquisition projects through purchase, condemnation and transfer. These projects involved approximately 15,000 separate parcels or tracts of land, and ranged in size from less than one acre to more than 3,560,000 acres. The three largest projects were acquired by transfer for the Air Corps. Tonopah, Nevada, consisting of 3,567,338 acres and Wendover, Utah, constituting 1,822,200 acres were transferred for bombing ranges. Mojave, California, with an acreage of 640,000 was transferred for an aerial gunnery range.

34. The War Department owned 9,628,551 acres of land on June 30, 1941, as compared with 1,981,000 acres at the close of the preceding fiscal year. The 7,647,551 acres of land to which title was acquired during the fiscal year were composed of 589,206 acres obtained by purchase, 531,706 acres secured through condemnation, and 6,526,639 acquired by transfer or gift.

35. The following table shows the acreage and cost of land acquired in fee by the War Department for various military purposes during the fiscal year 1941:

LAND TO WHICH THE WAR DEPARTMENT
ACQUIRED OWNERSHIP DURING FISCAL YEAR 1941

| PURPOSE | A C R E A G E | | | TOTAL ACREAGE | COST |
|-----------------------|---------------|-----------|-------------------------------|------------------|---------------|
| | Purchased | Condemned | Transferred and Donated | | |
| Camps and Cantonments | 364,730 | 298,594 | 92,145 | 755,469 | \$ 15,510,569 |
| General Hospitals | 582 | 126 | 93 | 801 | 101,002 |
| Ordnance Plants | 184,127 | 145,237 | - | 329,364 | 29,207,157 |
| Storage Depots | 28,482 | 19,329 | 454 | 48,265 | 15,968,419 |
| Air Corps | 11,117 | 65,846 | 5,776,280 | 5,853,243 | 2,149,464 |
| * Miscellaneous | 168 | 2,574 | 657,667 | 660,409 | 254,877 |
| Totals | 589,206 | 531,706 | 6,526,639 | 7,647,551 | \$ 63,191,488 |

* This comprises a 640,000 acre firing range and miscellaneous aircraft warning stations, gun sites, etc.

LEASES

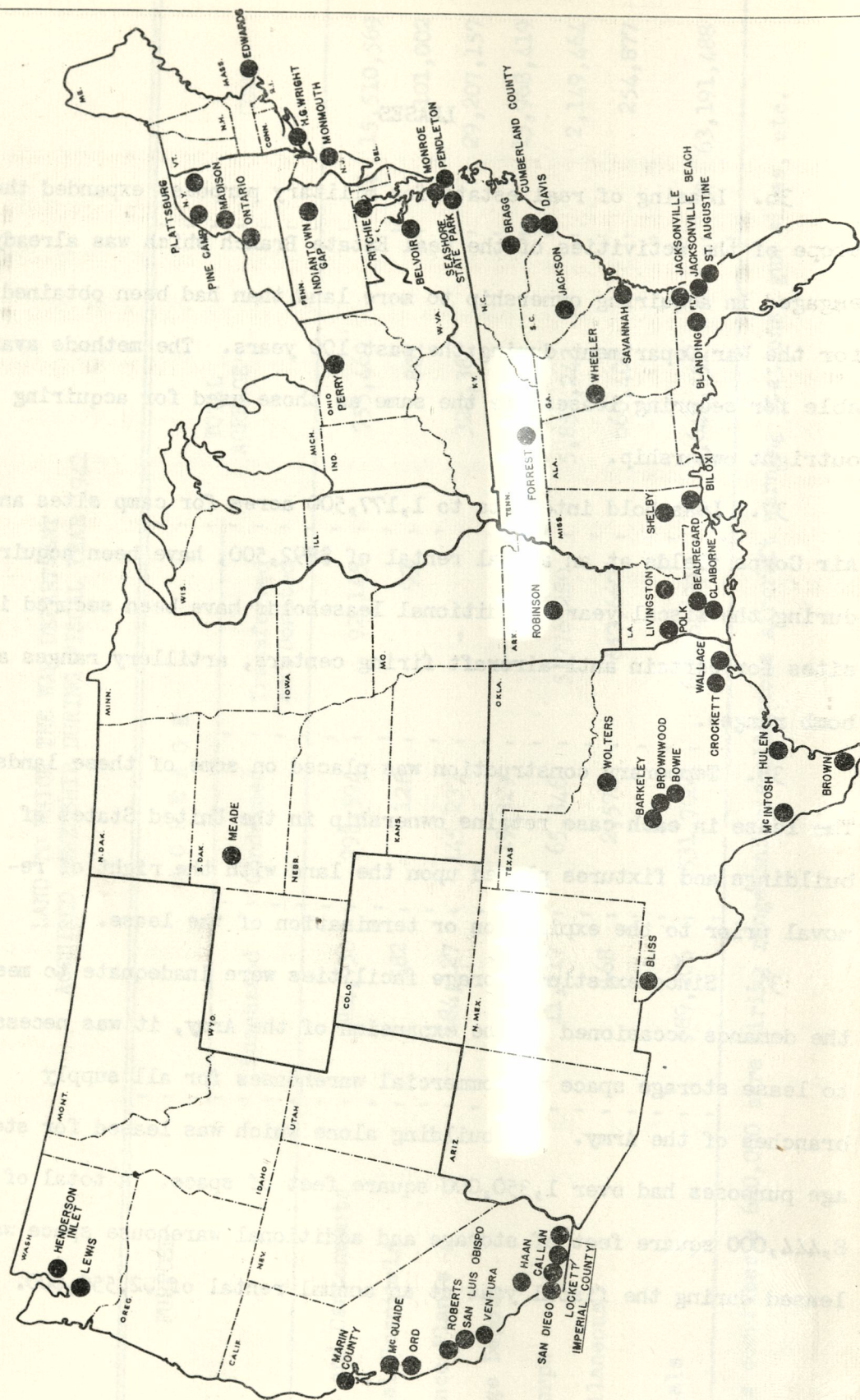
36. Leasing of real estate for military purposes expanded the scope of the activities of the Real Estate Branch which was already engaged in acquiring ownership to more land than had been obtained for the War Department during the past 100 years. The methods available for securing leases are the same as those used for acquiring outright ownership.

37. Leasehold interests to 1,177,500 acres for camp sites and Air Corps fields at an annual rental of \$892,500, have been acquired during the fiscal year. Additional leaseholds have been secured in sites for certain anti-aircraft firing centers, artillery ranges and bomb ranges.

38. Temporary construction was placed on some of these lands. The lease in each case retains ownership in the United States of buildings and fixtures placed upon the land with the right of removal prior to the expiration or termination of the lease.

39. Since existing storage facilities were inadequate to meet the demands occasioned by the expansion of the Army, it was necessary to lease storage space in commercial warehouses for all supply branches of the Army. One building alone which was leased for storage purposes had over 1,350,000 square feet of space. A total of 8,444,000 square feet of storage and additional warehouse space was leased during the fiscal year at an annual rental of \$2,550,000.

CAMPS & CANTONMENTS
(LEASES)



40. Office space was lacking at the beginning of the emergency. Existing Federal buildings throughout the United States constructed and designed to accomodate the needs of the various services at the time of construction had very little surplus space. Consequently, Federal buildings were not adequate to provide office space required by the War Department in the expansion of Corps Area Headquarters, procurement offices for the supply branches of the Army, induction and recruiting stations, subsistence district offices, Zone Constructing Quartermaster's offices, Organized Reserves and other uses. This situation necessitated the leasing of 1,244,000 square feet of space in commercial office buildings throughout the United States for the War Department at an annual rental of \$1,311,000.

41. It has been necessary also for the Real Estate Branch to lease camp sites, mechanical repair shops, miscellaneous warehouses and district headquarters for the Civilian Conservation Corps.

Leases in Force on June 30, 1941

42. As of June 30, 1941, there were 1835 Regular Army leases in force at an aggregate rental of \$4,857,858. In addition 1,171 leases of privately owned property were acquired for the use of the Civilian Conservation Corps at an aggregate annual rental of \$495,263.

43. A summary of the leases acquired for military purposes during the fiscal year 1941, is shown in the following table:

SUMMARY OF LEASES FOR MILITARY PURPOSES
IN FORCE DURING THE FISCAL YEAR 1941

| TYPES OF LEASES | AREA | ANNUAL RENTAL |
|-----------------------------|----------------------|----------------|
| Camps and Cantonments | 1,116,275.06 Acres | \$ 777,502.92* |
| Air Corps | 61,231.73 Acres | 114,974.27 |
| Storage | 6,720,398.00 Sq. Ft. | 2,095,547.65 |
| Additional Warehouse Space | 1,723,732.00 Sq. Ft. | 456,144.64 |
| Office Space | 1,244,282.47 Sq. Ft. | 1,311,154.03 |
| Barracks and Quarters | 62,839.00 Sq. Ft. | 40,748.00 |
| Garage Space | 17,383.00 Sq. Ft. | 36,931.00 |
| Rights-of-way and Easements | | 5,727.46 |
| Prophylactic Stations | 21,977.50 Sq. Ft. | 19,129.00 |

* Consideration is now being devoted to the advisability of acquiring those leased areas where extensive construction was necessary.

USE OF LAND UNDER OTHER GOVERNMENT AGENCIES

44. In many instances, lands under the jurisdiction of other departments and agencies of the Government are obtained, either by transfer or permit for military use. If transfer of jurisdiction of such lands to the War Department is not feasible, negotiations are had for permission to use these lands under authority of permits from the department or agency having jurisdiction thereover.

PERMITS TO USE WAR DEPARTMENT LAND

45. During the fiscal year, grants were made to private interests for the use of War Department real estate for diversified purposes, such as easements for rights-of-way for water, sewer and gas pipe lines, transmission lines, and telephone lines, many of which furnished services to Army posts, permits for the extension and relocation of state, county, and territorial roads, revocable leases of property of the War Department not presently required for military purposes for agricultural, grazing, and other purposes, leases of quarters to civilian employees, licenses to operate railroads and buses on military reservations. Also permits were granted to other departments and agencies of the government to use and occupy certain portions of military reservations for governmental purposes where such use did not interfere with the War Department's use of the reservation for military purposes. There were 1,851 such grants in

force at the end of the fiscal year, providing a rental return to the Government of \$70,438. This was a decline from the previous year as some of the leases were revoked or not renewed at their expiration, the use of the premises being required by the War Department. The number of this class of grants will greatly increase upon the cessation of the present national emergency, as the additional real estate that has been acquired or leased from private interests will be considerably in excess of the peacetime requirements of the War Department.

CLAIMS ARISING FROM ACQUISITION OF LAND

46. The Real Estate Branch is charged with the administrative action pertaining to the settlement of claims arising from damage to and for the use and occupation of privately owned real estate, with or without a lease. The number and amount of such claims during the past fiscal year was relatively small. It is anticipated that the number of claims undoubtedly will increase upon the termination of the present national emergency.

PROSPECTIVE ACQUISITION OF LAND

47. It is anticipated that the land acquisition program for the fiscal year 1942 will be as large or larger than that for 1941.

48. On July 1, 1941, approximately 80 projects were in the planning stage. These 80 projects involve the expenditure of between \$35,000,000 and \$40,000,000 for land. In addition to this work, preliminary data were being accumulated on a large number of other projects to be acquired during 1942.

PART VIII - LABOR FOR THE CONSTRUCTION PROGRAM

1. EMPLOYING NEARLY HALF A MILLION MEN to carry forward the Emergency Construction Program involved several important labor policies. The general principles contained in the President's policy letter of September 13, 1940, including the labor policy adopted by the National Defense Advisory Commission have been adhered to.

2. PERTINENT EXCERPTS from the President's Labor Policy Letter to Congress endorsing the statement of the National Defense Advisory Commission follow:

"This program can be used in the public interest as a vehicle to reduce unemployment and otherwise strengthen the human fiber of our Nation.

"In order that surplus and unemployed labor may be absorbed in the defense program, all reasonable efforts should be made to avoid hours in excess of 40 per week. However, in emergencies or where the needs of the national defense cannot otherwise be met, exceptions to this standard should be permitted. When the requirements of the defense program make it necessary to work in excess of these hours, or where work is required on Saturdays, Sundays, or holidays, overtime should be paid in accordance with the local recognized practices.

"All work carried on as part of the defense program should

comply with Federal statutory provisions affecting labor wherever such provisions are applicable. This applies to the Walsh-Healy Act, Fair Labor Standards Act, the National Labor Relations Act, etc. There should also be compliance with state and local statutes affecting labor relations, hours of work, wages, workmen's compensation, safety, sanitation, etc.

"Adequate provision should be made for the health and safety of employees.

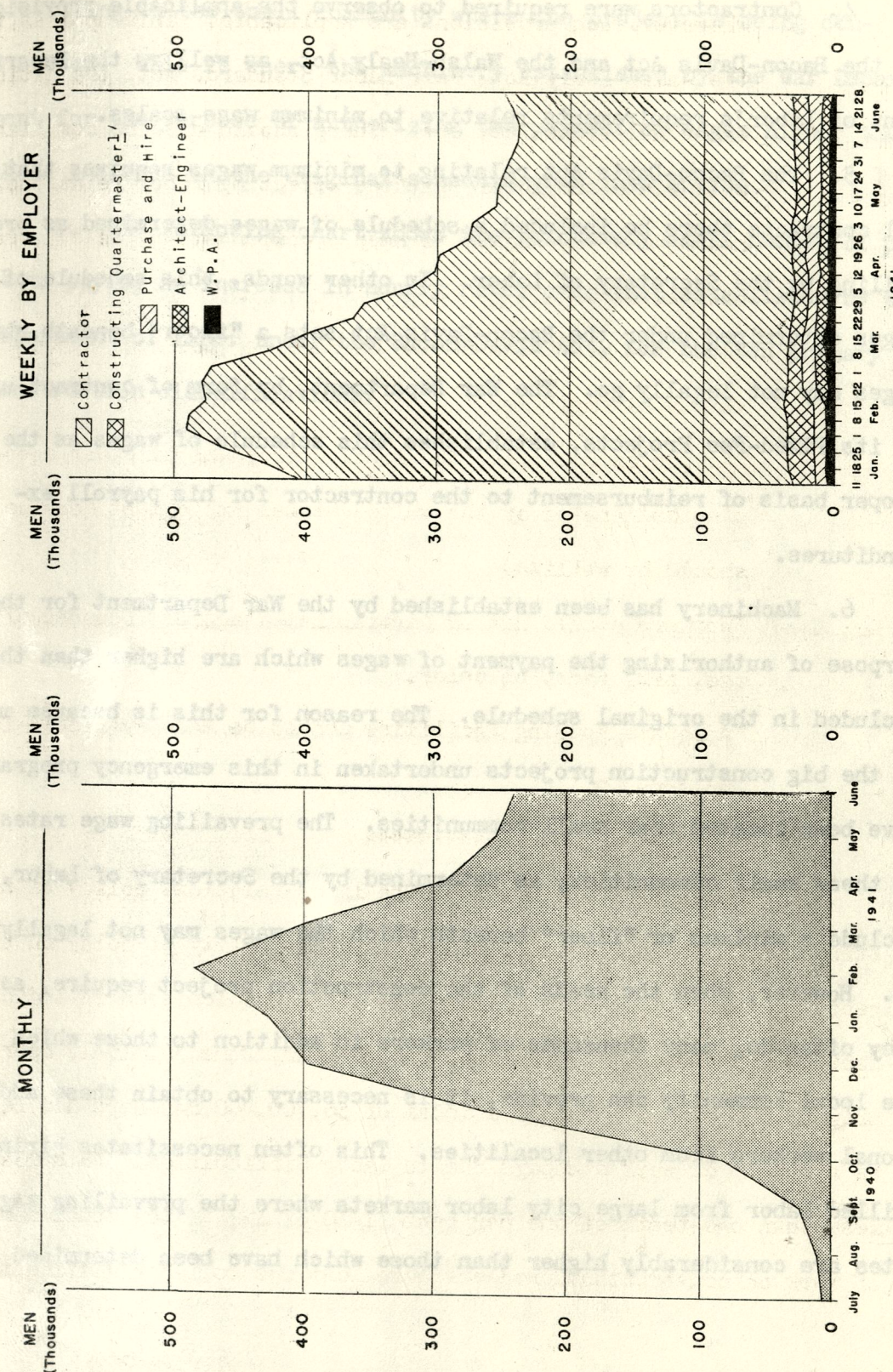
"As far as possible, the local employment or other agencies designated by the United States Employment Service should be utilized.

"Workers should not be discriminated against because of age, sex, race, or color.

"Adequate housing facilities should be made available for employees."

3. THE PRIMARY OBJECTIVE of the labor relations policy of the Construction Division was to eliminate any possibility of delay on the emergency program. That this primary objective was achieved is indicated by the fact that up to the close of the fiscal year, June 30, 1941, approximately only 43,000 man-days out of a total of 56,700,000 man-days had been lost as a result of work stoppage due to labor difficulties. This means that less than one-tenth of one per cent (1/10 of 1%) of the total man-days of work on construction projects were lost due to labor difficulties.

EMPLOYMENT Construction Projects



4. Contractors were required to observe the applicable provisions of the Bacon-Davis Act and the Walsh-Healy Act, as well as the Department of Labor's requirements relative to minimum wage scales.

5. The Bacon-Davis Act relating to minimum wages requires that on all contracts there be included a schedule of wages determined as prevailing by the Secretary of Labor. In other words, this schedule of wages determined under the Bacon-Davis Act sets a "floor" beneath which wages may not legally go. The War Department, by form of contract used on its Fixed-Fee Projects, establishes this schedule of wages as the proper basis of reimbursement to the contractor for his payroll expenditures.

6. Machinery has been established by the War Department for the purpose of authorizing the payment of wages which are higher than those included in the original schedule. The reason for this is because many of the big construction projects undertaken in this emergency program have been located near small communities. The prevailing wage rates in these small communities, as determined by the Secretary of Labor, include a minimum or "floor" beneath which the wages may not legally go. However, when the needs of the construction project require, as they often do, many thousands of workers in addition to those which the local community can provide, it is necessary to obtain these additional workers from other localities. This often necessitates hiring skilled labor from large city labor markets where the prevailing wage rates are considerably higher than those which have been determined as

prevailing in the small community where the project is being constructed. This is where the machinery established by the War Department for the purpose of authorizing the payment of wages higher than those included in the original schedule goes into action.

7. The following chart shows the relatively small number of projects paying an increase in hourly rate, over that established by the Department of Labor under the Bacon-Davis Act, for the ten primary construction classifications:

| | Brick-Carpenter- layers: | Electricians: Workers: | Iron Workers: | Painters | Plumbers | Sheet Metal Workers: | Rein- forcing: fitters: | Unskilled Laborers |
|--|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | \$1.25-\$0.75- \$1.75-\$1.75 | \$1.00-\$1.00- \$1.80-\$1.80 | \$1.10-\$1.10- \$2.00-\$2.00 | \$0.75-\$0.75- \$1.57-\$1.57 | \$1.00-\$1.00- \$1.75-\$1.75 | \$0.75-\$0.75- \$1.50-\$1.50 | \$0.60-\$0.60- \$2.00-\$2.00 | \$0.30-\$0.30- \$1.10-\$1.10 |
| All Projects | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Projects Paying Same Rate... | 73 | 62 | 71 | 75 | 60 | 65 | 61 | 72 |
| Projects Paying Increased Rate..... | 7 | 18 | 9 | 5 | 20 | 15 | 19 | 8 |
| Increase 0 - 9.9%..... | 3 | 3 | 4 | | 5 | 1 | 5 | 3 |
| Within 30 days..... | | | 1 | | 2 | 1 | 2 | 1 |
| Within 30-60 days..... | 1 | 1 | 2 | | 1 | | 1 | 2 |
| Within 60-90 days..... | | 1 | 1 | | 1 | | 1 | |
| After 90 days..... | 2 | 1 | | | 1 | | 1 | |
| Increase 10 - 19.9%..... | | 1 | 5 | 3 | 3 | 7 | 2 | 3 |
| Within 30 days..... | | | | | | 3 | 1 | 2 |
| Within 30-60 days..... | 1 | 1 | 2 | 1 | 2 | 3 | 1 | 1 |
| Within 60-90 days..... | | | | | 1 | 1 | | |
| After 90 days..... | | | 3 | 1 | | | | |
| Increase 20% or over..... | 4 | 14 | | 2 | 12 | 7 | 12 | 3 |
| Within 30 days..... | 3 | 7 | | | 5 | 3 | 5 | 1 |
| Within 30-60 days..... | 1 | 3 | | 1 | 3 | 2 | 4 | 1 |
| Within 60-90 days..... | | 1 | | | 2 | 2 | 1 | 1 |
| After 90 days..... | | | | | | | | |

BASIC RATE POLICY

8. In establishing a policy governing the basic rate of wages on a project, the War Department has consistently maintained that the ordinary practices of the construction industry should govern the work on defense contracts. In this regard it has insisted that a basic rate, once established for a given project, should be continued for the life of the project or for a minimum period of one year. This principle has finally been accepted in its entirety by the building trades and final agreement has been reached between this office and the building trades for the application of this principle on all defense projects. Any tendency toward a sudden upward spiralling of wages has been largely eliminated due to the adoption of this policy.

OVERTIME POLICY

9. The President's Labor Policy Letter referred to, required that all wages paid for overtime work or work on Saturday, Sunday, and holidays should be as determined by local prevailing practice in the areas in which the contracts were to be prosecuted. The War Department established in its contracts and by regulation procedure and machinery for the evaluation of local practice regarding each class of overtime for each of its projects. This control has been the means of maintaining reasonable overtime practices in accordance with the established conditions found prevailing in the various localities. It

must be clearly understood that existing statutes require that all work in excess of eight hours per day will be paid for at not less than $1\frac{1}{2}$ times the basic rate.

10. The War Department has always considered that the establishment of a uniform overtime policy for the entire country, applicable only to the Defense Program, would be an important step in simplifying and controlling the question of overtime rates. At the present time such a policy has been drafted and has been accepted in full by the War Department and the representatives of those unions which are ordinarily engaged in construction activities. This policy calls for the establishment of a uniform rate of $1\frac{1}{2}$ times the basic rate for all overtime work.

SHIFT POLICY

11. In applying the principles of the President's Labor Policy Letter, the War Department made an effort to establish a basis for shift policy which would be in conformity with accepted local practice. It was found that local practice was to a large extent non-existent. For this reason every effort was made to have established with the building trades unions a uniform system of shift operation which would be acceptable over the entire country. At the present time, an agreement has been reached which calls for operation of either two or three shifts on the basis of $7\frac{1}{2}$ hours work for eight hours pay. This uniform operation has permitted a great increase in shift operation with a consequent reduction of overtime required.

12. The importance of labor in the construction program was fully appreciated. The excellent results which the War Department has had with its labor policy have been due in part to the whole-hearted cooperation received from the officials of the Building Trades Department. Since the start of construction these officials have insisted to their local unions that all difficulties should be settled without resorting to strikes which might cause delays on defense projects. In a few instances, strikes have resulted. That these occurrences were minor in nature has been indicated by the reference to the relatively few man-days lost due to labor difficulties.

13. The President's Labor Policy Letter indicated that construction work should be carried out in accordance with local recognized practices. The War Department has recognized this principle in awarding its contracts and operates on the basis that the contractor chosen is solely responsible for the procurement and management of labor on his particular contract. The Department's sole interest is to see that the work is prosecuted without unnecessary delay and as economically as possible. Within this policy the Department has no authority to enforce any regulations restricting the right of the employer to operate on a union or non-union basis. This issue of the contractor's working union or non-union, therefore, does not involve any government discrimination against workers. Even under the Fixed-Fee system of contracts the projects are operated by the contractor and not by the Government.

INITIATION FEES

14. The question of the use of construction unions on this work sometimes leads to the controversial question of unreasonable initiation fees.

15. The government has, by statute, repeatedly protected the right of all workmen to attempt to secure improvements in wages, hours, and working conditions by the use of collective bargaining. In many instances, the union has been chosen as the bargaining agent by most workmen. The right of unions to collect fees and dues is supported by statute and tradition.

16. One of the aims of labor organizations is to maintain the independence and autonomy of the local union and to protect the territorial integrity of the union. It is often considered necessary to exclude workmen from other areas until those of the local are fully employed; or, when outside workmen are used, to require a small fee as their contribution to the support of the organization which represents them in matters requiring collective bargaining.

JURISDICTIONAL DISPUTES

17. One of the factors ordinarily troublesome in the construction industry is that of the jurisdiction of the individual crafts over the various phases of the work. The War Department has considered the policy of local practice, outlined in the President's Labor Policy Letter, applicable to this problem and by its use is endeavoring to

control improper jurisdiction of the crafts. In most instances the questionable cases are those which require the use of skilled tradesmen for work ordinarily performed by unskilled or semi-skilled labor. Before approving reimbursement to a contractor for any phase of operation in which craft jurisdiction is questionable, the War Department requires from the contractor proof that the award of jurisdiction is consistent with the local practice in the area where the job is performed and also consistent with the contractor's prior employment policy.

18. The program has not experienced any extended difficulties due to petty regulations of unions and ordinary jurisdictional disputes. The governing bodies of the unions have made strong efforts to see that such difficulties have not been made the cause of work stoppage. Attempts have been made to reach settlement on these matters by arbitration within the union structure and without interference with job operation.

19. In the early days of the program, certain instances arose where the workmen on the job refused to install materials either because they had been fabricated in non-union shops or had come to the job in a state of fabrication which was unacceptable to the tradesmen on the site. These matters were brought to the attention of the national officials of the trade unions who have instructed their locals to show no interest in the circumstances involving goods or materials before they reach the construction site. On a number of cantonment jobs, particularly that at Indiantown Gap, the unions

refused to install prefabricated sheet metal work. With the cooperation of the international unions, orders were issued to all locals to accept such materials without question. Since that time, no labor difficulties of this nature have developed.

SAFETY POLICY

20. The labor relations record of the Construction Division, reflected in data compiled by the Labor Relations Section, showing the small percentage of man-days of work lost due to labor difficulties can be attributed to a number of factors. The foregoing labor policies enunciated in the President's letter and adopted by the Construction Division was one important factor. Another was the safety policy of the Construction Division.

21. Such hazardous occupations as dynamiting, pile-driving, dam-building, caisson-sinking and excavating, as well as the usual work associated with all phases of camp construction were involved in this emergency construction program. The safety policy of the Construction Division included intensified efforts at accident prevention. Safety engineers and inspectors were employed on the large projects, and safety rules and regulations for the control and elimination of industrial accidents were adopted. The Construction Division cooperated with all regularly constituted safety agencies and authorities. Data compiled by the Safety Section showed that only $2\frac{1}{2}$ per cent of all men on the job have been injured in accidents.

PART IX. MATERIALS FOR THE CONSTRUCTION PROGRAM

1. THIS GREATEST BUILDING PROJECT of modern times--in terms of construction work done in less than a year--required a tremendous amount of materials.

2. BUILDING MATERIALS PURCHASED through the Construction Division, in addition to materials purchased by contractors included: over 1,100,000,000 board feet of lumber, over 1,100,000 gallons of paint and related supplies, over 77,700,000 square feet of lumber substitutes, over 45,000 furnaces and tent heaters, 430 boilers, 57 air compressors and receivers, and more than 75,000 squares of roofing materials.

3. FIELD SERVICE EQUIPMENT and supplies, including over 80,000,000 gallons of fuel oil and kerosene; over 2,000,000 tons of coal, coke, and charcoal; over 75,000,000 gallons of gasoline; over 140,000 cords of wood; over 87,000 steel lockers for use in barracks; over 23,000 refrigerators; more than 9,000 ranges; 10,000 units of heavy duty kitchen equipment; and 600 units of bakery equipment were obtained.

4. Fire fighting equipment, including over 380,000 fire extinguishers, more than 1,600,000 linear feet of fire hose, 822 fire trucks, 150 fire pumps, and 44 automatic sprinkler systems, were purchased. Also procured were 144 units of hospital equipment; 112 units of laundry equipment; 339 pieces of surveying equipment; 22 steel gasoline storage tanks; and 555 chapel organs.

5. All of the above figures are cumulative as of June 30, 1941. The total cost of the materials purchased through the Construction

Division, enumerated above, and including some additional miscellaneous materials, was \$111,374,667.83. A breakdown of this total showing the cost of the various items is included in the appendix.

6. Prior to fiscal year 1941 the annual expenditures of the War Department amounted to approximately \$5,000 for mess equipment, \$83,000 for bakery equipment, \$54,000 for warehouse equipment; and some 625 heating stoves and 1,426 ranges were procured annually. This equipment was used almost entirely for replacement purposes. The materials and equipment now being procured are primarily for new projects.

MORALE AND UTILITARIAN FACTORS

7. In evaluating the use to which these materials are put, several factors should be borne in mind. In our present Army--including as it does, many men recently inducted from civilian life--the morale factor is very important. This fact has not been overlooked by the Army and War Department. In purchasing materials, both the utilitarian use to which the materials will be put and the important morale factor involved have been considered.

8. For example, over a million gallons of paint has been purchased for use on barracks and other Army buildings. Not only are the barracks and other buildings better protected by these coats of paint; but equally important, the morale of the men who have to live and work in and about the buildings, is improved. The drab, dreary, impermanent nature of unpainted buildings is removed and in its place the men now have painted and attractive buildings, in which they can take proper pride.

9. The importance of the furnaces and tent heaters, boilers and fuel supplies can be really appreciated by a man who has to turn out of bed in the cold gray dawn of a winter's morning.

10. The modern Army with all of its new techniques still, figuratively speaking, "moves on its stomach", and the importance of proper kitchen and bakery equipment is apparent. Likewise, the value of proper hospital and laundry equipment is evident.

PROCUREMENT METHODS

11. To focus responsibility for prompt procurement and to facilitate the purchase of certain material and equipment, the Procurement and Expediting Section of the Construction Division was organized. It is charged with the direct purchase or rental of such building material and contractor's equipment as may be difficult to procure locally. It also directs Field Agencies in the procurement of liquid and solid fuel, lubricants, and construction material, and handles requests from all sources for preference ratings on any of the above items.

12. There are two different methods of operation in use:

1. Allocation - On certain types of material and equipment for Cost-Plus-A-Fixed-Fee projects, the purchase is negotiated by the Procurement and Expediting Section and the purchase order is issued by the contractor. This permits negotiation on a national scale -- direct with the most responsible producers--rather than with middlemen. In effect it allocates to each contractor certain producers whose facilities can be drawn on for the contractor's

needs, on terms and at a cost which the contractor independently could not hope to negotiate.

2. Government purchases - The Procurement and Expediting Section also directs and reviews certain purchases made by the Contracting Officers at the Washington, Holabird and Jeffersonville Quartermaster Depots. This material and equipment, paid for and owned outright, may be installed in buildings by the contractor or by the Government, as called for in the specifications.

13. Materials and equipment which are procured for the contractor through the Procurement and Expediting Section by allocation include:

Building Materials

| | |
|---|---|
| Felt | Plywood |
| Gypsum Board | Shingles (Metal & Asbestos) |
| Gypsum Sheathing | Siding (Metal & Asbestos) |
| Insulation Board | Wall Board |
| Lumber | Exterior Paint |
| Plyform | |
| Gasoline Station Equipment | Plumbing Supplies |
| Heating Equipment | Power Plant Equipment |
| Ice Chutes with mechanically operated doors for ice storage rooms | Refrigerator Doors for Ice Storage Rooms, Cold Storage Rooms and Walkin Refrigerators |
| Air Compressors and Storage Tanks for Laundry | Refrigeration Equipment |
| Millwork | Warm Air Ducts and Pipe Insulation |

14. The purchases made outright by the Government through the issuance of Government purchase instruments include:

| | |
|---|----------------------------------|
| Bakery Equipment | Hospital Equipment, Disinfectors |
| Chapel Organs | Mortuary Cabinets |
| Electric Light Bulbs | Kitchen Equipment |
| Fire Protection Equipment, Extinguishers, all types | Laundry Operating Machinery |
| Fire Engines and Pumps, Fire Hose | Canvas for Tent Theatres |
| Seats for Theatres and Pews for Chapels | Cannon Stoves |
| | Sports Equipment |

CONSERVING VITAL DEFENSE MATERIAL

15. Setting the pace for the home owner and general consumer in conserving vital national defense material, the Construction Division, as well as other Divisions of The Quartermaster Corps, is utilizing suitable substitutes for these vital materials wherever possible.

16. Instructions have been issued to eliminate the use of strategic and critical materials except in those cases where essential efficiency would be lost by the use of substitutes.

17. For example, more wood and concrete are being utilized in construction projects--replacing steel and conserving this vital defense material for military purposes.

18. Available industrial capacity appears inadequate to meet promptly future requirements for certain materials and equipment. These materials and equipment include:

| | |
|------------------------------|-----------------------------|
| Heavy Duty Kitchen Equipment | Disinfectors |
| Mortuary Cabinets | Fire Fighting Equipment |
| Laundry and Bakery Equipment | Steel Lockers and Furniture |
| Structural Steel | Reinforcing Steel |

LUMBER

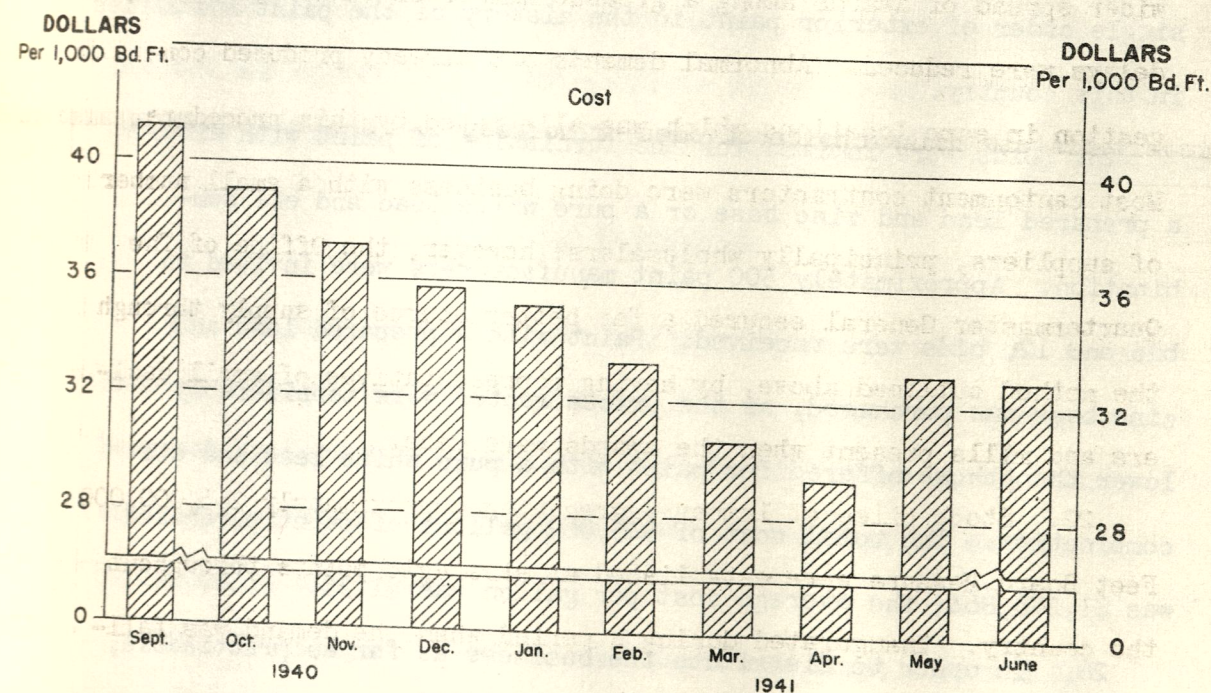
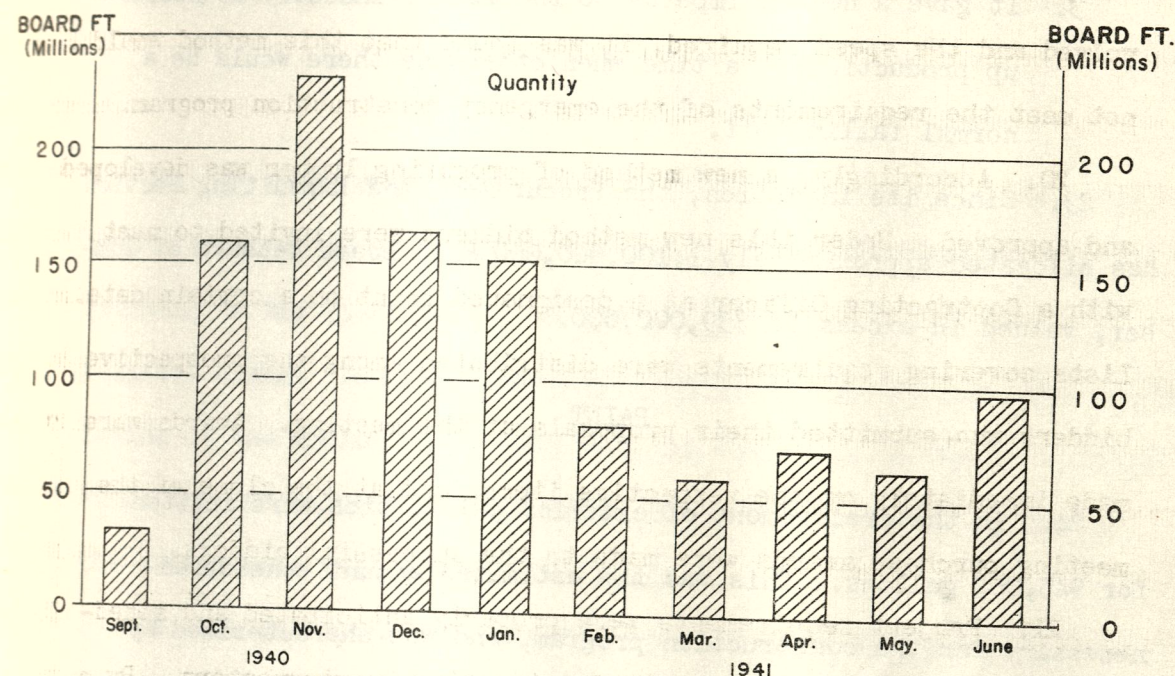
19. In the procurement of lumber, attempts were made to follow the regular procedure of issuing invitations to be returned for analysis and awards. Because of the large quantities of lumber involved and the speed required, it was found that this method would not meet the requirements of the emergency construction program.

20. Accordingly, a new method of procuring lumber was developed and approved. Under this new method bidders were invited to meet with a Contracting Officer at a designated point on a certain date. Lists covering requirements were distributed among the prospective bidders who submitted their proposals at the meeting. Awards were made immediately on the respective items, and at the close of the meeting purchase awards were made to the successful bidders.

21. Project requirements were properly anticipated and scheduled by issuing instructions to Constructing Quartermasters. By a wider spread of awards among a greater number of vendors, delivery delays were reduced. Abnormal demands had already produced congestion in some locations which was alleviated by this procedure. Most cantonment contractors were doing business with a small number of suppliers, principally wholesalers; however, the Office of The Quartermaster General secured a far better source of supply through the method outlined above, by having representatives of small dealers and mills present when the awards were made.

22. Stock piles of lumber aggregating approximately 266,000,000 Feet Board Measure were established at strategic points throughout the country. Inaugurated during a period when the demand was falling off, this plan accomplished three purposes:

LUMBER COST AND QUANTITY PURCHASED FOR FIXED FEE PROJECTS



1. It acted as a reservoir from which lumber could be drawn as the need required.
2. It acted as a curb on price increases.
3. It gave a needed impetus to the lumber industry to keep up production at a time when otherwise there would be a normal falling off.

23. Since its inception, the Procurement and Expediting Section has allocated approximately 1,100,000,000 Feet Board Measure of lumber, valued in excess of \$39,000,000.

PAINT

24. In the procurement of exterior paint, bids were invited for 945,062 gallons. This was the estimated amount considered necessary for the construction program, and was characterized by the National Paint, Varnish and Lacquer Association as the largest single order of exterior paint in the history of the paint industries in this country.

25. Bids were invited for the furnishing of paint with either a prepared lead and zinc base or a pure white lead and oil combination. Approximately 500 paint manufacturers were invited to bid and 126 bids were received. Paint with a prepared lead and zinc base was purchased, as the prices quoted were considerably lower than those offered for paint with a pure white lead and oil combination. The total cost of 945,062 gallons of paint purchased was \$1,276,864; the average cost per gallon was \$1.35.

26. In order to distribute the business as far as practicable, the projects were divided into ten groups or territories. Paint

manufacturers might bid on the requirements of any one or all of the territories. It was stipulated in the bid that not more than the requirements of any one territory would be awarded to one company, or its affiliates.

FIRE FIGHTING EQUIPMENT

27. In connection with the fire fighting program, an extensive system of automatic sprinklers has been installed. Work is now progressing in the installation of sprinkler systems in 53 of the 55 hospital areas. The fire alarm systems which must follow the installation of the sprinkler systems will be installed in the near future. Funds for automatic fire protection have been provided for all of the cantonments and general hospitals.

28. It was planned to provide fire fighting equipment progressively in the new projects as the construction work at each project progressed. Initial supplies of equipment were provided when the project was approximately 50% complete and allocations made so that complete equipment could be in service when the project was completed.

FOOD PROTECTION

29. To provide for better food protection, in addition to purchasing a large number of refrigerators, an inspection system has been set up including provisions for careful review of the refrigeration specifications. This will be instrumental in savings in replacements and repairs.

30. To safeguard food for America's new Army, modern cold storage buildings have been provided. These cold storage buildings

of concrete construction contain refrigerating equipment and ice-making facilities. The preservation of perishable foods is thus assured.

FUEL INSPECTION

31. Another instance of how the War Department is making sure that it gets value received has been the employment of experienced coal inspectors in connection with the coal purchasing program. These coal inspectors have been employed to inspect coal destined for the Army, at the mines and at the Posts. They will instruct in proper sampling methods and advise on storage problems.

32. In the past, fuel allowances were made on the basis of approved hours of operation and inconsistencies have frequently existed in allotments to Posts in the same locality. Now a fuel consumption study has been instituted at 10 Army Posts throughout the Continental United States. An engineer is stationed at each of these Posts to keep a careful record of fuel consumed in representative buildings. The United States Weather Bureau is cooperating in providing weather data over a forty-year period, which will be used in coordinating fuel requirements with outside weather conditions. The Engineering Experiment Station of the University of Illinois is acting in an advisory capacity. On completion of this study, it will be possible to allot fuel on the basis of a thousand square feet of floor area per degree day. This is a scientific method of allotment and it provides a check on efficiency between Posts.

LAUNDRY MACHINERY

33. Procurement of items such as laundry machinery presented several problems, the major one being to procure large quantities of specialized apparatus in a short time at a reasonable price from a limited number of manufacturers.

34. In the procurement of complete laundry equipment for cantonments and hospitals throughout the country, competitive bids were requested through the Washington Quartermaster Depot. Bids were invited from manufacturers by items. They could be submitted for one or several items, and for more than one laundry, depending upon the capacity to meet delivery and installation requirements. The major difficulty in this procurement was in the delivery lag on large flat work ironers. The laundry and pressing machinery manufacturers in 1939 had approximately \$15,785,000 total sales. Total awards of new defense business spread over a period of 7 months represented \$8,127,000, or over 50% of the 1939 total. These awards took precedence over regular commercial business.

35. Liaison was maintained by frequent meetings with The Laundry and Dry Cleaner's Machinery Manufacturers' Association and with its National Defense Committee. These meetings proved beneficial both to the Government and members of the Association, creating a better perspective and appreciation of problems by both.

ELECTRIC CHAPEL ORGANS

36. Electric Chapel Organs were a new item of mass purchase by competitive bidding, handled through the Washington Quartermaster Depot. Bids were requested on 555 organs for installation

in 166 different Posts or Stations located throughout the country.

The total cost of these 555 organs was \$532,000. This order absorbed approximately 80% of normal annual manufacturing capacity of the electric organ industry, and 15.5% of the 1939 output of the entire organ industry. It was the largest single contract ever awarded for electric chapel organs.

PRIORITIES

37. Through the Priority Sub-Unit, liaison is maintained with the Procurement-Control Branch, Planning and Control Division, Office of The Quartermaster General; with the Army and Navy Munitions Board; and with the Office of Production Management. All requests for higher preference ratings on any particular item are referred to the Procurement Control Branch for approval and submission to the Army and Navy Munitions Board. Matters of policy formulated by the Office of Production Management and Army and Navy Munitions Board are referred to this unit through the Procurement Control Branch. The Procurement and Expediting Section also has contact with various units of the Office of Production Management, chiefly those concerned with minerals and metals, tools and equipment, steel and priorities. This contact is in connection with expediting deliveries; in obtaining information as to capacity of plants, inventories on hand, and best sources of procurement.

38. Expediting action is taken on all items or components of such items purchased by Constructing Quartermasters or construction contractors on projects under the jurisdiction of the Quartermaster Corps. This expediting is accomplished by telephone, by letter, and by personal visits to factories and project sites. Since the starting of

the present program approximately 18,000 separate expediting actions have been accomplished.

CERTAIN SITUATIONS RELATING TO MATERIALS

39. In purchasing the many and varied materials necessary for this construction program certain situations were encountered.

40. For example, it was necessary to purchase water at some camps in addition to that which was obtained from the water supply systems which the Construction Division had built. Under the present program the Army is trying to provide a per capita water supply at camps and cantonments of not less than 100 gallons per day. Some camps, however, use considerably more water, especially where there are armored divisions. The reason for this, of course, is that a great deal of water is needed to wash tanks and other vehicles after a hard day's drive, often through heavy mud. Water is purchased from municipalities whenever possible.

41. The application of State sales taxes to materials purchased by contractors performing work under Cost-Plus-Fixed-Fee Contracts will be discussed in the next part of this report pertaining to Construction Contracts.

PART X - CONSTRUCTION CONTRACTS

1. CONTRACTUAL PROCEDURE for the War Department during normal times presents few complications. However, the emergency, with its accompanying requirement of speed, has modified the types of contracts that can be utilized effectively.

2. LUMP SUM CONTRACTS have been used almost exclusively by governmental agencies during peacetime. Under this type of contract the contractor delivers a completed job for a specified sum. The Constructing Quartermaster, as agent for the Government, requests formal proposals from prospective contractors on specifications prepared by the War Department. The lowest qualified bid received is accepted and becomes the basis for the contract. In an effort during the emergency to save the time required for advertising for competitive bids, the negotiated lump sum contract has been used frequently.

3. THE COST-PLUS-A-FIXED-FEE CONTRACT currently utilized by the War Department for emergency construction, where complete detailed plans and specifications are not available to submit for competitive bids, is essentially a contract for management services. The organizational ability and trained workers of an architect-engineer and a construction contractor are employed by means of this contract to act in the capacity of an agent or fiduciary for the Government in planning for and erecting a project. Practically all of their out-of-pocket expenditures are reimbursable and a fee is paid for their services in connection with the work.

PROCEDURE UNDER COST-PLUS-A-FIXED-FEE CONTRACTS

4. The procedure leading up to a cost-plus-a-fixed-fee contract involves the recommendation by the Construction Advisory Committee of a competent architect-engineer or construction contractor, as the case may be; negotiations with the Contract Board in the Engineering Branch; agreement as to all contract terms; approval by the Chief of the Construction Division and the Quartermaster General; clearance by the Office of Production Management; and final approval by the Under Secretary of War.

Construction Advisory Committee

5. The selection of a competent architect-engineer and construction contractor is of primary importance. To insure deliberation and impartiality in such selections, a Construction Advisory Committee has been appointed. This Committee has collected, analyzed and classified data relating to designing and construction organizations, and on the basis of the data assembled, it has recommended to the Chief of the Construction Division the organization which appears from all available records to be best qualified to handle a proposed project. The recommendations of the Construction Advisory Committee have been guided by certain policies established by the Under Secretary of War, the most important of which are:

- a. Other things being equal, contracts should be negotiated with constructors or architect-engineers whose principal place of business is in the same State as the site of the work. (Issued September 13, 1940.)
- b. When qualified firms are not available within the State,

the selections should be from the same section of the country as the site of the work. (Issued Sept. 13, 1940.)

- c. Second, or repeat, contracts should not be awarded unless the Construction Division could certify beyond reasonable doubt that the initial project had been completed in an outstanding manner, that other competent firms were not available, and that the repeat contract would be in the best public interest. (Issued about November, 1940.)

This was modified April 11, 1941, by the Under Secretary of War, stating:

"-----that contracts be awarded to firms in the State or areas in which the work is to be performed unless other selection is necessary because of cogent reasons to be fully explained; and that awards of second contracts be made only to firms who have performed their previous contracts in a manner fully satisfactory to the Quartermaster General and in cases where such action will be definitely in the public interest."

- d. No firm should be engaged if a member of the firm, an executive officer, a director, an owner, or an employee of the firm is receiving compensation from the Government as an employee under the jurisdiction of the Construction Division.

6. Within the limits imposed by the above policy, the Construction Advisory Committee had recommended architect-engineers and contractors only after being satisfied from available records that:

- a. The firm was a strong going organization.
- b. The firm had performed a good volume of construction within recent years; the last five years usually being taken into consideration.
- c. The firm's recent volume was commensurate with the estimated cost of the proposed project, and that the proposed project, together with unfinished work, would not overtax the firm's capacity.
- d. The firm had sufficient financial ability to carry on the project.
- e. The firm had the nucleus of the proper type of organization and equipment to prosecute the project without delay.
- f. The firm had the apparent ability to:
 - (1) Grasp the actual and also the probable requirements of the project.
 - (2) Attain maximum essential speed of construction.
 - (3) Anticipate problems and avoid delays.
 - (4) Provide a reliable organization with seasoned, competent office and field personnel having experience, judgment, and zeal.
 - (5) Assume responsibility for the health and life factors arising in the accomplishment of the military plan to be served.
 - (6) Visualize properly all requirements in ample time to courageously execute the work under any conditions arising.

- (7) Distinguish properly between essentials and things which might be delayed or omitted.
- (8) Carry on so that proper progress and completion on time of the whole project is accomplished.
- (9) Use only the best and most dependable personnel, materials and methods.
- (10) Take no chances of any kind that might jeopardize the execution of the project speedily in the best manner possible.

7. As the construction activity of the Office of the Quartermaster General quickened its pace, many firms of architects, engineers and construction contractors addressed communications to the Construction Division setting forth their qualifications and requesting consideration on work to be undertaken. With the start of the defense program and the organization of the Construction Advisory Committee, these files were turned over to the Committee and a great flood of new requests both in person and by mail were recieved.

8. In order to assist the Government in its search for technical talent and contemplating the need for records on available firms under the then proposed defense program, the engineering and technical societies in June, 1940, jointly undertook a national census of engineering and architectural personnel. Forms were sent out to all known architects and engineers. These forms, requesting detailed statements of qualifications, were filled out and returned to the American Society of Civil Engineers and the American Institute

of Architects. This information was made available to the Construction Advisory Committee.

9. The applications received from all sources were separated as to architect-engineers and contractors. At the same time, an alphabetical index in a list by States, based upon home office addresses, was prepared.

10. As a request from the Construction Division was received, a complete review was made of all firms filed from the State in which the project was to be located. The review was based upon the size of the project, the type of the work involved, the rate of construction work and the character of the services required. In some cases, the available local firms were not qualified to handle the work involved and the search for talent was widened to include firms from other areas. An initial list of from five to twenty-five firms was made tentatively and the applications of each of these very carefully examined by each member of the Advisory Committee. Advantage was taken of many personal and confidential sources of information and the wide range of personal knowledge and experience of members of the Committee as well as such information as was obtainable from the Staff of the Construction Division, the Office of Production Management, the Federal Works Administration and other governmental agencies. The list by this process was reduced to one firm or combination of firms for recommendation by the Committee to the Contract Board.

CONTRACT BOARD

11. A Contract Board, composed of three members, has been organized in the Engineering Branch of the Construction Division

for the purpose of conducting negotiations of cost-plus-a-fixed-fee contracts for construction and architect-engineering services in connection with various construction projects.

12. The basis for the negotiation of a fixed-fee construction and engineering contract is a detailed estimate of cost of the proposed project. Upon receipt of such information and the determination by higher authority that the construction or engineering services will be performed on a fixed-fee basis, authority is obtained from the Under Secretary of War to undertake negotiations leading up to the consummation of a fixed-fee contract. Upon receipt of this authority, a request is made by the Contract Board to the Construction Advisory Committee for recommendation of qualified prospective contractors.

13. Upon receipt of recommendation from the Advisory Committee, the Contract Board discusses the recommendation with the Zone Constructing Quartermaster of the zone in which the project is located. If neither the Contract Board nor the Zone Constructing Quartermaster have objection to the first recommendation, a memorandum is submitted to the Chief of the Construction Division advising him of all the recommended names and stating that no objection is interposed to the recommended firm. In the event valid objections appear, the matter is referred to the Chief of the Construction Division with a complete report of the situation for final disposition.

14. The procedure for making an award of a fixed-fee contract, immediately upon the selection of an architect-engineer or construction contractor, is to invite him to proceed to Washington for negotiations.

The contractor or architect-engineer is requested to be prepared to furnish information regarding his key personnel and organization available. The contractor or architect-engineer is handed a copy of a description and estimate of the project, and is required to assign an executive officer or responsible representative to devote whole time to the project on a non-reimbursable basis. If the architect-engineer or contractor can furnish sufficient factual evidence to the Contract Board that he has or can obtain the equipment and personnel necessary for the project, negotiations are then entered into as to the terms of the contract.

Terms of the Contract

15. After the estimated cost has been agreed to and identified by the prospective architect-engineer or contractor, and the proposed fee has been accepted, the form of contract to be executed is presented for formal execution. This contract provides among other things that work shall be started immediately; that the title to all materials shall pass to the Government immediately upon their arrival at the site and acceptance by the Constructing Quartermaster; that reimbursement will be made for substantially all expenses incurred by the contractor except for his overhead expenses and interest on borrowed money. Such reimbursable items include all labor and materials, all subcontracts, when so declared in the negotiation, all rental for equipment obtained from third parties or furnished by the contractor; necessary traveling expenses with a per diem of not to exceed \$6 per day, for key personnel in connection with the work;

salaries of key personnel to the extent of time devoted to the project, provided that such salaries are not reimbursable when in excess of the highest salaries or compensation rate received by such employee during the preceding year; commissaries, hospitals and other like facilities, provided that when commissaries are operated by a third party, the agreement of operation must be approved by the Quartermaster General; expenditures to secure temporary rights in lands where services must be undertaken prior to acquisition by the Government; premiums on bonds and insurance policies as may be approved; all taxes, State and Federal, actually paid by the contractor.

16. In consideration for all the reimbursements, the contractor agrees that all labor and materials will be of the best kind and character, that he will accept and incorporate into the project any materials furnished by the Government; that in the event he should fail to pay for labor or materials, that the Government may pay such claims directly and charge such payments to his account plus a penalty of 5 per cent of such amount paid; that he will take credit for all discounts, rebates or salvages; that he will keep records and books of account on a recognized cost accounting system and maintain such records for a period of three years; that the Government may inspect such records at any time; that the Government may, at its election, perform all functions of auditing and accounting and preparation of payrolls; that he will turn over to the Government all sketches, drawings and other data relating to the project; that he will obey all laws and regulations of the United States or political subdivisions thereof; that he will at all times maintain a

responsible representative on site of the work; that the Government may at any time dismiss such of his employees as are considered incompetent, careless or insubordinate, or whose employment is deemed inimical to the public interest; that he will furnish any and all necessary reports required by the Government; that he will use only domestic materials as prescribed by law; that he will employ no convict labor; that he will not pay wages less than those predetermined by the Secretary of Labor; that he will observe safety requirements prescribed by Federal specifications; that he has not employed any person to solicit the contract upon any commission, percentage, brokerage or continuance fee; that he will promptly load and unload all railway cars; that if he assigns the right to receive payment under this contract, it will be in accordance with the Assignment of Claims Act, 1941, as amended; that he will cooperate with the Government or any other contractor engaged on the project; that he will not discriminate against workers because of race, creed, color, or national origin.

17. This contract may be terminated at any time at the convenience of the Government and if so terminated, the contractor will receive that portion of his fixed-fee as the work performed bears to the entire work called for by the contract. In the event the contract should be terminated because of the fault or neglect of the contractor, no fee in addition to that already received will be paid. All disputes under the contract may be appealed from the decision of the contracting officer to the Chief of Supply Arm or Service and then to the Secretary of War or his duly authorized representative, whose decision shall be final and conclusive as to the facts.

18. Before any payment is made by the Government, all vouchers must be approved by the contracting officer or his duly authorized representative.

Final Approval

19. When the fixed-fee is settled, a request is forwarded to the Office of Production Management, containing a brief description and estimated cost of the work, with the name of the proposed contractor and the fixed-fee to be paid him, for approval. Upon receiving approval of the proposed contract from the Office of Production Management, the contract documents are forwarded to the Under Secretary of War for final approval.

DETERMINATION OF FIXED FEE

20. The cost-plus-a-fixed-fee system of contracting as employed in Army construction today, presents a novel method of determining the fees to be paid architect-engineers and construction contractors. The method, however, is not entirely without precedent, inasmuch as a cost-plus-a-percentage-of-cost contract was employed during the World War for construction of cantonments, munition plants or other similar Army projects. The first expression of the legislative will concerning this method of determining the contractors remuneration is contained in Public No. 309 - 76th Congress, approved August 7, 1939. This Act restricted the authority of the Secretary of War to enter into cost-plus-a-fixed

fee contracts for public works projects to be located in Alaska and the Panama Canal Zone. This Act provided that the fee should not exceed 10 per centum of the estimated cost of the contract exclusive of the fee.

21. The Secretary of War is authorized by Section 2 of the Public No. 309, whenever the facilities of the War Department were deemed inadequate, to employ by contract or otherwise, outside architectural and engineering corporations, firms or individuals for the production and delivery of the designs, plans, drawings and specifications required for equipment of any public works or utility project of the War Department, without reference to the Classification Act of 1923, (42 Stat. 1488), as amended. This Section which is in the nature of permanent legislation with respect to contracts for architectural or engineering services, limited the fixed fee to 6 per centum.

22. Congress did not enact further legislation covering Army emergency construction until the regular session of the 76th Congress. Public No. 671 - 76th Congress approved June 28, 1940, contained the provision that the contractor was not to receive in excess of 7 per centum of the estimated cost of the construction exclusive of the fee as determined by the Secretary of War. That statutory ceiling for fixed fees was further lowered by Public No. 781 - 76th Congress, approved September 9, 1940, TITLE I, the pertinent portion of this title is quoted as follows:

"---That the fixed fee to be paid the contractor as a result of any such public works contract hereafter entered into shall not

exceed 6 per centum of the estimated cost of the contract, exclusive of the fee, as determined by the Secretary of War."

23. Consequently, at the present time the maximum fixed fee of 6 per centum has been established by Congress for both architect-engineers and construction contractors.

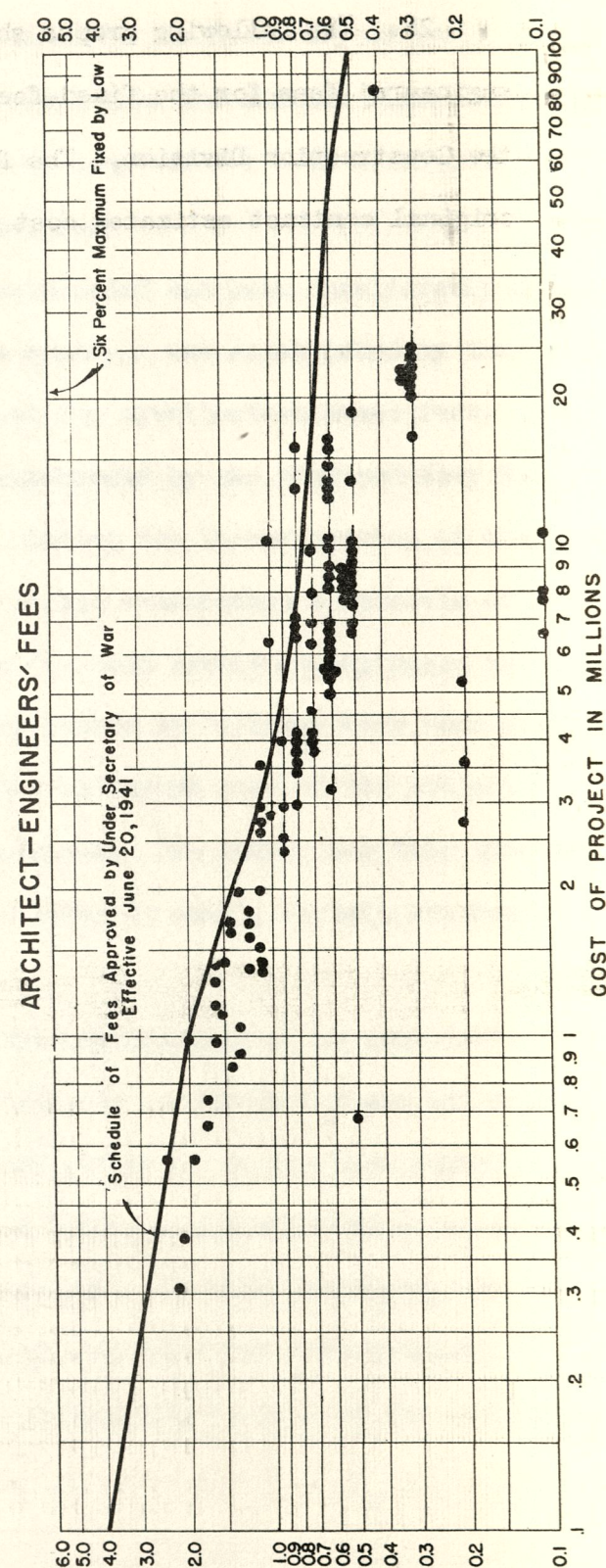
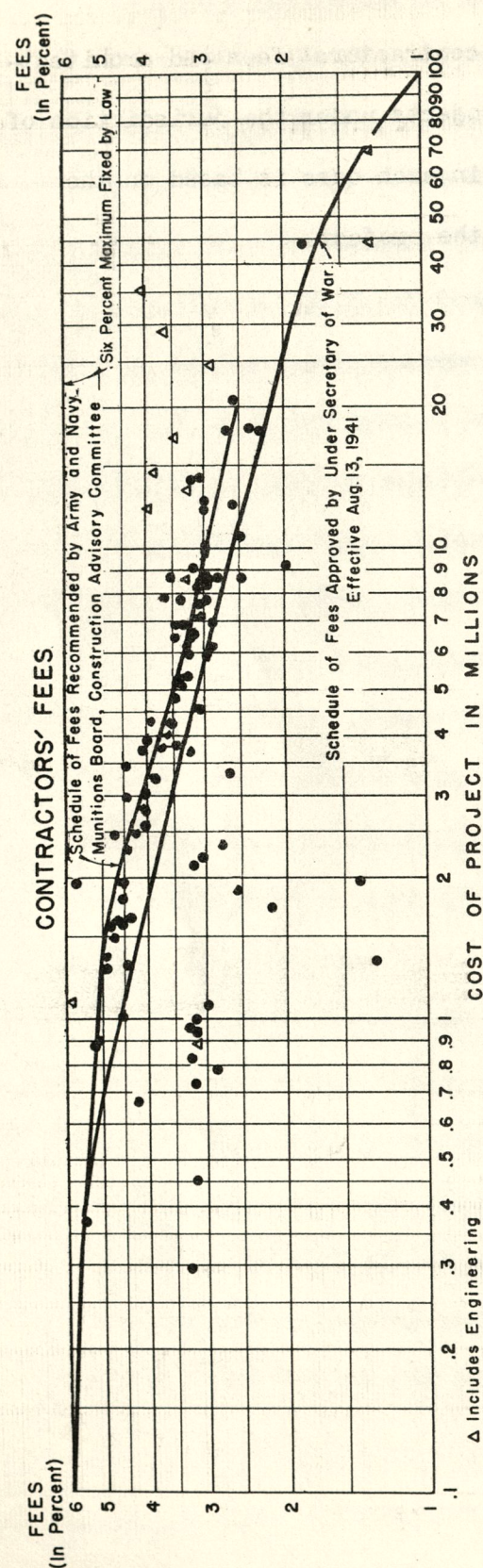
24. The schedule of fees recommended has been considerably below the Congressional maximum. A schedule was established by the Office of the Quartermaster General for architect-engineer fees. For contractors fees the schedule recommended by the Army and Navy Munitions Board has been followed. During the latter portion of the fiscal year, the Under Secretary of War established a schedule of fees as the basis of negotiations for both architect-engineers and contractors. In all cases the fee schedules followed have been graduated in such a manner that as the estimated cost of the project increases, the fee percentage decreases. The reason for this graduation is that whether a project be large or small, certain overhead expenses are involved.

25. An item considered in the negotiations of an architect-engineer's fixed fee is the availability of standard plans and drawings for adaptation to the proposed project. In the same manner, the amount of work to be sublet is taken into consideration in determining the construction contractors fee. In both instances, the fee is reduced where numerous plans are available for the architect-engineer and where excessive sub-contracting is done by the contractor.

26. The following graphs show contractors' fees and architect-engineers' fees for the fixed-fee projects under the jurisdiction of the Construction Division. The fee in each case is based on the original contract estimated cost of the project.

FIXED FEE CONSTRUCTION CONTRACTS

Contractors' and Engineers' Fees in Percent of Original Estimated Contract Cost Δ



Δ Includes Approved Supplements and Change Orders

SUBCONTRACTS OF FIXED FEE PRINCIPAL CONTRACTS

27. Subcontracts under fixed-fee principal construction contracts are in two categories: fixed-fee subcontracts, or lump sum subcontracts.

28. Fixed-fee subcontracts are negotiated by the contractor subject to the approval of the Constructing Quartermaster with properly equipped mechanical contractors in the vicinity of the project. "Mechanical contractors" are those engaged in plumbing, heating, excavating, electrical and other specialized operations requiring skilled mechanics. The fee has approximated closely the percentage of a fee paid the principal contractor. The fixed-fee subcontractor has almost always been awarded to a concern capable of performing the work and willing to do so for a smaller fee than other concerns being considered. In general, the fixed-fee subcontract has resulted in the Government's securing the mechanical work on a project at a lower net cost than could be accomplished through competitive bidding and award on a lump sum basis. Performance and payment bonds are waived on all fixed-fee subcontracts.

29. As to work performed under lump sum subcontracts, the amount has varied with the character of the project. Very few general contractors have in their own organization the necessary employees and equipment to perform the entire work called for by their contract and therefore sublet specialized jobs. Accordingly, it is customary that a considerable percentage of the entire cost is more efficiently and less expensively performed by concerns experienced along

those lines. In general, the awarding of lump sum subcontracts has resulted from proposals by two or more firms and has been made to the lowest bidder. Performance and payment bonds are required to be furnished by all lump sum subcontractors who have been awarded contracts in excess of \$2,000.

30. The proposals from the bidders are examined by the architect-engineer or the contractor and the Constructing Quartermaster and the award is made according to the consensus of their opinions. The subcontract, after execution, is endorsed as approved by the Constructing Quartermaster and forwarded by him through the Zone Office to the Office of the Quartermaster General for administrative review, except that fixed-fee subcontracts of less than \$50,000 and lump sum subcontracts of less than \$100,000 receive administrative review in the Zone Offices.

PROCEDURE UNDER LUMP SUM CONTRACTS

31. The usual procedure for making an award of a lump sum contract is for the Constructing Quartermaster to issue invitations for bids. The Constructing Quartermaster analyzes the bids and submits the case with recommendations to the Zone Constructing Quartermaster, who in turn reviews the case and endorses the recommendations to the Office of the Quartermaster General. If the amount of the contract is less than \$500,000, the authority has been given the Zone Constructing Quartermaster to make the award on his own initiative. Beyond that amount, authority to award in all cases is given by the

Office of the Quartermaster General upon approval by the Office of Production Management and the Under Secretary of War.

PURCHASE AND HIRE

32. Supplementing fixed-fee and lump sum contract methods of accomplishing construction work, is the force account of the various Constructing Quartermasters for purchase and hire. Through this fund the Constructing Quartermaster purchases materials and hires workers to undertake any necessary construction. More than \$100,000,000 of construction work was accomplished through this method during the fiscal year.

33. Additional facilities have been provided at Army posts and stations with funds made available through the Works Progress Administration. On W.P.A. Federal projects alone, over \$11,000,000 was allotted for military construction purposes. In addition, the War Department as sponsor of numerous State projects under the W.P.A. program, has paid for materials while the W.P.A. made available the labor. Usually the ratio of cost was approximately 25 per cent for materials and 75 per cent for labor.

PROTECTING THE GOVERNMENT'S INTEREST

34. To safeguard the interest of the United States, construction contracts have contained various protective provisions. As special problems have been disclosed examining boards or other devices have been used to effect a solution.

INSURANCE UNDER FIXED-FEE CONTRACTS

35. Insurance protection is essential for contractors, architect-engineers and subcontractors operating under cost-plus-a-fixed-fee contracts. The required insurance under such contracts include: Workmen's Compensation, with occupational disease coverage, public bodily injury liability, protective bodily injury liability, automobile bodily injury liability and automobile property damage. In addition, when special circumstances exist, insurance may be obtained against forgery, paymaster robbery, safe robbery, interior robbery and outside holdup.

36. Steps have been taken to make economical the cost of this insurance to the United States. Policies purchased by the contractors, architect-engineers and subcontractors under cost-plus-a-fixed-fee contracts were reviewed and it was found that considerable savings could be effected by obtaining competitive bids from at least two fixed premium carriers, and two dividend paying carriers. This competitive bid plan was made a general requirement under which the insurance is awarded to the lowest bidding company complying with required standards subject to the approval of the Zone Constructing Quartermaster. By applying the competitive bid plan, approximately a 25 per cent saving in insurance costs is effected. Since insurance premiums on each of several large projects amount to more than \$900,000, savings to the Government procured by this procedure are substantial.

UTILITIES CONTRACTORS

37. All contracts for utilities where new construction or substantial modifications are involved, are considered by a Utilities Board. This Board has developed a standard form of electrical service contract to cover as nearly as possible all contingencies arising out of electrical service. This form of contract contemplates that power companies will construct, own and operate any new facilities required, such as new lines and substations. Under this type of contract, the Government pays the utility company for the cost of the facilities. The Government in turn recoups its expenditures by a reduction in service rates on monthly bills for current consumed.

38. The form of electrical service contract is adaptable to other utilities. Where additional facilities for water supply, gas or sewerage are required, a contract for each of the services referred to is usually necessary at every new military project. Numerous contracts in each utility category where objectionable features existed have been subject to negotiation. Substantial saving to the Government has been accomplished through this method of operation. For example, a proposal was received from a private company for the supply of natural gas to the Lake City Ordnance Plant. One feature of the proposal involved the payment by the Government of a minimum charge of \$45,000 per annum, regardless of the quantity of gas consumed. Through extended negotiations, this charge has been reduced to a minimum of \$8,000.

EQUIPMENT RENTAL AGREEMENTS

39. The Government has obtained the use of equipment in constructing the various projects by paying a reasonable rental to the contractor or by authorizing the rental of third party equipment. The rates paid to the contractor for such equipment as he may own or use on the project have followed, with certain reductions, the Associated General Contractors' schedule. The reductions have been made because the Government reimburses for the making of necessary minor or field repairs to the equipment while in operation. Third party equipment is rented by competitive bid. In order to protect the Government from paying rental in excess of the value of either contractor owned or rented equipment, it is provided in the contract that all equipment rental agreements shall contain the provision that if and when the rental paid equals the value of the equipment plus one per cent per month for each month such equipment has been in use, title to such equipment will automatically vest in the Government. With this provision in all rental equipment agreements, no loss can be incurred by the Government in that if the rates charged are exorbitant, the recapture of the equipment will be effective that much sooner.

TAXATION PROBLEMS

40. Several questions of taxation have arisen as the result of the attempt by states and their political sub-divisions to impose

taxes upon transactions engaged in by contractors performing work on a cost-plus-a-fixed-fee basis. The War Department has determined to resist before the Courts all sales or use taxes for purchases made by cost-plus-a-fixed-fee contractors for Government purposes since the economic incidence of such taxes falls directly upon the Federal Government. Wherever a State statute expressly exempts from taxation transactions with the United States, the same exemption is asserted on behalf of a cost-plus-a-fixed-fee contractor as an instrumentality of the United States.

41. In several cases now pending, the Attorney General is protesting the right of the States and municipalities to impose sales and use taxes under cost-plus-a-fixed-fee contracts. Two of these cases, United States and Dunn Construction Company, Inc., John S. Hodgson v. Commissioner of Revenue of the State of Alabama, and King and Boozer v. State of Alabama, testing the application of sales and use taxes, have been argued before the Supreme Court of the State of Alabama and a decision was rendered by that Court on July 31, 1941, upholding the Government's contention, in favor of the cost-plus-a-fixed-fee contractors. These cases will be appealed to the United States Supreme Court and heard at the opening of the fall term (1941). Another case, the Standard Oil Company of Louisiana v. the State of Louisiana, testing the application of gasoline and motor fuel taxes, and also decided in favor of the taxpayer, is expected to be before the Supreme Court at the same term.

42. In the meantime, conferences are being conducted continuously with each taxing body of the States in which the War Department has projects located in an effort to work out with such agencies a uniform exemption for all cost-plus-a-fixed-fee contractors having work with the War Department. These conferences have resulted in widespread saving to the United States. An exemption from State taxes on gasoline sold to cost-plus-a-fixed-fee contractors has been obtained from 18 states, and exemption from the application of sales taxes upon the sale of materials and other services to cost-plus-a-fixed-fee contractors has been obtained from 15 states.

USES OF VARIOUS TYPES OF CONTRACTS

43. The advertised lump sum contract is used by the Construction Division wherever practicable. This contract has the advantage of permitting adequate competition and provides a check on the reasonableness of the price for work. It results in lower cost to the Government for work and eliminates the necessity for an extensive administrative and advisory organization. It provides a means for controlling the completion of the work. It facilitates the use of the resources of a large number of small contractors, who can combine or individually take portions of a job, whereas they otherwise might not be in a financial position to handle a complete project. The disadvantages of the lump sum contract are that time is

required for advertising, detailed plans must be available prior to requesting bids, and the Government must accept any low bidder who can furnish a performance and payment bond.

44. The principal justification for the use of cost-plus-a-fixed-fee contract is that it is adaptable to the speed and flexibility necessary for a program of the character now facing the War Department. Work on a project can be started immediately upon the decision of the Government to undertake the work, without waiting for the preparation of complete designs and specifications. The project may be designed during the construction period, changes in location, design, material, equipment and size of project may be made as deemed necessary, without interfering in any way with the construction program or necessitating long drawn out negotiations for increase or decrease in payments to the contractor. This is particularly important as contractors under a lump sum contract, after signing the contract and starting work, are in a very advantageous position in negotiating the amounts to be paid for extras and changes. In most instances, the Government has not had available complete plans and specifications for the project to be constructed. This is particularly true with reference to ordnance plants and chemical warfare plants.

45. A second advantage of the cost-plus-a-fixed-fee contract is that the Government has the opportunity to select its contractors and can choose reputable and capable firms. It is hardly an argument to say that under a bid price contract, the contractor may be

penalized if he fails to finish on time, because the government is not looking for penalties, but rather for completed cantonments or munitions plants. Further, it is possible to select a contractor who will not be required to have a large sum of cash on hand, as reimbursements are made currently. It is unnecessary to wait a long period of time for payment, as is true under the bid price type of contract. No performance or payment bonds are required, and there is no advance necessary by the contractor to pay for such bonds. The decisive reason for the cost-plus-a-fixed-fee contract is that it is designed for speed. To take anything less than the maximum advantage of time for defense preparation endangers national safety.

CONTRACTS AWARDED OR APPROVED

46. During the fiscal year 1941, the Construction Division awarded or approved a total of 1,795 contracts aggregating approximately \$1,166,798,674, including supplements and change orders. They consisted of the following types, shown by quantity and value:

| <u>TYPE</u> | <u>QUANTITY</u> | <u>VALUE</u> |
|--|-----------------|--------------------|
| Advertised Lump Sum Contracts | 1,343 | \$ 194,523,724 |
| Negotiated Lump Sum Contracts | 226 | 48,296,417 |
| Fixed-Fee Architect-Engineer Contracts | 115 | 25,252,650 |
| Fixed-Fee Construction Contracts | <u>111</u> | <u>898,725,883</u> |
| Total | 1,795 | \$1,166,798,674 |

PART XI - FINANCING THE CONSTRUCTION PROGRAM

1. TOTAL FUNDS AVAILABLE to the Construction Division for the fiscal year 1941, in carrying out the building program, amounted to \$1,792,947,269.52. This figure is more than six times that of \$271,402,317—the approximate total amount of money expended by the Construction Division for building work from 1921 to 1940, including Emergency Funds under N.I.R.A., P.W.A., and W.P.A.

2. THE FIRST FUNDS to start this emergency construction work were obtained on August 2, 1940, when the War Department borrowed \$29,500,000 from the "Emergency fund for the President". Funds for the shelter of the National Guard became available on September 9, 1940. Funds for the shelter of the Selective Trainees became available on September 24, 1940.

3. THE MILITARY APPROPRIATIONS ACT of 1941 contained \$29,463,823 for usual Army construction purposes. Additional appropriations were necessary to build the housing and facilities required for the greatly enlarged Army and to construct other defense projects. Congress, in meeting the emergency construction requirements, chose to appropriate only such funds as conservative estimates at the time of appropriation indicated to be necessary. It was understood, however, that supplementary appropriations would be made later if additional funds were required. This procedure has been followed.

4. Supplementary appropriations made included the following funds available to the Construction Division: \$5,200,000 in the First Supplemental National Defense Appropriations Act of 1941; \$97,914,722 in the Second Supplemental National Defense Appropriations Act of 1941; \$31,380,000 in the Third Supplemental National Defense Appropriations Act of 1941 (included herein were funds to repay the \$29,500,000 borrowed from the "Emergency fund for the President"); \$1,534,384,409 in the Fifth Supplemental National Defense Appropriations Act of 1941 (included herein are portions of other appropriations which, under this Act, are to be accounted for as one fund).

5. There was also \$20,009,400 available to the Construction Division in the fiscal year 1941, from the fund for Construction of buildings, utilities and appurtenances.

6. The above funds made available to the Construction Division were increased by the transfer of funds from other agencies; and were decreased by the transfer of funds to the jurisdiction of the Corps of Engineers.

7. The following funds were transferred from other Agencies:

| | |
|-------------------------------|-------------------------|
| Air Corps | \$ 1,629,319.44 |
| Chemical Warfare Service | 20,037,184.20 |
| Coast Artillery Corps | 27,131.00 |
| Corps of Engineers | 4,832,429.14 |
| Navy Department | 10,000.00 |
| National Defense Housing | 2,887,500.00 |
| National Guard Bureau | 246,510.86 |
| Ordnance Department | 467,846,636.60 |
| Signal Corps | 29,588.30 |
| Works Projects Administration | 11,114,870.00 |
| Total | \$508,661,169.54 |

8. The following funds were transferred to the jurisdiction of the Corps of Engineers: \$551,296,943.73. This left available to the Construction Division \$1,675,716,579.81 for all construction work. Added to this amount was \$77,359,634.71 for maintenance and repairs and \$39,871,055 for acquisition of land and leases, making the total funds available to the Construction Division for the fiscal year 1941, in carrying out the building program, \$1,792,947,269.52.

MAINTENANCE AND REPAIRS

9. The status on June 30, 1941, of the funds for Maintenance and Repairs is shown by the following table:

| | |
|-------------------------------------|------------------|
| TOTAL | \$ 77,359,634.71 |
| Barracks & Quarters Army: | |
| Fiscal Year 1941 | 57,684,763.33 |
| Fiscal Year 1941 and 1942 | 15,144,538.00 |
| Replacing Barracks & Quarters: | |
| Fiscal Year 1941 | 652,239.57 |
| Construction & Repair of Hospitals: | |
| Fiscal Year 1941 | 2,881,093.81 |
| Fiscal Year 1941 and 1942 | 997,000.00 |

10. The funds for maintenance and repairs were made available for expenditure in the fiscal years, 1941 and 1942. The appropriations Barracks and Quarters Army, and Construction and Repair of Hospitals were reduced by transfers to other agencies for salaries of operating personnel, travel expenses, etc. Funds for replacing Barracks and Quarters were derived from operating income at various Posts and Stations.

ACQUISITION OF LAND AND LEASES

11. Total funds made available to the Construction Division for the acquisition of land and leases for the fiscal year 1941 amounted to \$84,957,081.82. This total includes both funds specifically appropriated for acquiring land and leases and funds for the same purpose included under funds for all construction.

12. The total funds for the acquisition of land and leases are shown in the following summary:

| | |
|-------|-----------------|
| TOTAL | \$84,957,081.82 |
|-------|-----------------|

| | |
|---------------------------------|---------------|
| Specifically Appropriated | 39,871,055.00 |
| From funds for all construction | 45,086,026.82 |

13. The funds specifically appropriated for the acquisition of land and leases were obtained from the following appropriations:

| | |
|------------------------------------|--------------|
| Military Appropriation Act of 1941 | \$ 3,009,054 |
|------------------------------------|--------------|

| | |
|----------------------------------|---------|
| Emergency Fund for the President | 115,000 |
|----------------------------------|---------|

| | |
|---|---------|
| First Supplemental National Defense Appropriation Act of 1941 | 654,000 |
|---|---------|

| | |
|---|--------|
| Second Deficiency Appropriation Act of 1940 | 78,250 |
|---|--------|

| | |
|--|-----------|
| Second Supplemental National Defense Appropriation Act of 1941 | 7,600,885 |
|--|-----------|

| | |
|---------------------------|-----------|
| Public Resolution 99-76th | 8,744,000 |
|---------------------------|-----------|

| | |
|--|------------|
| Fourth Supplemental National Defense Appropriation Act of 1941 | 15,202,466 |
|--|------------|

| | |
|---|-----------|
| Fifth Supplemental National Defense Appropriation Act of 1941 | 4,467,400 |
|---|-----------|

14. A contrast to these figures is provided by a comparison with total funds, including WPA and PWA funds, for the acquisition of land between 1927 and 1939, which amounted to \$5,558,906.47.

TOTAL ESTIMATED COST

15. The total estimated cost as of June 30, 1941, of the various emergency construction projects being built by the Construction Division was \$1,556,623,356.00. This figure is broken down into separate construction categories in the following summary:

| Purpose | Estimated Cost as of June 30, 1941 |
|--------------------------------|--|
| Troop Housing: | |
| Camps and Cantonments | \$628,209,765.00 |
| Reception Centers | 8,359,545.00 |
| Replacement Training Centers | 98,052,921.00 |
| Harbor Defenses | 24,295,651.00 |
| Air Corps Projects | 34,580,293.00 |
| Facilities | 74,804,189.00 |
| Miscellaneous | 14,756,729.00 |
| General Hospitals | 20,989,441.00 |
| Ordnance: | |
| Manufacturing Plants | 496,211,545.00 |
| Ammunition Storage Depots | 52,201,995.00 |
| Field Service Facilities | 4,866,141.00 |
| Chemical Warfare Plants | 7,378,791.00 |
| Storage Depots | 72,913,965.00 |
| Miscellaneous Projects | 19,002,385.00 |

16. Other pertinent financial data is included in the Appendix.

PART XII - THE ORGANIZATION OF THE CONSTRUCTION DIVISION

1. A BRIEF HISTORY of the Construction Division--leading up to the present organization--will furnish needed background.

2. ARMY CONSTRUCTION WORK has been a function of the Quartermaster Corps since 1775, as part of its job of clothing, feeding, transporting, and sheltering the Army.

3. DURING THE CIVIL WAR, in addition to thousands of tents furnished to the Union Army, temporary barracks were constructed in most of the Northern States for assembling and organizing the soldiers.

World War Period

4. Prior to 1917, Army construction work was done by the Construction and Repair Division of the Quartermaster General's Office.

5. When the United States became involved in the World War, a new organization to carry on the large construction program was provided by the Order of the Secretary of War on March 13, 1918. The Construction Division of the Army came into existence by this Order, with instructions to report to the Assistant Chief of Staff in charge of operations. The history of this period reflects the fact that construction work was handled efficiently and with dispatch.

Peace Decades

6. Congress, in the Act approved June 4, 1920, provided for the transfer of the Construction Division to the Quartermaster Corps. Since then the Construction Division has been a part of the Office of the Quartermaster General. By this same Act the Real Estate Service which had functioned during the World War period as a separate service under the General Staff, was also transferred to the Quartermaster Corps.

7. The activities of the Construction Division during the two decades, 1920-1940, included in addition to the construction of buildings, utilities and appurtenances, the maintenance, repair and operation of barracks and quarters, and the construction and repair of hospitals. Toward the latter part of this period, money became available for new construction to take the place of deteriorated World War housing, the maintenance of which had become excessively high.

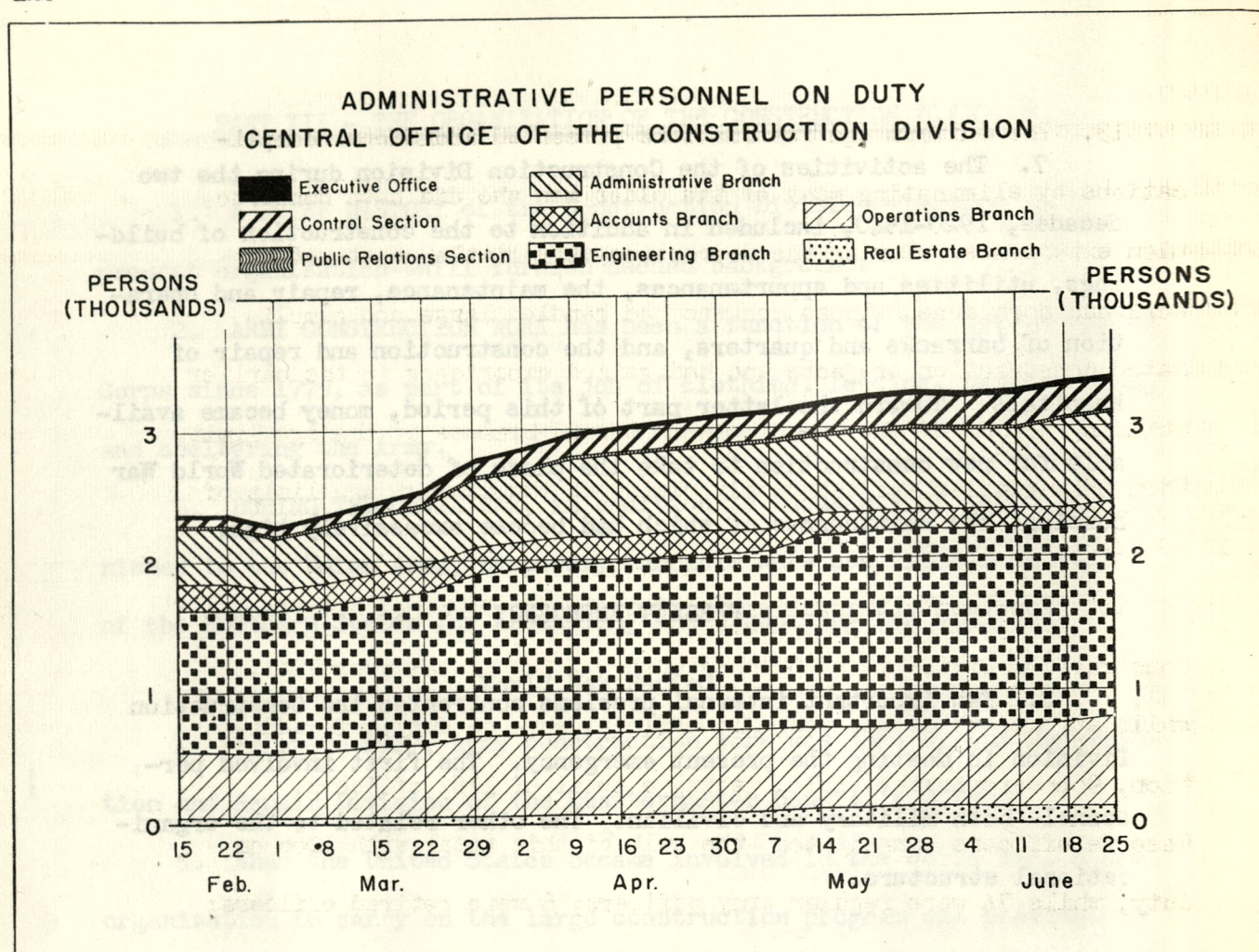
PRESENT EMERGENCY

8. Two important internal problems confronted the Construction Division in meeting the present emergency. The first involved personnel--both military and civilian. The other related to the organizational structure.

PERSONNEL

9. The magnitude of the task involved in any important undertaking, such as the emergency program of the Construction Division, is of a nature that places its prompt and efficient accomplishment beyond the capacity of any individual working single-handed. Therefore, it was necessary to enlist the services of a number of other individuals, who were qualified to assist by reason of their aptitude or their specialized experience in the several types of effort that the task required.

10. Personnel--both military and civilian--expanded rapidly to meet the demands of the emergency construction program. This personnel had to be recruited at a time when there was great competition



throughout the country for professional and skilled workers from many other organizations.

Military Personnel

11. Officers needed on construction work were obviously those with construction experience. For this reason it was felt that first consideration should be given to men who actually had worked on construction projects in private industry or otherwise, whether or not they held commissions.

12. When the policy was announced that commissions would not be granted to civilians for construction work it necessitated combing the lists of 7,500 reserve officers to obtain men who appeared to have qualifications for construction work.

13. The maximum age restrictions presented additional complications by eliminating many of the older men who did have construction experience. During the depression very little construction work had been done. Those men who had handled large and complicated construction projects and had gained experience in the earlier building decade of the twenties were barred because of the age limit. When this problem was thoroughly realized, the maximum age limit of 50 years was relaxed.

14. Fourteen officers were on duty in the Washington Office, Construction Division, at the beginning of the fiscal year 1941, while at the end of the year 216 officers were on duty. In addition, 966 were in the field, making a total of 1182 officers. Reserve officers constituted the bulk of this total with 1066 on duty, while 74 were regular Army officers; 6 were retired officers; and 36 were Army officers assigned from other duty. Cases were pending at the close of the fiscal year on an additional 452 reserve officers who were to be called to active duty.

15. Officers have responded to the construction challenge in an excellent manner, often at a great personal or financial sacrifice.

Civilian Personnel

16. The United States Civil Service Commission, cognizant of the emergency and appreciating the needs of the Construction Division, expedited the procurement of civilian personnel in every

possible way. A governing principle was worked out between the Construction Division and the Civil Service Commission. In essence, this governing principle was: workers had to be on the job when the Constructing Quartermaster needed them.

17. Pertinent excerpts from a letter written to the Under Secretary of War, Honorable Robert P. Patterson, by Mr. Arthur S. Fleming, Commissioner of the United States Civil Service Commission follows:

..."The Commission is willing to rule in advance that (a) the appointing officers may begin to make appointments....as soon as the project is started and (b) may do so without regard to the existence or nonexistence of eligibles on the Commission's Registers. It is also willing to rule in advance that these appointments may be made initially for a period of six months.

"The Commission is willing to make these rulings in light of the following considerations:

1. The Construction Division of the Quartermaster Corps will restrict the use of this authority to job employments.
2. The Construction Division of the Quartermaster Corps will establish a routine whereby the Commission's Central Office is informed immediately as soon as a Constructing Quartermaster has been ordered to a particular point for the purpose of beginning a construction project.
3. The Commission, as soon as this information is received, will notify the appropriate district manager

and instruct him to send at once to the place where the project is located one of the Commission's special representatives. This special representative will report immediately to the Constructing Quartermaster with the understanding that the Constructing Quartermaster will utilize his services for the purpose of obtaining the personnel which are needed.

4. The Commission's special representative will be instructed to adhere literally to the deadlines which are established by the Constructing Quartermaster. As soon as he has ascertained what the deadlines are and what type of person is needed, he will, in cooperation with the local employment office, determine how to procure the necessary personnel. In no case will the Commission's special representative go outside of the immediate locality for this personnel until it is determined that such personnel is not available in that locality.
5. It is understood that any complaints coming to the Central Office of the Construction Division of The Quartermaster Corps will be relayed immediately to my office so that we can get in immediate contact with our representative and correct any difficulties which may have arisen....

"The Commission is willing to follow this general practice with the distinct understanding that where time permits the persons who have the responsibility for making these appointments will give

prior consideration to the qualification of persons who are on the Commission's Registers and whom it would be possible to secure within the time limits set. Citizens throughout the country have responded in good faith to the announcement of the United States Government that if they desire to receive appointments in certain lines of work they should follow the procedure which one normally follows in order to be placed on a civil service register. Clearly the United States Government should attempt to utilize the services of these persons except when, in the interest of expediting the National Defense Program in the manner in which we know it should be expedited, it is impossible to do so. There are times, however, when utilizing these registers will coincide with the most expeditious and most effective handling of the defense program. When such occasions arise, it is the Commission's understanding that the Construction Division will be perfectly willing to cooperate with the Commission."

18. The Construction Division needed trained and experienced professional men to carry forward its great building program. It now has a number of such men working in its organization. With a definite shortage of trained and skilled workers throughout the country, many of these professional men in the Construction Division have been offered much better jobs with increases in salary in private industry. The Construction Division has been unable to release these vitally needed men in the organization because the emergency building program of the Army had to go forward on schedule. Civilian personnel, generally, has responded loyally and enthusiastically to the construction challenge.

19. Some idea of the rapid expansion of civilian personnel in the Construction Division may be obtained by the following: Washington personnel as of June 30, 1940, totaled 1,470 and as of June 30, 1941, totaled 3,219; Field personnel as of June 30, 1940, totaled 2,688 and as of June 30, 1941, totaled 11,679. In addition there were 10,183 persons hired for repair of and utilities for barracks and quarters as of June 30, 1941.

ORGANIZATION

20. When the present emergency confronted the country in June, 1940, the Construction Division consisted of three branches—New Construction Branch, Real Estate Branch, and Repairs and Utilities Branch—as well as several sections under the Executive Office.

21. On June 15, 1940, in order to carry out the emergency construction program assigned to the Quartermaster Corps, the Construction Division was organized as follows:

1. Chief - of the Construction Division
 - a. Assistant to the Chief of the Construction Division.
2. Executive Officer
 - a. Assistant to the Executive Officer
 - b. Funds and Estimates Branch
3. Administrative Branch
4. Engineering Branch
5. Constructing Branch (Lump Sum Contracts)
6. Constructing Branch (Fixed-Fee Contracts)
 - a. Requirements Section
7. Legal Branch
8. Procurement and Expediting Branch

9. Accounting and Auditing Branch

10. Liaison Branch

11. Maintenance and Repairs Branch

12. Real Estate Branch

22. This organization continued to function with such minor modifications as experience indicated until December, 1940.

23. Upon assuming responsibility as Chief of the Construction Division, Brigadier General Brehon Somervell reorganized the Construction Division in December, 1940. Five branches were established with the chiefs of each reporting directly to the Chief of the Construction Division. All sections and smaller divisions of each branch were responsible to the Chief of the Construction Division through the chief of the particular branch. The plan adopted for the Division embraced, in general, the type of organization commonly termed the "Line and Staff" organization.

24. In a "Line and Staff" organization, authority flows from the top to the bottom, following definite channels of command. The actual operation of activities is decentralized through a definite channel of command from the top to the minor elements in the office or field, and in addition, there is provided a staff of experts or specialists to assist the responsible official in charge of each command echelon. Each expert, or specialist, is at the head of a staff group or Branch which has charge of a single important function or a group of certain similar or complementary functions. The experts, or specialists, and their assistants, work out the problems

relative to the performance of the particular functions of which they have charge. The experts, or specialists, do not give orders direct. Their recommendations and suggestions are normally carried out through the line of command. However, these recommendations may be, and frequently are, accepted and adopted without further action through the command channel.

25. The Chief of the Construction Division and his Deputy Chief head the direct line of command through which the operations of the organization are directed, supervised and coordinated.

26. The Chief of the Construction Division is assisted by a special staff consisting of the Construction Advisory Committee, a Control Section, a Public Relations Section, a Contract Information Section, and such special assistants as are found necessary from time to time.

27. Under the reorganization, the country was divided into nine Zones and an Army construction officer was placed in charge of each Zone, coextensive with the nine Corps Areas. He was provided with a staff from the engineering, architectural and construction fields, to assist him in general supervision and inspections.

28. A Constructing Quartermaster retained in charge of each project was responsible to the Zone Constructing Quartermaster and through him to the Chief of the Construction Division.

PRESENT ORGANIZATION

29. At the end of the fiscal year 1941, the Construction Division consisted of a Central Office in Washington, and a field service composed of zones and local offices. The Washington organization consisted of the Executive Office and five branches, with the chiefs of each being responsible directly to the Chief of the Construction Division.

30. Under the Executive Office, the Contract Information Service, the Public Relations Section and the Control Section were established. The first two provide pertinent information to the public while the Control Section is charged with the responsibility of supplying to the Chief of the Construction Division factual data to aid in properly directing and controlling the construction building program. Both field and internal reports are prepared which graphically portray the status of the widespread projects at any given time.

31. Functioning in close cooperation with the Executive Office is the Construction Advisory Committee which was first organized on July 21, 1940, by direction of the Secretary of War. At the close of the fiscal year, this Committee consisted of five members with Major General W. D. Conner, as Chairman. The Committee assists the Quartermaster General in prosecuting the construction defense program authorized by Congress. It acts as the point of contact with the construction and designing organizations of the country which desire to participate in that portion of the construction program accomplished

on a Cost-Plus-A-Fixed-Fee contract basis. The Advisory Committee collected, analyzed and classified data relating to such construction and designing organizations. On the basis of this data collected, the Construction Advisory Committee recommends to the Chief of the Construction Division the three organizations appearing from all available records to be best qualified to handle each project. The five principal staff groups or Branches established in the Construction Division are:

Accounts Branch

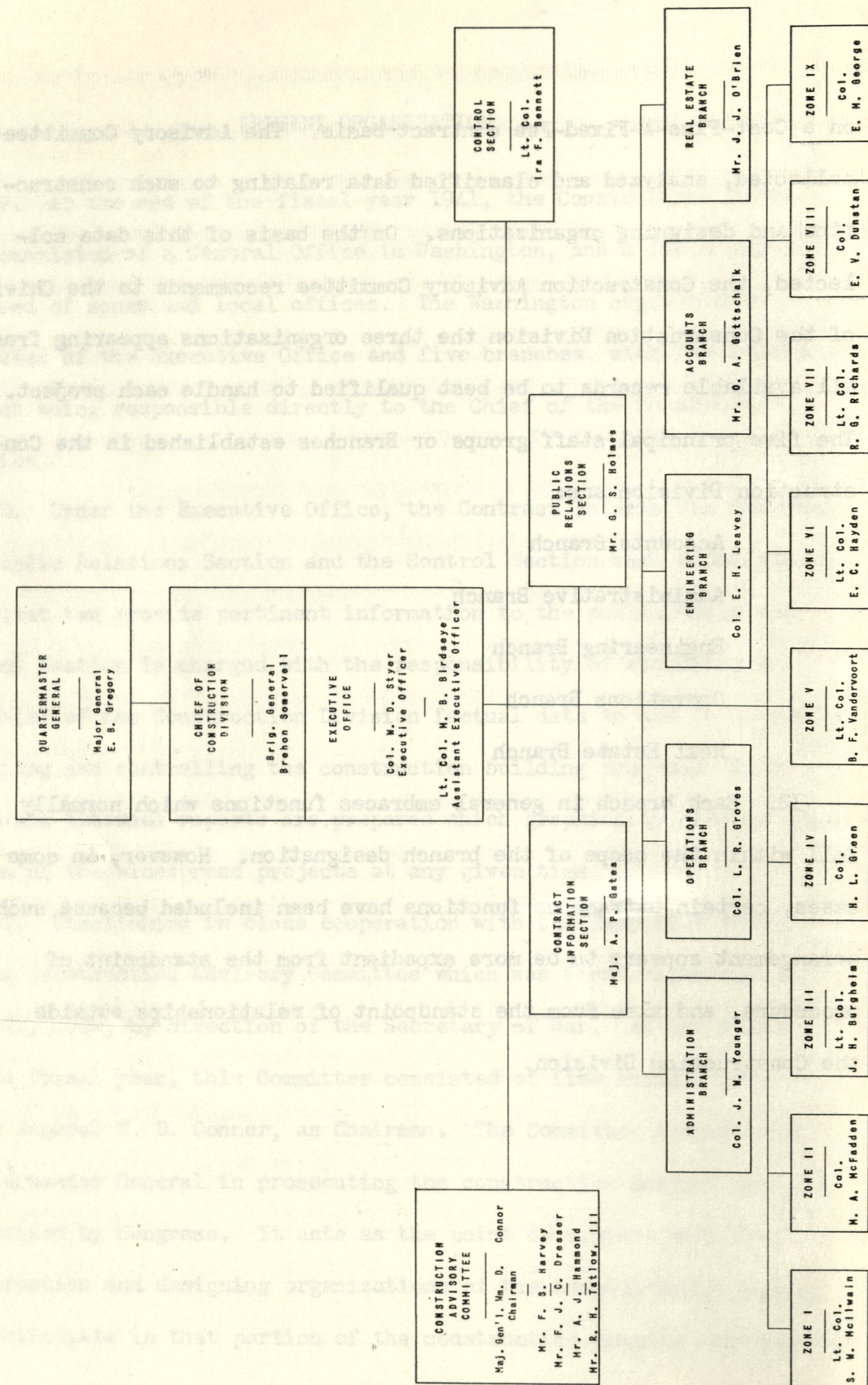
Administrative Branch

Engineering Branch

Operations Branch

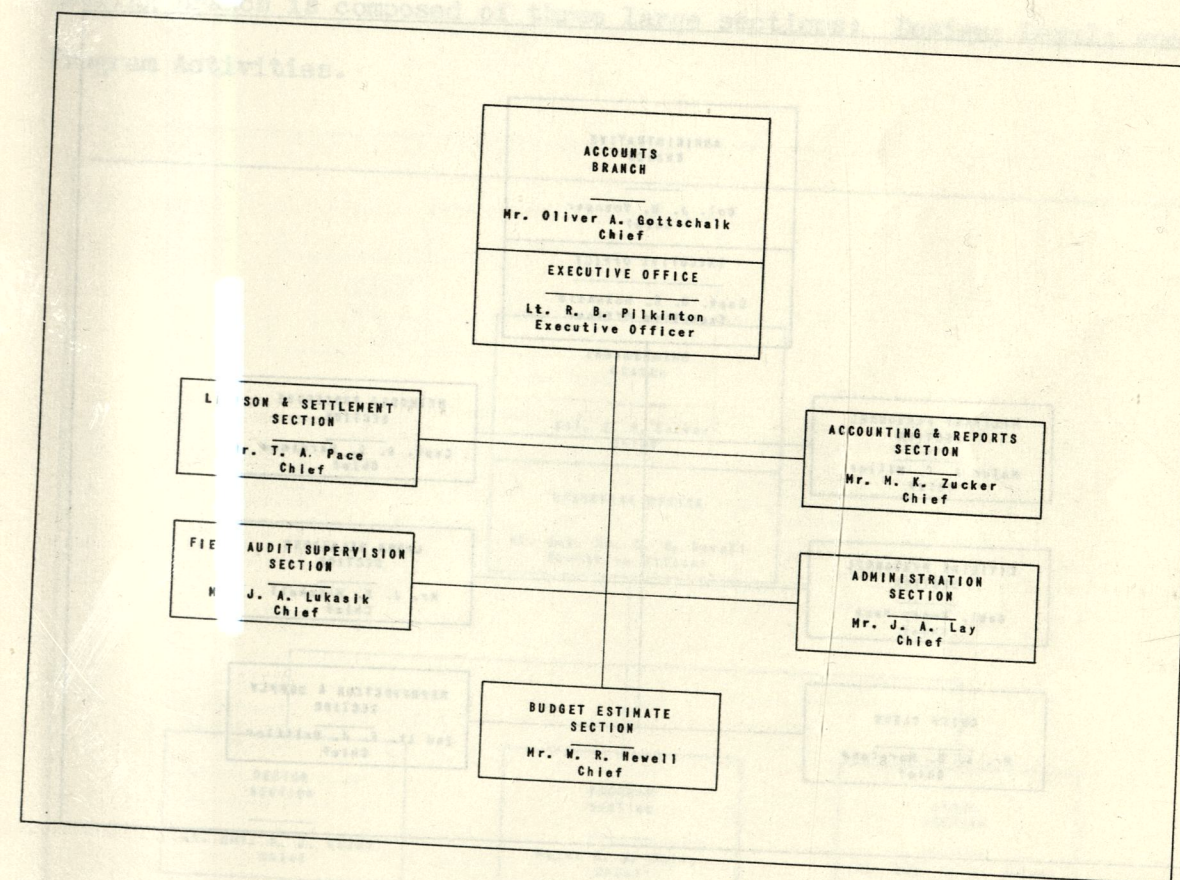
Real Estate Branch

32. Each branch in general embraces functions which normally fall within the scope of the branch designation. However, in some cases, certain extraneous functions have been included because such arrangement appears to be more expedient from the standpoint of procedure, and also from the standpoint of relationships outside the Construction Division.



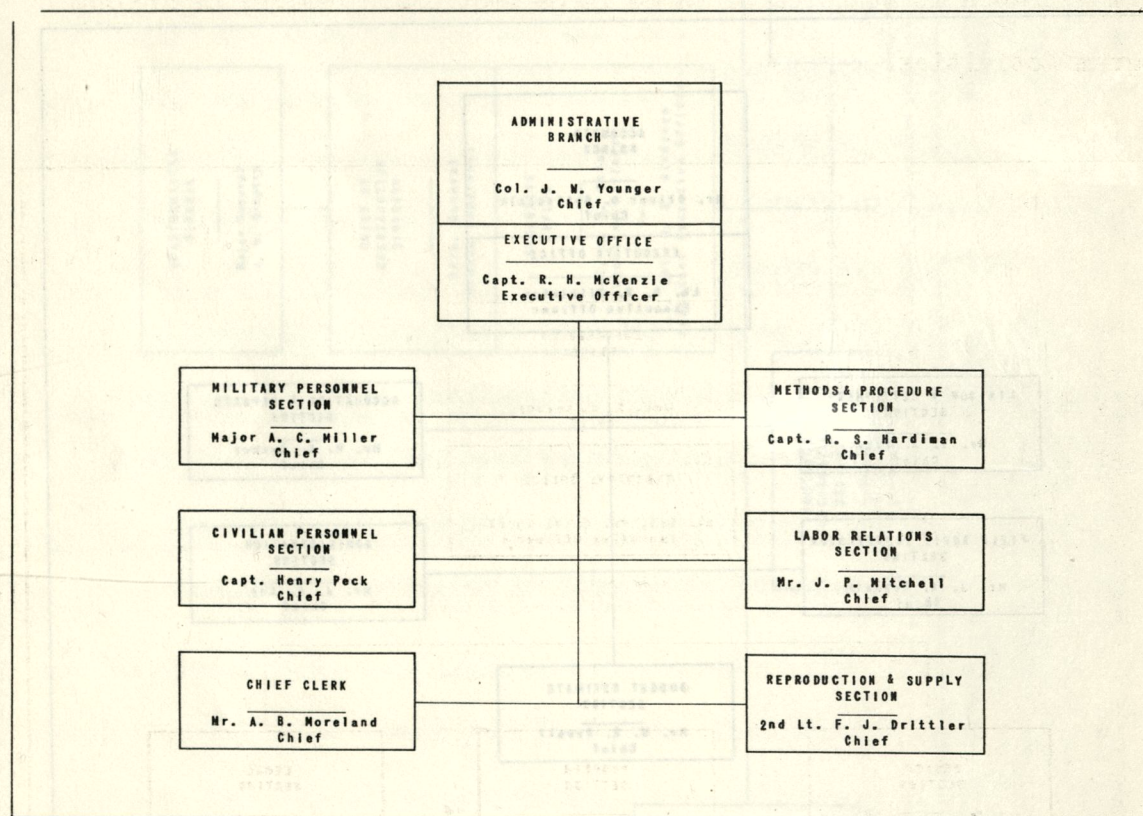
ACCOUNTS BRANCH

33. The Accounts Branch is responsible for the maintenance of detailed records and finance accounts of the activities of the Construction Division for the purpose of controlling the status of projects, funds apportioned, obligations, expenditures and property. The Accounts Branch is composed of five sections: Accounting and Reports; Budget Estimates; Field Audit Supervision; Liaison and Settlements; and Administrative.



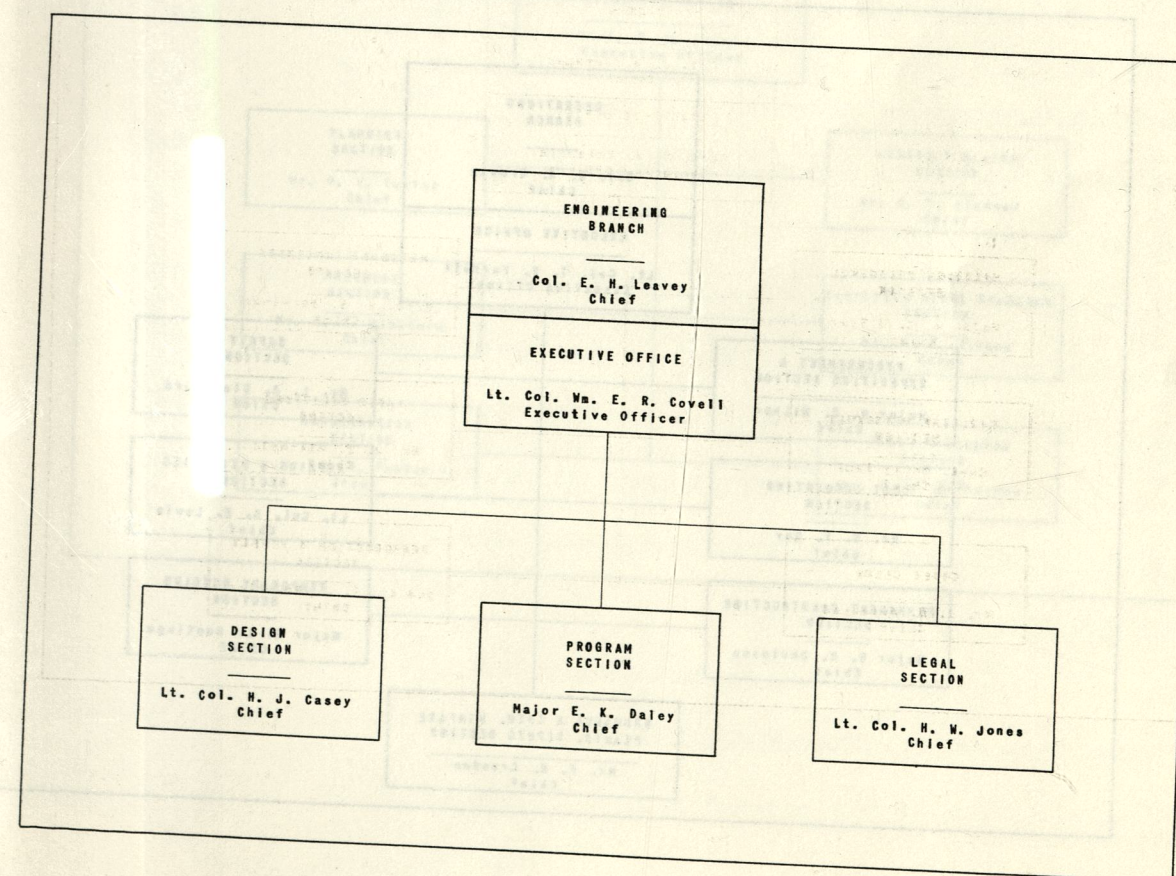
ADMINISTRATIVE BRANCH

34. The Administrative Branch is responsible for functions incident to the administration of the organization. The branch is responsible for making studies with a view to developing new procedures and improving established procedures involving administrative activities, and in general, acts as an advisor to the Chief of the Construction Division on administrative matters. The Administrative Branch is composed of six sections; Military Personnel; Civilian Personnel; Labor Relations; Methods and Procedure; Chief Clerk; and Reproduction and Supply.



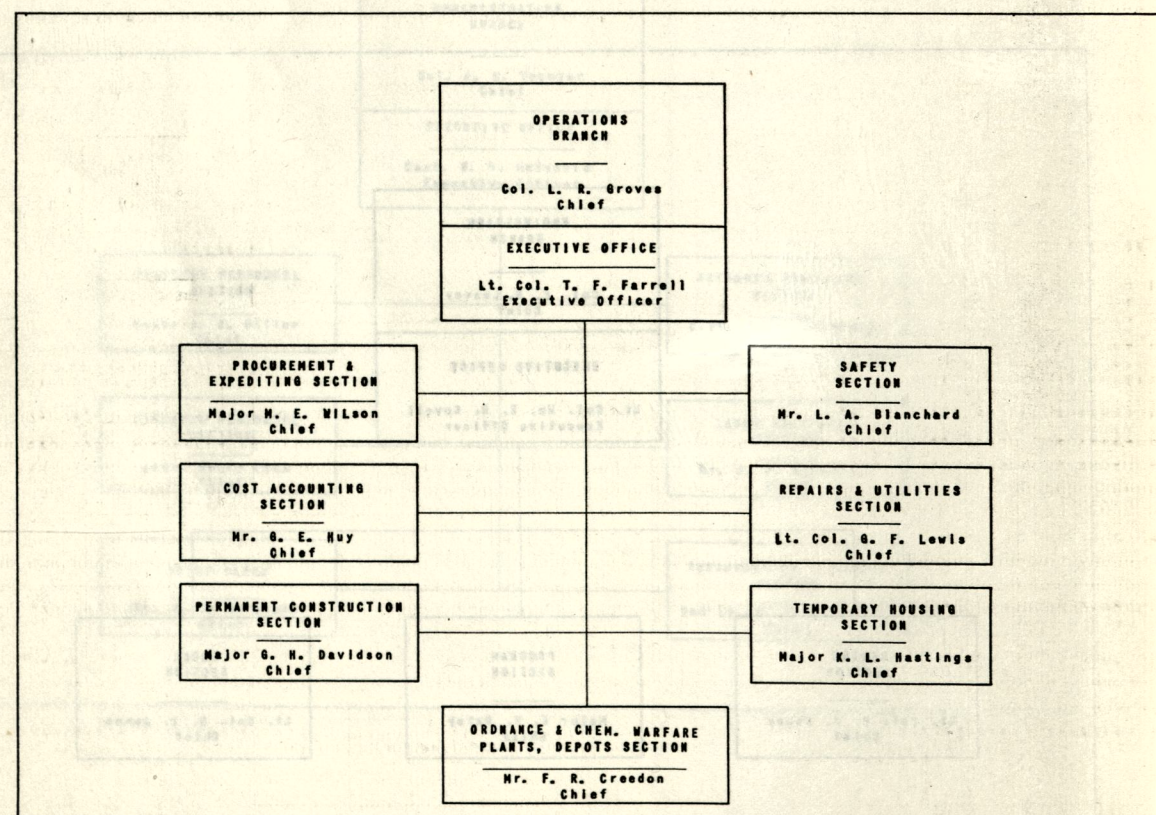
ENGINEERING BRANCH

35. The Engineering Branch is responsible for advising the Chief of the Construction Division on engineering matters and policies and for keeping him informed on the status and progress of the engineering phase of the construction program. This branch, acting for the Chief of the Division, directs, supervises and inspects the engineering activities of the Zone Constructing Quartermaster and of the Constructing Quartermasters, including the engineering activities of architectural and engineering firms and consultants. It also performs the engineering activities that are carried on in the Central Office of the Construction Division. The Engineering Branch is composed of three large sections: Design; Legal; and Program Activities.



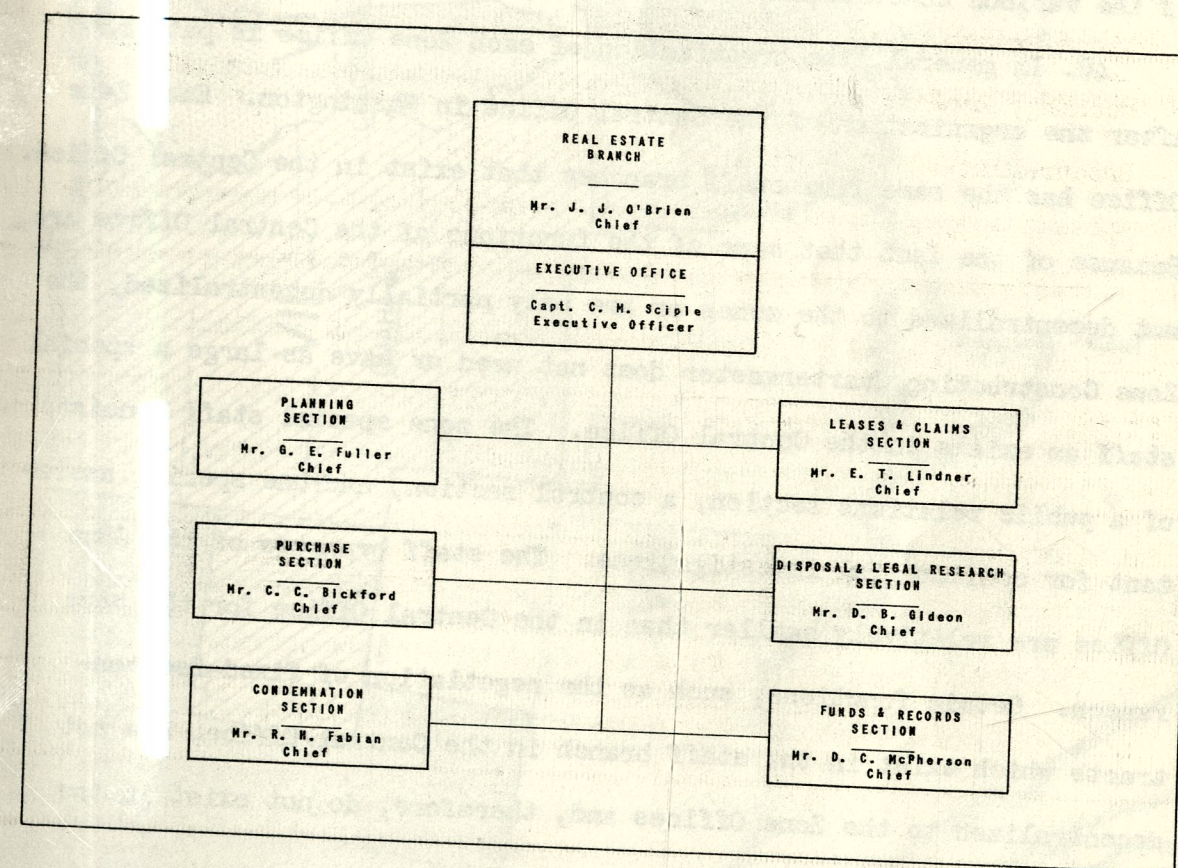
OPERATIONS BRANCH

36. The Operations Branch is responsible for establishing policies; maintaining liaison with all field projects, supervising the construction of all housing, both permanent and temporary, munitions plants and depots, storage facilities, and all other items of the construction program. This branch also supervises all purchasing activities of the Construction Division, and all repairs and utilities at Army posts and stations. The Operations Branch is composed of seven Sections: Temporary Housing; Permanent Housing; Repairs and Utilities; Ordnance and Chemical Warfare Plants, Depots; Procurement and Expediting, Cost Accounting; and Safety.



REAL ESTATE BRANCH

37. The Real Estate Branch is responsible for controlling, supervising and coordinating all matters pertaining to real estate used for military purposes under the control of the War Department, including leasing, acquisition, claims and disposal. The Real Estate Branch is composed of six Sections: Planning; Purchase; Condemnation; Leases and Claims; Disposal and Legal Research; and Funds and Records.



Zone Organization

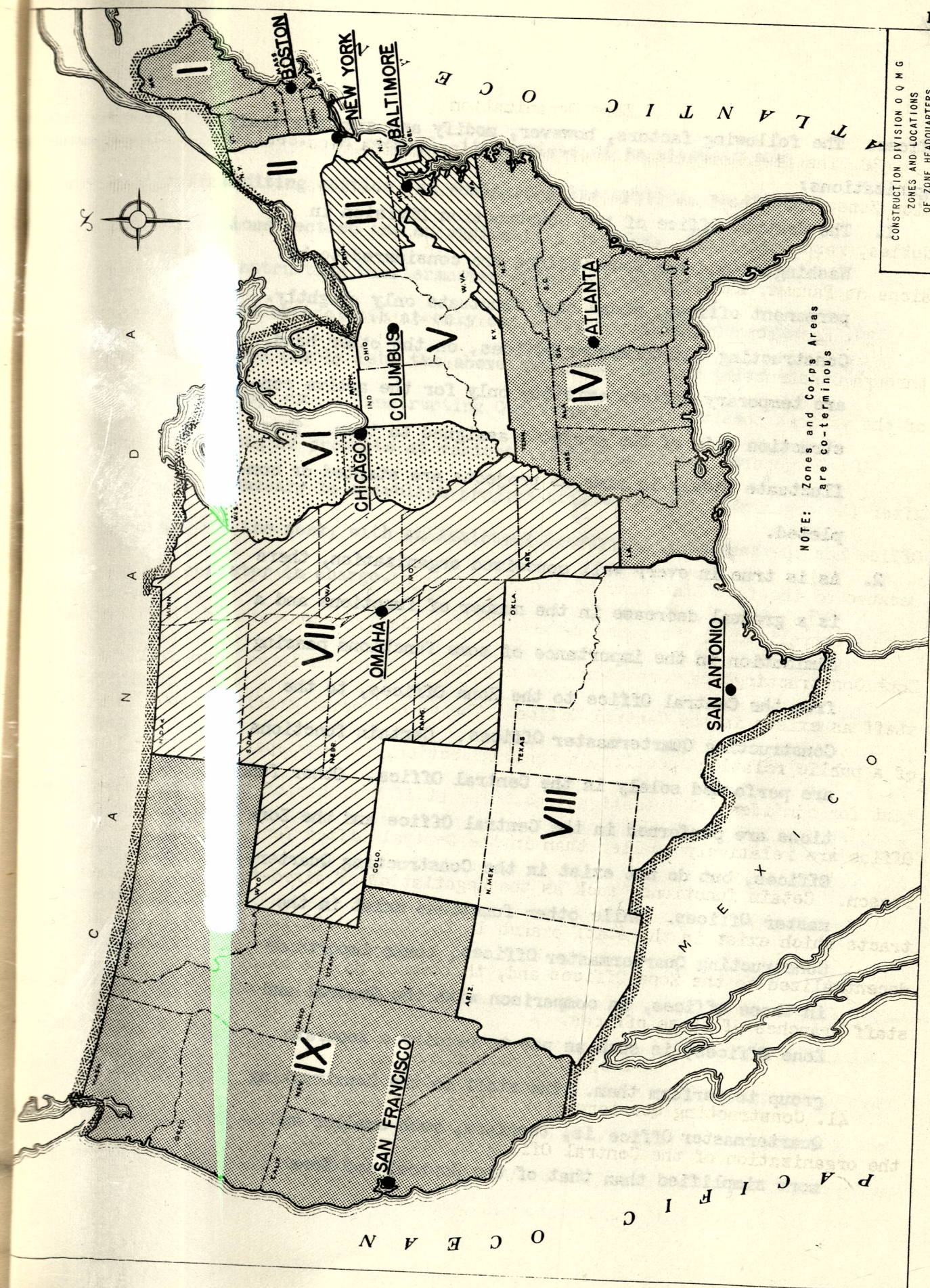
38. The field organization comprises nine geographical construction Zones and nine Zone Offices, and in addition, offices with similar duties, responsibilities and authorities located in our foreign possessions at Panama, Hawaii, and Puerto Rico.

39. Each Zone Office supervises the work within its zone boundary through Constructing Quartermaster Offices located at or near the site of the various construction activities.

40. In general, the organization of each Zone Office is patterned after the organization of the Central Office in Washington. Each Zone Office has the same five staff branches that exist in the Central Office. Because of the fact that some of the functions of the Central Office are not decentralized to the zones or are only partially decentralized, the Zone Constructing Quartermaster does not need or have as large a special staff as exists in the Central Office. The zone special staff consists of a public relations section, a control section, and one special assistant for confidential investigations. The staff branches of the Zone Office are relatively smaller than in the Central Office for the same reason. Certain functions, such as the negotiation of fixed-fee contracts which exist in the staff branch in the Central Office, are not decentralized to the Zone Offices and, therefore, do not exist in the staff branches of those offices.

Project Organization

41. Constructing Quartermaster Offices are also patterned after the organization of the Central Office in Washington and the Zone



Offices. The following factors, however, modify and simplify their organizations:

1. The Central Office of the Construction Division in Washington and the Zone Offices are considered to be permanent offices, whose size fluctuate only slightly. Constructing Quartermaster Offices, on the other hand, are temporary offices existing only for the active construction life of the projects assigned to them. They fluctuate widely in size as projects are started or completed.
2. As is true in every well conceived organization, there is a gradual decrease in the number of functions and a diminution in the importance of some functions passing from the Central Office to the Zone Offices, to the Constructing Quartermaster Offices. Certain functions are performed solely in the Central Office. Other functions are performed in the Central Office and the Zone Offices, but do not exist in the Constructing Quartermaster Offices. While other functions exist in the Constructing Quartermaster Offices, their importance in those offices, in comparison with the Central and Zone Offices, is such as not to require a separate group to perform them. The staff in the Constructing Quartermaster Office is, therefore, much smaller and more simplified than that of the Central and Zone

Offices. In general, it consists of an accounts and auditing section, an administrative section, an operations section and an engineering section. Where the Constructing Quartermaster Office is assigned a project or projects at only one site, the office is organized simply into the above sections. On the other hand, when a Constructing Quartermaster Office is assigned projects at various locations, it may be necessary to establish project offices at the site of the work, with an Assistant Constructing Quartermaster in charge.

PART XIII - WHAT THE CONSTRUCTION DIVISION HAS DONE

1. HURDLING NUMEROUS DIFFICULTIES and special problems, this great building program has met the initial requirements of national defense. Troop housing has been built and other defense projects have been started regardless of seasonal handicaps. Some mistakes--only natural in an emergency program as vast as this one--have been made.

2. A RAPID TEMPO of construction was maintained. The program accelerated so swiftly that the peak of employment--over 492,000 men on the job--was reached in an incredibly short time after money became available. In contrast to the usual time-lag in reaching peak employment on large private or public works construction jobs, this peak of employment was attained in less than five months. Moreover, it was reached in the dead of a tough winter, between January and February, 1941.

3. MAXIMUM CONSTRUCTION EFFICIENCY, of course, is obtained by having complete plans drawn up and careful engineering surveys and estimates made in advance. Then construction work proceeds at a less hectic pace. Naturally, it was not originally contemplated that the construction work would have to be done in the extremely short time in which it was--but the country's welfare demanded it.

DIFFICULTIES ENCOUNTERED

4. Bad weather hit the troop housing projects when roads were being completed. Mud resulted that bogged down anything on wheels,

and almost anything on lugs; even a man on foot would sink to his knees in the clutching gumbo. This difficulty was surmounted by the use of "mud sleds" hauled by special tractors.

5. Construction work went forward. Difficulties were met and overcome. Among the difficulties and problems encountered were: rough terrain, rock, soil conditions, the absence of natural drainage, lack of transportation, inadequate unloading facilities, insufficient land, inadequate water supply, sewage disposal plant problems, pumping station problems, electrical transmission problems, and additional problems occasioned by increases in the scope of work.

OBJECTIVES ACHIEVED

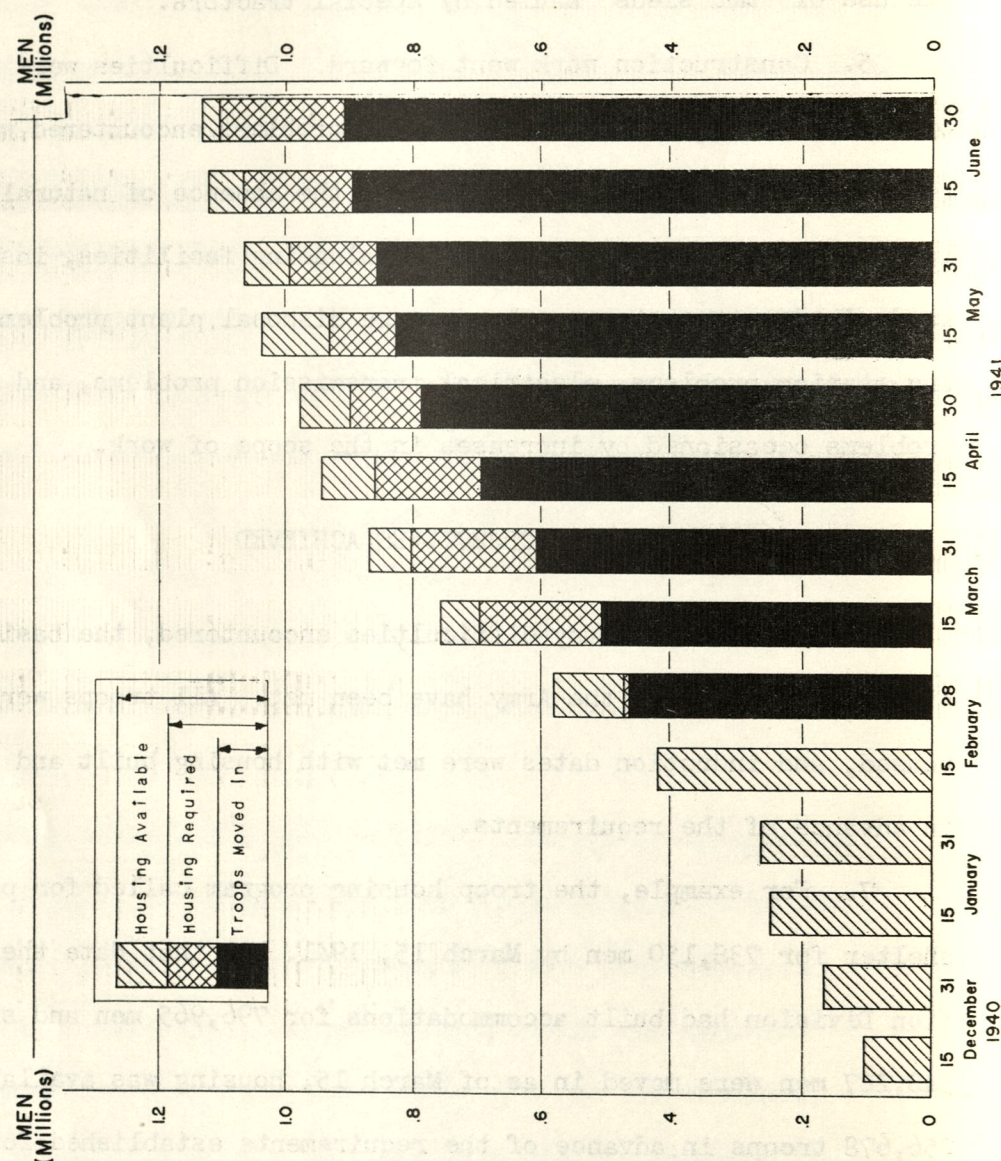
6. Despite the many difficulties encountered, the basic construction requirements of the Army have been met. All troops were properly housed, and induction dates were met with housing built and available in advance of the requirements.

7. For example, the troop housing program called for providing shelter for 738,150 men by March 15, 1941. On that date the Construction Division had built accommodations for 796,965 men and since only 540,287 men were moved in as of March 15, housing was available for 256,678 troops in advance of the requirements established for that date.

8. Similarly, on June 30, 1941, at the close of the fiscal year, the required troop housing under the emergency program called for accommodations for 1,181,525 men. On that date the Construction Division

STATUS OF HOUSING FOR ENLISTED MEN

Major Housing Program



Note: Figures Not Available for Housing Required and Troops Moved In Prior to February 28, 1941.
 J/Consists of Housing for Enlisted Men at the Original 45 Contonments and Tent Camps, 19 Replacement Training Centers, and 28 Recruit Reception Centers in the Continental United States.

had built troop housing available for 1,208,939 men. Since 960,265 troops had moved in, this meant that housing was available for 248,674 men in advance of requirements.

9. Vital defense plants and the facilities to properly service these defense projects are being built as rapidly as possible.

10. The building program carried on by the Construction Division during the fiscal year 1941, involved 459 projects scattered over the country at 250 different locations.

11. With the addition of new ordnance plants, expansion of some now underway, and new Quartermaster depots and other projects authorized for the fiscal year 1942, the total estimated cost of the emergency work undertaken by the Construction Division has passed the \$2,000,000,000 mark.

12. Ordering billions of dollars worth of construction, facilities and materials is in itself a huge undertaking. Specifications have to be prepared; bids, either formal or informal have to be sought; contractors have to be found who are able and willing to perform; quantities, sites and prices have to be determined.

13. Time--the most expensive commodity in the world--was more important than money if the Army was to achieve its initial objective--the translation of millions of troops on paper to troops actually housed and provided with proper training facilities. That initial objective has been achieved and work is now well underway on the other defense building objectives.

14. Experience has taught the Construction Division. The vast program that it has carried through during the past year has trained its personnel in the complicated details of speeding to completion manufacturing facilities which are the backbone of defense. The Construction Division of the Quartermaster Corps is ready to meet any demands the American people shall consider necessary in building for the defense of the United States.

APPENDIX

Locations within the Continental United States where building projects were under construction or completed by the Construction Division at the close of the fiscal year, 1941:

Aberdeen Proving Ground, Aberdeen, Maryland
 Adams, Fort, Newport, Rhode Island (Narragansett H.D.)
 Alabama Ordnance Works, Sylacauga, Alabama
 Alexandria QM Depot, Alexandria, Virginia
 Allen, Fort Ethan, Vermont

 Andrews, Fort, Massachusetts (Boston H.D.)
 Anniston Ordnance Depot, Talladega, Alabama
 Arlington Cantonment, Arlington, Virginia
 Arlington QM Depot, Alexandria, Virginia
 Arlington National Cemetery, Arlington, Virginia

 Armor Piercing Core Plant, St. Louis, Missouri
 Army and Navy General Hospital, Hot Springs, Arkansas
 Army Medical Center, Washington, D. C.
 Army War College, Washington, D. C.
 Atlanta General Depot, Atlanta, Georgia

 Atlanta General Hospital
 Augusta Arsenal, Augusta, Georgia
 Baker, Fort, San Francisco, California (San Francisco H.D.)
 Banks, Fort, Boston, Massachusetts, (Boston H.D.)
 Berkeley, Camp, Abilene, Texas

 Barnes General Hospital, Vancouver, Washington
 Barrancas, Fort, Florida (Pensacola H.D.)
 Barry, Fort, Fort Baker, California (San Francisco H.D.)
 Baytown Ordnance Works, Baytown, Texas
 Beaumont, William, General Hospital, El Paso, Texas

 Beauregard, Camp, Alexandria, Louisiana
 Beauregard Landing Field, Camp
 Belvoir, Fort, Virginia
 Benicia Arsenal, Benicia, California
 Benning, Fort, Georgia

 Biggs Field, Fort Bliss, Texas
 Billings General Hospital, Ft. Benjamin Harrison, Indiana
 Blanding, Camp, Starke, Florida
 Bliss, Fort, Texas
 Bowie, Camp, Brownwood, Texas

Brady, Fort, Sault Ste. Marie, Michigan
 Bragg, Fort, North Carolina
 Brown, Fort, Brownsville, Texas
 Brownwood Airport, Fort Bowie, Texas
 Callan, Camp, San Diego, California

Canby, Fort, Ilwaco, Washington (Columbia H.D.)
 Carlisle Barracks, Carlisle, Pennsylvania
 Casey, Fort, Coupeville, Washington (Puget Sound H. D.)
 Charleston General Hospital
 Charleston QM Project, Charleston, South Carolina

Charleston Ordnance Depot, Charleston, S. C.
 Charleston Overseas Discharge and Replacement Depot, Charleston, S. C.
 Charlotte QM Depot, Charlotte, North Carolina
 Claiborne, Camp, Alexandria, Louisiana
 Clark, Fort, Brackettville, Texas

Columbia, Fort, McGowan, Washington (Columbia H. D.)
 Columbus General Depot, Columbus, Ohio
 Constitution, Fort, New Castle, New Hampshire (Portsmouth H.D.)
 Coosa River Ordnance Plant, Talladega, Alabama
 Crockett, Fort, Galveston, Texas (Galveston H.D.)

Croft, Camp, Spartanburg, South Carolina
 Cronkhite, Fort, San Francisco, California (San Francisco H.D.)
 Curtis Bay Ordnance Depot, Baltimore, Maryland
 Custer, Fort, Battle Creek, Michigan
 Davis, Camp, Wilmington, North Carolina

Dawes, Fort, Massachusetts (Boston H. D.)
 Delaware Ordnance Depot, Pedricktown, New Jersey
 Denver Ordnance Plant, Denver, Colorado
 Des Moines, Fort, Des Moines, Iowa
 Detroit Tank Arsenal, Detroit, Michigan

Devens, Fort, Massachusetts
 Devens, Fort, Air Field, Massachusetts
 Devens, Fort, General Hospital
 Dix, Fort, New Jersey
 Dix, Fort, General Hospital

Douglas, Fort, Utah
 Du Pont, Fort, Delaware City, Delaware (Delaware H.D.)
 Duvall, Fort, Massachusetts (Boston H.D.)
 Edgewood Arsenal, Maryland
 Edwards, Camp, Falmouth, Massachusetts

Elwood Ordnance Plant, Joliet, Illinois
 Erie Proving Ground, Lacarne, Ohio (Erie Ordnance Depot)
 Eustis, Fort, Virginia
 Fitzsimons General Hospital, Denver, Colorado
 Flagler, Fort, Port Townsend, Washington (Puget Sound H.D.)

Forrest, Camp, Tullahoma, Tennessee
 Fourth Corps Headquarters, Jacksonville, Florida
 Foster, Fort, Kittery, Maine (Portsmouth H.D.)
 Fostoria Plant, Fostoria, Ohio
 Frankford Arsenal, Philadelphia, Pennsylvania

Funston, Fort, San Francisco, California (San Francisco H.D.)
 Gadsden Ordnance Plant, Gadsden, Alabama
 Getty, Fort, Jamestown, Rhode Island (Narragansett H.D.)
 Golden Gate National Cemetery, San Bruno, California
 Grant, Camp, Rockford, Illinois

Gray Field, Fort Lewis, Washington
 Haan, Camp, Riverside, California
 Hamilton Field, California
 Hamilton, Fort, Brooklyn, New York (Southern New York H.D.)
 Hancock, Fort, New Jersey (Sandy Hook H.D.)

Harrison, Fort Benjamin, Indiana
 Harrison, Fort Benjamin, General Hospital
 Hayes, Fort, Columbus, Ohio
 Heath, Fort, Boston, Massachusetts, (Boston H.D.)
 Hoff General Hospital, Santa Barbara, California

Holabird Quartermaster Depot, Baltimore, Maryland
 Hoosier Ordnance Plant, Charlestown, Indiana
 Houston, Fort Sam, San Antonio, Texas
 Huachuca, Fort, Arizona
 Hulen, Camp, Palacios, Texas

Indiana Ordnance Works, Charlestown, Indiana
 Indiantown Gap Military Reservation, Pennsylvania
 Iowa Ordnance Plant, Burlington, Iowa
 Jackson, Fort, South Carolina
 Jackson Barracks, New Orleans, Louisiana

Jay, Fort, Governors Island, New York
 Jefferson Barracks, St. Louis, Missouri
 Jefferson Proving Ground, Madison, Indiana
 Jeffersonville Quartermaster Depot, Jeffersonville, Indiana
 Kankakee Ordnance Works, Joliet, Illinois

Kansas City Quartermaster Depot, Kansas City, Missouri
 Kearney, Fort, Saunterstown, Rhode Island (Narragansett H.D.)
 Kellogg Airport, Fort Custer, Michigan
 Kingsbury Ordnance Plant, La Porte, Indiana
 Knox, Fort, Kentucky

LaGarde General Hospital, New Orleans, Louisiana
 Lake City Ordnance Plant, Independence, Missouri
 Langdon, Camp, New Hampshire (Portsmouth H.D.)
 Lawson General Hospital, Chamblee, Georgia
 Lawson Field, Georgia

Leavenworth, Fort, Kansas
 Lee, Camp, Virginia
 Letterman General Hospital, San Francisco, California
 Levett, Fort, Portland, Maine (Portland H.D.)
 Lewis, Fort, Washington

Lexington Signal Depot, Lexington, Kentucky
 Livingston, Camp, Alexandria, Louisiana
 Lockett, Camp, Campo, California
 Lovell General Hospital, Ft. Devens, Massachusetts
 MacArthur, Fort, San Pedro, California

MacQuaide, Camp, Watsonville, California
 McClellan, Fort, Anniston, Alabama
 McDowell, Fort, Angel Island, California
 McKinley, Fort, Portland, Maine (Portland H.D.)
 McPherson, Fort, Atlanta, Georgia

Madison Barracks, Sackets Harbor, New York
 Mason, Fort, San Francisco, California
 Meade, Fort, South Dakota
 Meade, Fort George G., Maryland
 Memphis General Depot, Memphis, Tennessee

Michie, Fort, New York (Long Island H.D.)
 Midland Plant, Midland, Michigan
 Milan Ammunition Depot, Milan, Tennessee
 Miley, Fort, San Francisco, California (San Francisco H.D.)
 Mojave Antiaircraft Range, Barstow, California

Monmouth, Fort, Oceanport, New Jersey
 Monroe, Fort, Virginia (Chesapeake H.D.)
 Monterey, Presidio of, California
 Morgantown Ordnance Plant, Morgantown, West Virginia
 Moultrie, Fort, Moultrieville, South Carolina (Charleston H.D.)

Myer, Fort, Virginia
 New Cumberland General Depot, New Cumberland, Pennsylvania
 Nansemond Ordnance Depot, Portsmouth, Virginia
 New River Ordnance Plant, Pulaski, Virginia
 Niagara Falls Plant, Niagara Falls, New York

Niagara, Fort, Youngstown, New York
 Normoyle Quartermaster Depot, San Antonio, Texas
 Oakland, Port and General Depot, Oakland, California
 Ogden Ordnance Depot, Ogden, Utah
 Oglethorpe, Fort, Georgia

Ohio River Ordnance Works, West Henderson, Kentucky
 Omaha, Fort, Nebraska
 Ontario, Fort, Oswego, New York
 Ord, Fort, Monterey, California
 O'Reilly General Hospital, Springfield, Missouri

Paso Robles Airport, San Luis Obispo, California
 Peay, Camp (See Forrest)
 Pendleton, Camp, Virginia Beach, Va. (Chesapeake H.D.)
 Philadelphia Armor Plate Plant, Philadelphia, Pennsylvania
 Philadelphia Quartermaster Depot, Philadelphia, Pennsylvania

Picatinny Arsenal, Dover, New Jersey
 Pine Camp, Watertown, New York
 Plum Brook Ordnance Plant, Sandusky, Ohio
 Polk, Camp, Leesville, Louisiana
 Pope Field, Fort Bragg, North Carolina

Portland Harbor Defense, Maine
 Post Field, Fort Sill, Oklahoma
 Preble, Fort, Portland, Maine (Portland H.D.)
 Radford Ordnance Works, Radford, Virginia
 Raritan Arsenal, Metuchen, New Jersey

Ravenna Ordnance Depot, Ravenna, Ohio
 Ravenna Ordnance Plant, Ravenna, Ohio
 Revere, Fort, Hull, Massachusetts (Boston H.D.)
 Richmond General Depot, Richmond, Virginia
 Riley, Fort, Kansas

Ringgold, Fort, Texas
 Roberts, Camp, San Miguel, California
 Robinson, Camp Joseph T., Arkansas
 Rock Island Arsenal, Rock Island, Illinois
 Rodman, Fort, New Bedford, Massachusetts (New Bedford H.D.)

Rosecrans, Fort, Point Loma, California (San Diego, H.D.)
 Ruckman, Fort, Massachusetts (Boston H.D.)
 Russell, Fort, D.A., Marfa, Texas
 St. Louis Plant, Monsanto (East St. Louis) Illinois
 St. Louis Ordnance Plant, St. Louis, Missouri

San Antonio General Depot, San Antonio, Texas
 San Francisco, Presidio of, California
 San Luis Obispo, Camp, San Luis Obispo, California
 Saulsbury, Fort, Milford, Delaware (Delaware H.D.)
 Savanna Ordnance Depot, Proving Grounds, Illinois

Schenectady General Depot, Schenectady, New York
 Screven, Fort, Georgia
 Scott, Fort Winfield, California (San Francisco H.D.)
 Seattle, QM Depot, Seattle, Washington
 Seattle, Port of Embarkation, Washington

Seneca Ordnance Depot, Kendala, New York
 Shelby, Camp, Hattiesburg, Mississippi
 Sheridan, Fort, Illinois
 Sibert, Camp, Boulder City, Nevada
 Sill, Fort, Oklahoma

Snelling, Fort, Minnesota
 Springfield Armory, Springfield, Massachusetts
 Springfield General Hospital (See O'Reilly)
 Standish, Fort, Boston, Massachusetts (Boston H.D.)
 Stanley, Camp, Texas

Stark, Fort, Portsmouth, New Hampshire (Portsmouth H.D.)
 Stevens, Fort, Oregon (Columbia H.D.)
 Stewart, Camp, Hinesville, Georgia (Savannah Antiaircraft Firing Center)
 Story, Fort, Cape Henry, Virginia (Chesapeake H.D.)
 Strong, Fort, Boston, Massachusetts (Boston H.D.)

Terry, Fort, New York (Long Island H.D.)
 Thomas, Fort, Newport, Kentucky
 Tilden, Fort, Rockaway Park, New York (Sandy Hook H.D.)
 Tilton General Hospital, Fort Dix, New Jersey
 Totten, Fort (Eastern N. Y. H.D.) New York

Umatilla Ordnance Depot, Hermiston, Oregon
 Upton, Camp, New York
 Utah General Depot, Ogden, Utah
 Vancouver Barracks, Vancouver, Washington
 Wadsworth, Fort, Rosebank, New York (Southern New York H.D.)

Wallace, Camp, Galveston, Texas
 Warren, Fort, Boston, Massachusetts (Boston H.D.)
 Warren, Fort Francis E., Wyoming
 Watertown Arsenal, Massachusetts
 Watervliet Arsenal, Watervliet, New York

Wayne, Fort, Quartermaster Depot, Detroit, Michigan
 Weldon Spring Ordnance Works, Weldon Spring, Missouri
 Wetherill, Fort, Jamestown, Rhode Island (Narragansett H.D.)
 Wheeler, Camp, Macon, Georgia
 Williams, Fort, Camp Cottage, Maine (Portland H.D.)

Wilmington (See Davis)
 Wingate Ordnance Depot, Wingate, New Mexico
 Wolf Creek Ordnance Plant, Milan, Tennessee
 Wolters, Camp, Mineral Wells, Texas
 Wood, Fort Leonard K., Tribune, Missouri (Seventh Corps Area)

Worden, Fort, Port Townsend, Washington (Puget Sound H.D.)
 Wright, Fort, H.G., New York (Long Island H.D.)

TABLE NO. 1

Number of Projects and Estimated Total Cost, By Types
 June 30, 1941

| TYPE OF PROJECT | PROJECTS | | ESTIMATED COST | |
|---|----------|---------|-----------------|---------|
| | Number | Percent | Amount | Percent |
| All Types | 459 | 100 | \$1,556,623,356 | 100 |
| Camps and Cantonments | 50 | 10.9 | 628,209,765 | 40.4 |
| Reception Centers | 47 | 10.2 | 8,359,545 | 0.5 |
| Replacement Centers | 19 | 4.1 | 98,052,921 | 6.3 |
| Harbor Defenses | 52 | 11.3 | 24,295,651 | 1.6 |
| Air Corps | 16 | 3.5 | 34,580,293 | 2.2 |
| Miscellaneous Troop Facilities | 144 | 31.4 | 89,560,918 | 5.7 |
| General Hospitals | 9 | 2.0 | 20,989,441 | 1.3 |
| Ordnance Manufacturing | 33 | 7.2 | 496,211,545 | 31.9 |
| Ordnance Ammunition Storage Depots | 7 | 1.5 | 52,201,995 | 3.4 |
| Ordnance Field Service Facilities | 8 | 1.7 | 4,866,141 | 0.3 |
| Chemical Warfare Plants | 10 | 2.2 | 7,378,791 | 0.5 |
| Storage Depots - Other than Ammunition and Explosives | 26 | 5.7 | 72,913,965 | 4.7 |
| Miscellaneous Projects | 38 | 8.3 | 19,002,385 | 1.2 |

TABLE NO. 2

Estimated Cost and Value of Work in Place, By Types of Projects

June 30, 1941

| TYPES OF PROJECTS | ESTIMATED COST | | VALUE OF WORK SCHEDULED TO BE IN PLACE ON June 30, 1941 | | VALUE OF WORK IN PLACE ON June 30, 1941 | |
|---|-----------------|---------|---|---------|---|---------|
| | Amount | Percent | Amount | Percent | Amount | Percent |
| All Types | \$1,556,623,356 | 100.0 | \$1,049,398,769 | 100.0 | \$1,043,737,019 | 100.0 |
| Camps and Cantonments | 628,209,765 | 40.4 | 584,322,991 | 55.7 | 587,793,244 | 56.3 |
| Reception Centers | 8,359,545 | 0.5 | 6,966,017 | 0.6 | 6,958,937 | 0.7 |
| Replacement Centers | 98,052,921 | 6.3 | 96,460,465 | 9.2 | 96,578,328 | 9.3 |
| Harbor Defenses | 24,295,651 | 1.6 | 21,428,914 | 2.1 | 21,381,778 | 2.0 |
| Air Corps | 34,580,293 | 2.2 | 18,029,851 | 1.7 | 17,904,927 | 1.7 |
| Miscellaneous Troop Facilities | 89,560,918 | 5.7 | 15,748,675 | 1.5 | 14,202,522 | 1.4 |
| General Hospitals | 20,989,441 | 1.3 | 19,242,872 | 1.8 | 19,506,266 | 1.9 |
| Ordnance Manufacturing | 496,211,545 | 31.9 | 251,408,650 | 24.0 | 244,594,510 | 23.4 |
| Ordnance Ammunition Storage Depots | 52,201,995 | 3.4 | 5,143,170 | 0.5 | 5,143,170 | 0.5 |
| Ordnance Field Service Facilities | 4,866,141 | 0.3 | 369,464 | 0.04 | 402,413 | 0.04 |
| Chemical Warfare Plants | 7,378,791 | 0.5 | 2,545,365 | 0.2 | 2,066,483 | 0.2 |
| Storage Depots—other than Ammun. & Explo. | 72,913,965 | 4.7 | 20,121,799 | 1.9 | 19,662,685 | 1.9 |
| Miscellaneous Projects | 19,002,385 | 1.2 | 7,610,536 | 0.7 | 7,657,376 | 0.7 |

TABLE NO. 3

Number and Estimated Total Cost of Projects by Status of Completion

June 30, 1941

| STATUS OF COMPLETION | PROJECTS | | ESTIMATED COST | |
|----------------------|----------|---------|-----------------|---------|
| | Number | Percent | Amount | Percent |
| All Projects | 459 | 100 | \$1,556,623,356 | 100 |
| Not Started | 35 | 7.6 | 26,867,053 | 1.7 |
| Under Construction | 324 | 70.6 | 1,228,873,648 | 79 |
| Completed | 100 | 21.8 | 300,882,655 | 19.3 |

Totals of contracts are based on information received by the Control Section through the close of business June 30, 1941.

TABLE NO. 4

Housing Facilities for Enlisted Men by Required Dates
and by Dates of Actual Availability

June 30, 1941

| DATE | CAPACITY OF HOUSING | | TROOPS MOVED IN | HOUSING AVAILABLE IN ADVANCE OF REQUIREMENTS |
|-------------|---------------------|-----------|--------------------|---|
| | Available | Required | | |
| December 15 | 112,164 | | | |
| December 31 | 176,477 | | | |
| January 15 | 261,781 | | | |
| January 31 | 290,561 | | | |
| February 15 | 452,175 | | | |
| February 28 | 611,406 | 504,083 | 481,453 | 129,953 |
| March 15 | 796,965 | 738,150 | 540,287 | 256,678 |
| March 31 | 915,882 | 849,007 | 643,898 | 271,984 |
| April 15 | 1,000,911 | 914,055 | 734,278 | 266,633 |
| April 30 | 1,034,306 | 955,090 | 831,823 | 202,483 |
| May 15 | 1,104,199 | 995,702 | 870,739 | 233,460 |
| May 31 | 1,135,593 | 1,062,257 | 903,686 | 231,907 |
| June 15 | 1,195,674 | 1,141,806 | 944,559 | 251,115 |
| June 30 | 1,208,939 | 1,181,525 | 960,265 | 248,674 |

Totals of contracts are based on information received by the
Control Section through the close of business June 30, 1941.

TABLE NO. 5
CONTRACTS AWARDED OR APPROVED
NUMBER AND AMOUNT 1/
BY STATE AND TYPE OF CONTRACT

| STATE | ALL CONTRACTS | | ADVERTISED LUMP SUM | |
|----------------|-------------------------------|-----------------|---------------------|---------------|
| | Awarded or Approved Number | Amount | Awarded Number | Amount |
| TOTAL | 1,266 | \$1,041,554,478 | 942 | \$143,494,687 |
| Alabama | 15 | 70,977,624 | 4 | 405,760 |
| Arizona | 5 | 1,924,035 | 3 | 28,088 |
| Arkansas | 14 | 13,151,349 | 6 | 612,683 |
| California | 132 | 55,070,026 | 105 | 13,813,326 |
| Colorado | 16 | 17,571,473 | 13 | 3,511,467 |
| Delaware | 7 | 1,013,230 | 7 | 1,013,230 |
| Florida | 5 | 11,189,897 | 3 | 1,400,830 |
| Georgia | 71 | 33,089,474 | 59 | 17,209,990 |
| Illinois | 57 | 63,604,352 | 49 | 10,707,070 |
| Indiana | 36 | 115,226,219 | 26 | 6,424,383 |
| Iowa | 4 | 13,585,994 | 2 | 92,559 |
| Kansas | 14 | 5,489,006 | 9 | 775,285 |
| Kentucky | 23 | 30,918,394 | 16 | 3,399,764 |
| Louisiana | 23 | 23,202,722 | 11 | 449,505 |
| Maine | 18 | 902,974 | 17 | 895,774 |
| Maryland | 21 | 23,277,611 | 15 | 2,477,523 |
| Massachusetts | 113 | 24,554,848 | 99 | 4,168,313 |
| Michigan | 57 | 32,121,237 | 45 | 5,973,499 |
| Minnesota | 4 | 315,198 | 2 | 170,865 |
| Mississippi | 14 | 13,164,374 | 10 | 1,403,366 |
| Missouri | 15 | 92,534,795 | 4 | 911,883 |
| Nebraska | 1 | 26,984 | 1 | 26,984 |
| Nevada | 1 | 364,313 | 1 | 364,313 |
| New Hampshire | 9 | 661,688 | 9 | 661,688 |
| New Jersey | 73 | 22,994,839 | 58 | 16,235,788 |
| New Mexico | 3 | 8,509,632 | | |
| New York | 59 | 18,102,089 | 52 | 5,193,070 |
| North Carolina | 16 | 36,611,199 | 10 | 1,576,628 |
| Ohio | 22 | 38,542,834 | 14 | 4,078,890 |
| Oklahoma | 35 | 6,090,874 | 30 | 4,927,376 |

1/ Totals of contracts are based on information received by the
Control Section through the close of business June 30, 1941.

| STATE | ALL CONTRACTS | | ADVERTISED LUMP SUM | |
|------------------|-------------------------------|--------------|---------------------|------------|
| | Awarded or Approved Number | Amount | Awarded Number | Amount |
| Oregon | 10 | \$ 8,851,463 | 3 | \$ 183,127 |
| Pennsylvania | 29 | 20,539,780 | 18 | 2,155,990 |
| Rhode Island | 22 | 1,461,607 | 21 | 1,460,007 |
| South Carolina | 28 | 28,038,380 | 17 | 4,110,349 |
| South Dakota | 5 | 219,062 | 4 | 160,304 |
| Tennessee | 11 | 32,350,468 | 3 | 277,187 |
| Texas | 93 | 59,286,414 | 66 | 10,542,866 |
| Utah | 32 | 6,015,757 | 32 | 6,015,757 |
| Vermont | 12 | 1,275,169 | 8 | 400,802 |
| Virginia | 65 | 74,884,346 | 39 | 3,921,881 |
| Washington | 59 | 17,464,569 | 38 | 4,117,659 |
| West Virginia | 1 | 15,810,409 | - | - |
| Wyoming | 8 | 2,915,784 | 5 | 586,872 |
| District of Col. | 5 | 629,985 | 5 | 629,985 |
| Various | 3 | 22,001 | 3 | 22,001 |

| STATE | NEGOTIATED LUMP SUM | | FIXED-FEE CONTRACTS APPROVED | |
|----------------|---------------------|--------------|------------------------------|---|
| | Awarded Number | Amount | Construction Number | Architect-Engineer Amount 2/ Number Amount 3/ |
| TOTAL | 106 | \$41,092,427 | 104 | \$835,139,845 |
| Alabama | 1 | 48,993 | 5 | 69,893,869 |
| Arizona | - | - | 1 | 1,805,950 |
| Arkansas | 2 | 13,000 | 2 | 12,192,303 |
| California | 8 | 6,632,229 | 8 | 33,060,922 |
| Colorado | 1 | 242,261 | 1 | 13,206,390 |
| Delaware | - | - | - | - |
| Florida | - | - | - | - |
| Georgia | 2 | 91,066 | 1 | 9,491,304 |
| Illinois | 3 | 553,278 | 5 | 15,121,868 |
| Indiana | - | - | 4 | 52,209,004 |
| Iowa | - | - | 5 | 106,911,813 |
| Kansas | - | - | - | - |
| Kentucky | 3 | 167,935 | 1 | 13,383,015 |
| Louisiana | 1 | 2,500 | 1 | 4,004,380 |
| Maine | 3 | 244,519 | 3 | 26,902,846 |
| Maryland | 1 | 7,200 | 4 | 21,168,981 |
| Massachusetts | - | - | - | - |
| Michigan | 5 | 189,339 | 3 | 19,797,083 |
| Minnesota | 10 | 4,063,366 | 4 | 18,822,017 |
| Mississippi | 2 | 144,333 | 2 | 22,084,372 |
| Missouri | 2 | 5,000 | - | - |
| Nebraska | 2 | 1,717,500 | 1 | 11,396,008 |
| Nevada | - | - | 4 | 88,313,435 |
| New Hampshire | - | - | - | - |
| New Jersey | 9 | 2,196,060 | - | - |
| New Mexico | - | - | 2 | 4,283,314 |
| New York | 2 | 217,884 | 1 | 8,378,000 |
| North Carolina | - | - | 3 | 12,345,281 |
| Ohio | - | - | 3 | 31,204,041 |
| Oklahoma | 3 | 11,848 | 4 | 33,404,898 |
| | | | 1 | 1,076,650 |

2/ Combined Architect-Engineer and Construction Contracts are included.

3/ Amount of the Architect-Engineer

3/ Amount of the Architect-Engineer's fee and the latest Field Estimate of reimbursable costs to be incurred by the Architect-Engineer are included.

Table No. 5 Continued.

| STATE | NEGOTIATED LUMP SUM | | FIXED-FEE CONTRACTS APPROVED | | | |
|------------------|---------------------|------------|------------------------------|--------------|------------------------------|------------|
| | Awarded Number | Amount | Construction Number | Amount 2/ | Architect-Engineer Number | Amount 3/ |
| Oregon | 2 | \$ 464,477 | 1 | \$ 7,651,497 | 4 | \$ 552,362 |
| Pennsylvania | 2 | 7,845 | 5 | 17,462,250 | 4 | 913,695 |
| Rhode Island | 1 | 1,600 | | - | | - |
| South Carolina | 3 | 11,437,462 | 4 | 12,132,689 | 4 | 357,880 |
| South Dakota | 1 | 58,758 | | - | | - |
| Tennessee | 1 | 2,500 | 3 | 30,692,549 | 4 | 1,378,232 |
| Texas | 7 | 291,719 | 12 | 47,197,965 | 8 | 1,253,864 |
| Utah | | - | | - | | - |
| Vermont | 4 | 874,367 | | - | | - |
| Virginia | 9 | 240,368 | 6 | 69,575,424 | 11 | 1,146,673 |
| Washington | 16 | 11,165,020 | 2 | 2,020,921 | 3 | 160,969 |
| West Virginia | | - | 1 | 15,810,409 | | - |
| Wyoming | | - | 1 | 2,138,397 | 2 | 190,515 |
| District of Col. | | - | | - | | - |
| Various | | - | | - | | - |

TABLE NO. 6

Status of All Funds Available to the Construction Division

June 30, 1941

| APPROPRIATION | TOTAL |
|--|--------------------|
| Military Appropriation Act of 1941 | |
| First Supplemental National Defense Appropriation Act of 1941 | \$ 29,463,823.00 |
| Second Supplemental National Defense Appropriation Act of 1941 | 5,200,000.00 |
| Third Supplemental National Defense Appropriation Act of 1941 | 97,914,722.00 |
| Fifth Supplemental National Defense Appropriation Act of 1941 | 31,380,000.00 |
| Funds for Construction of Buildings, Utilities & Appurtenances | 1,534,384,409.00 |
| Total Funds From Other Agencies | 20,009,400.00 |
| Air Corps Army | 508,661,169.54 |
| Chemical Warfare Service, Army | 1,629,319.44 |
| Coast Artillery Corps | 20,037,184.20 |
| Corps of Engineers | 27,131.00 |
| Navy Department | 4,832,429.14 |
| National Defense Housing | 10,000.00 |
| Ordnance Department | 2,887,500.00 |
| National Guard Bureau | 467,846,636.60 |
| Signal Corps | 246,510.86 |
| Work Projects Administration | 29,588.30 |
| | 11,114,870.00 |
| Less Funds Transferred to Corps of Engineers | |
| Total Available for Construction Work | 551,296,943.73 |
| Total Available for Maintenance & Repair | \$1,675,716,579.81 |
| Total Available for Acquisition of Land & Leases | 77,359,634.71 |
| All Funds Available to the Construction Division | 39,871,055.00 |
| | \$1,792,947,269.52 |

TABLE NO. 7

Employment on Construction Projects, by Employer and by Weeks ^{1/}

July 1940 through June 1941

| PERIOD | TOTAL | CONTRACTOR | CQM ^{2/} | A/E | WPA | P & H |
|----------------|---------|------------|-------------------|-------|-------|--------|
| 1940, July Av. | 5,380 | | | | | |
| Aug. Av. | 7,172 | | | | | |
| Sept. Av. | 19,103 | | | | | |
| Oct. Av. | 78,855 | | | | | |
| Nov. Av. | 255,592 | | | | | |
| Dec. Av. | 396,255 | | | | | |
| 1941, Jan. 4 | 388,281 | | | | | |
| 11 | 406,296 | 373,560 | 18,275 | 9,078 | 5,383 | |
| 18 | 432,231 | 397,347 | 19,355 | 8,330 | 7,199 | |
| 25 | 467,108 | 429,866 | 20,890 | 8,612 | 7,740 | |
| Jan. Av. | 423,479 | | | | | |
| Feb. 1 | 492,043 | 454,820 | 21,128 | 8,542 | 7,553 | |
| 8 | 488,612 | 451,067 | 21,462 | 8,628 | 7,455 | |
| 15 | 477,639 | 438,280 | 22,416 | 9,071 | 7,872 | |
| 22 | 480,354 | 443,881 | 11,945 | 9,084 | 5,106 | 10,338 |
| Feb. Av. | 484,662 | | | | | |
| Mar. 1 | 472,170 | 435,963 | 11,463 | 8,710 | 6,072 | 9,962 |
| 8 | 428,403 | 391,680 | 11,552 | 8,614 | 6,929 | 9,628 |
| 15 | 401,305 | 364,710 | 11,394 | 8,408 | 8,973 | 7,820 |
| 22 | 365,446 | 331,893 | 11,314 | 7,848 | 6,209 | 8,182 |
| 29 | 355,897 | 323,143 | 10,915 | 7,802 | 5,621 | 8,416 |
| Mar. Av. | 404,644 | | | | | |
| Apr. 5 | 318,799 | 288,631 | 10,730 | 7,382 | 5,560 | 6,496 |
| 12 | 302,678 | 269,996 | 10,767 | 7,496 | 3,601 | 10,818 |
| 19 | 299,108 | 254,608 | 10,446 | 7,629 | 5,783 | 9,642 |
| 26 | 277,335 | 244,559 | 10,298 | 7,570 | 4,504 | 10,404 |
| Apr. Av. | 296,730 | | | | | |
| May 3 | 273,229 | 239,717 | 10,454 | 7,450 | 4,427 | 11,181 |
| 10 | 255,852 | 224,526 | 10,338 | 7,160 | 4,331 | 9,497 |
| 17 | 255,414 | 224,710 | 10,219 | 7,386 | 4,102 | 9,007 |
| 24 | 251,856 | 220,926 | 10,326 | 7,136 | 4,204 | 9,264 |
| 31 | 244,884 | 213,361 | 10,432 | 6,907 | 3,870 | 10,314 |
| May Av. | 256,247 | | | | | |
| June 7 | 239,845 | 207,700 | 10,649 | 7,106 | 4,915 | 9,475 |
| June 14 | 237,938 | 206,469 | 10,980 | 6,948 | 3,490 | 10,051 |
| June 21 | 242,873 | 210,366 | 10,865 | 6,962 | 4,205 | 10,475 |
| June 28 | 250,634 | 217,482 | 11,135 | 6,762 | 2,305 | 12,950 |
| June Av. | 242,823 | | | | | |

^{1/} From July, 1940, through January 4, 1941, data are for persons paid from War Department appropriations. From January 11, 1941, to date, the figures include persons paid from W.P.A. and P.W.A. funds.

^{2/} Prior to February 22, the figures include Purchase and Hire.

TABLE NO. 8

Physical Accomplishments On Housing and Hospitalization Projects

Year Ending June 30, 1941

| ITEM | QUANTITY | SQUARE FEET |
|------------------------------------|----------|-------------|
| HOUSING FACILITIES | | |
| Tent Frames | | |
| Total Required | | |
| Total Completed | 92,884 | 22,742,513 |
| Barracks | | |
| 63-Man | | |
| Total Required | | |
| Total Completed | 13,760 | 65,846,329 |
| Other Capacity | | |
| Total Required | | |
| Total Completed | 12,901 | 62,085,763 |
| Officers' Quarters and Tent Frames | | |
| Total Required | | |
| Total Completed | 505 | 1,653,276 |
| | 270 | 948,272 |
| | | |
| | 8,470 | 9,022,421 |
| | 6,657 | 7,876,103 |
| SUPPLY FACILITIES | | |
| Mess Halls and Cafeterias | | |
| Total Required | | |
| Total Completed | 7,198 | 17,354,328 |
| | 6,812 | 16,229,098 |
| Warehouses and Storehouses | | |
| Total Required | | |
| Total Completed | 3,793 | 13,581,229 |
| | 3,403 | 12,385,709 |
| Bakeries and Cold Storage | | |
| Total Required | | |
| Total Completed | 276 | 1,168,930 |
| | 222 | 962,794 |
| HOSPITALS | | |
| Total Required | | |
| Total Completed | 3,954 | 14,916,522 |
| Number of Beds - 50,344 | 3,500 | 12,801,122 |

| ITEM | QUANTITY | SQUARE FEET |
|--|----------|-------------|
| CHAPELS | | |
| Total Required | 478 | 2,524,318 |
| Total Completed | | |
| RECREATIONAL FACILITIES | | |
| Theatres | | |
| Total Required | 194 | 2,020,320 |
| Total Completed | 138 | 1,201,916 |
| Other | | |
| Total Required | 6,335 | 10,831,221 |
| Total Completed | 3,493 | 6,430,809 |
| LAUNDRIES | | |
| Total Required | 50 | 1,618,440 |
| Total Completed | 37 | 1,282,479 |
| ADMINISTRATION AND MAINTENANCE BUILDINGS | | |
| Total Required | 2,034 | 4,364,853 |
| Total Completed | 1,789 | 3,727,648 |
| MISCELLANEOUS | | |
| Total Required | 12,929 | 29,580,638 |
| Total Completed | 10,228 | 21,476,976 |

Physical Accomplishments On General Storage and Ordnance Projects
Year Ending June 30, 1941

| ITEM | QUANTITY | SQUARE FEET |
|--------------------------------|----------|-------------|
| INDUSTRIAL FACILITIES | | |
| Manufacturing | | |
| Total Required | 1,137 | 9,597,538 |
| Total Completed | 441 | 2,385,471 |
| Assembly | | |
| Total Required | 1,507 | 5,362,554 |
| Total Completed | 295 | 1,369,695 |
| Power | | |
| Total Required | 64 | 465,687 |
| Total Completed | 25 | 232,515 |
| GENERAL STORAGE FACILITIES | | |
| Total Required | 158 | 11,704,249 |
| Total Completed | 29 | 1,226,050 |
| ORDNANCE STORAGE FACILITIES | | |
| Inert | | |
| Total Required | 248 | 5,009,716 |
| Total Completed | 67 | 1,112,478 |
| Active | | |
| Total Required | 5,566 | 11,994,048 |
| Total Completed | 587 | 1,622,029 |
| TESTING FACILITIES | | |
| Total Required | 68 | 632,874 |
| Total Completed | 4 | 10,791 |
| ADMINISTRATIVE AND MAINTENANCE | | |
| Total Required | 733 | 3,842,038 |
| Total Completed | 112 | 890,942 |
| MISCELLANEOUS | | |
| Total Required | 846 | 2,803,828 |
| Total Completed | 160 | 143,783 |

TABLE NO. 8B

Physical Accomplishments
Utilities

Year Ending June 30, 1941

| TYPE | UNIT OF MEASUREMENT | NUMBER OF UNITS |
|------------------------|----------------------|-----------------|
| WATER LINES | Feet | |
| Total Required | | 12,177,320 |
| Total Completed | | 10,334,795 |
| GAS LINES | Feet | |
| Total Required | | 4,145,981 |
| Total Completed | | 3,691,016 |
| ELECTRIC SERVICE LINES | Feet | |
| Total Required | | 22,347,384 |
| Total Completed | | 18,284,192 |
| SEWER LINES | Feet | |
| Total Required | | 9,063,950 |
| Total Completed | | 7,878,264 |
| ROADS | Miles | |
| Total Required | | 3,127.5 |
| Total Completed | | 1,577.0 |
| RAILROADS | Miles | |
| Total Required | | 1,076.0 |
| Total Completed | | 804.4 |
| DISPOSAL PLANTS | Gallons Per Day | |
| Total Required | | 109,493,266 |
| Total Completed | | 86,729,866 |
| DAMS | Acre Feet of Storage | |
| Total Required | | 46,908.1 |
| Total Completed | | 4,079.6 |

| TYPE | UNIT OF MEASUREMENT | NUMBER OF UNITS |
|----------------------|---------------------|-----------------|
| PUMPING STATIONS | Gallons Per Minute | |
| Total Required | | 660,468 |
| Total Completed | | 469,745 |
| FILTRATION PLANTS | Gallons Per Minute | |
| Total Required | | 48,466 |
| Total Completed | | 30,800 |
| WATER STORAGE | Gallons | |
| Total Required | | 136,569,600 |
| Total Completed | | 96,211,980 |
| GASOLINE STORAGE | Gallons | |
| Total Required | | 13,031,132 |
| Total Completed | | 7,988,122 |
| FUEL OIL STORAGE | Gallons | |
| Total Required | | 3,174,916 |
| Total Completed | | 1,179,886 |
| CLEARING AND GRADING | Square Yards | |
| Total Required | | 962,963 |
| Total Completed | | 892,383 |
| STEAM LINES | Feet | |
| Total Required | | 571,499 |
| Total Completed | | 181,964 |

TABLE NO. 9

Building Materials Purchased Through ^{1/}
The Construction Division

Through June 30, 1941

| TYPE OF MATERIAL | QUANTITY | | COST |
|---------------------------------|------------------------|--------------------|-----------------------------|
| | Unit Of Measurement | Number Of Units | |
| TOTAL | - | - | \$60,769,382.95 |
| Air Compressor and Receivers | Number | 57 | 72,671.50 |
| Boilers | Number | 430 | 1,419,646.43 |
| Boiler Accessories | Number | 43 | 36,811.00 |
| Furnaces and Tent Heaters | Number | 45,108 | 4,208,313.80 |
| Lumber ^{2/} | Board Feet | 1,378,492,803 | 47,018,904.23 ^{3/} |
| Lumber Substitutes | Square Feet | 77,716,941 | 2,467,371.65 |
| Materials for Shingles | Squares | 75,512 | 156,285.62 |
| Millwork, Steel Sash and Siding | - | - | 3,939,769.21 |
| Paint and Related Supplies | Gallons | 1,107,238 | 1,362,804.24 |
| Miscellaneous | - | - | 86,987.27 |

^{1/} Purchases by Fixed Fee Contractors, negotiated through Procurement and Expediting Section.

^{2/} Includes 98 awards of \$7,021,969.11 for 266,245,000 board feet of lumber purchased for deferred shipment.

^{3/} Includes \$89,895.28 for 978,930 linear feet of lumber and 36,602 pieces of railroad ties and treated poles for which no board footage is shown.

TABLE NO. 10

Field Service Materials and Supplies
Purchased Through The Construction Division

Through June 30, 1941

| TYPE OF MATERIAL | QUANTITY | | COST |
|---|------------------------|--------------------|------------------------|
| | Unit of Measurement | Number Of Units | |
| GRAND TOTAL | - | - | \$50,605,284.88 |
| Bakery & Kitchen Equipment-Total | - | - | 8,473,319.52 |
| Bakery Equipment | Units | - | 302,460.51 |
| Kitchen Equipment (Heavy Duty) | Units | -645 | 1,690,865.64 |
| Ranges | Units | 10,992 | 824,031.28 |
| Range Repair Parts | Number | 9,545 | 26,070.00 |
| Refrigerators | Number | 19,800 | 5,629,892.09 |
| Barrack Equipment-Steel Lockers | Number | 23,300 | 190,023.52 |
| Fire Fighting Equipment-Total | Number | 87,224 | 10,104,467.48 |
| Automatic Sprinkler System | - | - | 940,816.00 |
| Fire Trucks | Number | 44 | 3,436,715.85 |
| Fire Pumps | Number | 822 | 78,692.82 |
| Fire Extinguishers | Number | 150 | 4,776,021.07 |
| Fire Hose Reel Carts, Hand Drawn | Number | 387,484 | 8,752.07 |
| Fire Hose | Number | 145 | 863,469.67 |
| Fuel-Solid and Liquid-Total | Linear Feet | 1,691,400 | 14,280,686.35 |
| Coal, Coke, Charcoal (Incl. Hauling) | - | - | 11,170,605.11 |
| Kerosene and Fuel Oil | Tons | 2,115,488 | 2,295,570.87 |
| Wood | Gallons | 80,766,898 | 799,278.38 |
| Wood Briquettes and Pres-to-logs | Cords | 141,115 | 15,232.49 |
| Furniture | Tons | 1,288 | 911,664.99 |
| Gasoline, Grease and Oil for (Motor) | Pieces | 58,262 | 6,132,926.25 |
| Vehicles-Total | - | - | 5,290,553.30 |
| Gasoline | Gallons | 76,090,692 | 262,287.55 |
| Grease | Pounds | 2,494,999 | 580,085.40 |
| Lubricating Oil | Gallons | 2,726,284 | 234,682.15 |
| Hospital Equipment | Units | 144 | 8,127,466.52 |
| Laundry Equipment | Units | 112 | 532,038.32 |
| Organs (Electric Chapel) | Number | 555 | 62,138.35 |
| Surveying Equipment | Pieces | 339 | 571,260.00 |
| Steel Gasoline Storage Tanks | Units | 22 | 984,610.93 |
| Miscellaneous | - | - | - |
