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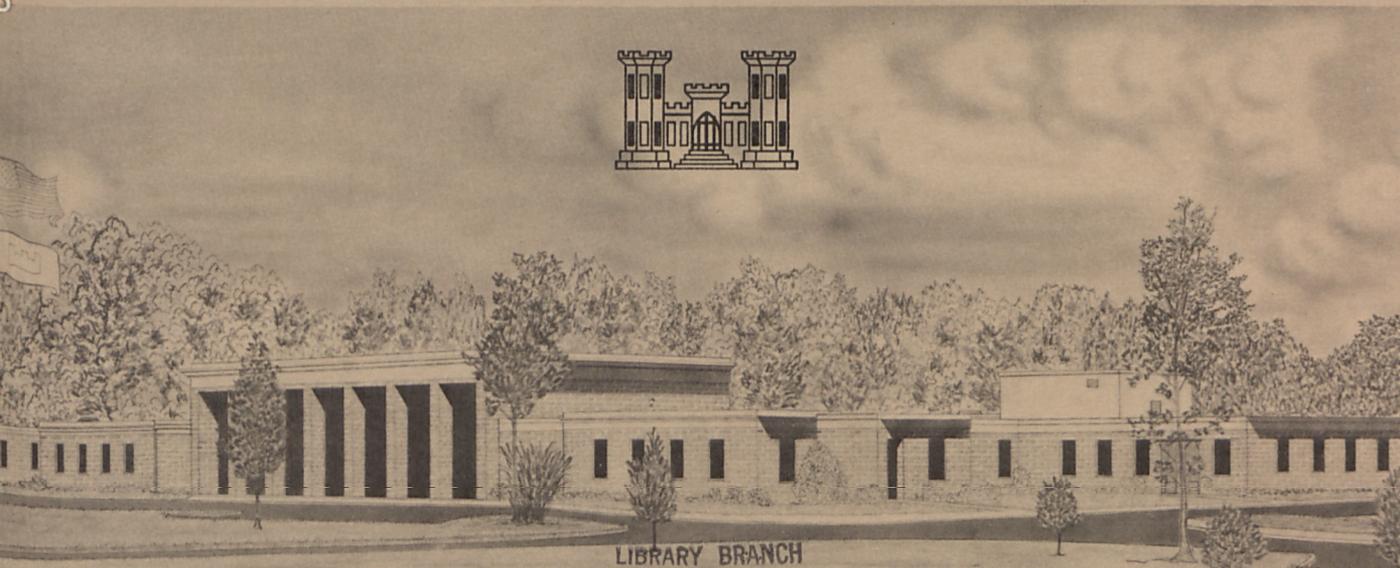


MISCELLANEOUS PAPER S-72-22

CONDITION SURVEY, FORNEY ARMY AIRFIELD FORT LEONARD WOOD, MISSOURI

by

P. J. Vedros, R. D. Jackson



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US ARMY ENGINEER WATERWAYS EXPERIMENT STATION
VICKSBURG, MISSISSIPPI

June 1972

Sponsored by **Office, Chief of Engineers, U. S. Army**

Conducted by **U. S. Army Engineer Waterways Experiment Station**
Soils and Pavements Laboratory
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Foreword

Authority for performance of condition surveys at selected airfields is contained in Long-Range Program, O&M,A, FY 1971, Project Q6-1: "Engineering Criteria for Design and Construction - WES," dated May 1970.

The facilities at Forney Army Airfield were inspected in April 1971 by Mr. R. D. Jackson of the General Engineering Support Branch, U. S. Army Engineer Waterways Experiment Station (WES). This report was prepared by Messrs. Jackson and P. J. Vedros under the general supervision of Messrs. J. P. Sale, R. G. Ahlvin, R. L. Hutchinson, and A. H. Joseph of the Soils and Pavements Laboratory, WES.

COL Ernest D. Peixotto, CE, was Director of the WES during the conduct of the study and preparation of this report. Mr. F. R. Brown was Technical Director.

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Conversion Factors, British to Metric Units of Measurement

British units of measurement used in this report can be converted to metric units as follows:

<u>Multiply</u>	<u>By</u>	<u>To Obtain</u>
inches	2.54	centimeters
feet	0.3048	meters
miles (U. S. statute)	1.609344	kilometers
pounds	0.45359237	kilograms

CONDITION SURVEY, FORNEY ARMY AIRFIELD
FORT LEONARD WOOD, MISSOURI

Purpose

1. The purpose of this report is to present the results of an inspection performed at Forney Army Airfield (FAAF) in April 1971. The inspection was limited to visual observations, and no tests were conducted on any of the pavement facilities. A layout of the airfield is shown in plate 1.

Pertinent Background Data

General description of airfield

2. FAAF is located approximately 6 miles* southeast of Waynesville, Missouri. A vicinity map is shown in plate 1.

3. The airfield is located physiographically in the Salem Plateau section of the Ozark Plateau province in an area of low hills. The soil in the area is generally a sandy gravelly clay underlain with dolomite and limestone.

4. In April 1971, the airfield facilities consisted of a northwest-southeast runway 5077 ft long and 150 ft wide, a connecting taxiway, and a parking apron (see plate 1). The taxiway is 1040 ft long and 60 ft wide. The parking apron is 390 by 510 ft.

Previous report

5. The only previous report covering the airfield facilities is entitled "Pavement Evaluation Report, Forney Army Airfield, Fort Leonard Wood, Missouri," by the U. S. Army Ohio River Division Laboratories, Cincinnati, Ohio, dated September 1960. Pertinent data were extracted from this report for use in this condition survey report.

* A table of factors for converting British units of measurement to metric units is presented on page vii.

History of Airfield Pavements

Design and construction history

6. The airfield pavements were originally constructed in 1942-43 and consisted of two runways with limited parking areas and taxiways. The original pavement construction consisted of a 6-in.-thick base course and a double bituminous surface treatment. Later, additional bituminous surfacing material was placed on the runways as maintenance measures. The type of material used and dates of application are not known. None of the original pavements have continued in service, although the old north-south runway is still available for limited usage if necessary. Part of the old northwest-southeast runway underlies the present active runway. All of the new airfield pavements were constructed in 1959-60 and were designed for a 60,000-lb gross load aircraft with twin-wheel landing gears. The troops of the 18th Engineer Brigade placed the 23-in.-thick crushed stone base course in 1959 and 1960. The 3-in.-thick asphaltic concrete paving was placed in two 1-1/2-in. lifts by contract in May and June 1960. The construction history is shown in table 1.

Traffic history

7. The majority of traffic at FAAF consists of regularly scheduled civilian airline flights. However, transient military aircraft do make limited use of the facilities. Heavier aircraft using the facilities and the frequency of use by each type are shown in table 2.

Condition of Pavement Surfaces

8. A visual inspection of the pavements in April 1971 indicated the airfield pavement to be generally in fair condition. The runway contained numerous cracks; however, the major portion appeared to be adequately supporting the aircraft using the pavement. The typical condition of the major portion of the runway pavement is shown in photograph 1. Photograph 2 shows the condition of an area about 25 ft wide, located east of the center line and extending from the vicinity of runway sta 34+60 to 40+60; this area is showing considerable distress. Another area, approximately 25 by 100 ft and located near runway sta 65+00, showed some distress

(photograph 3); however, distress in this area was not as severe as that in the area near the middle of the runway.

9. The taxiway and apron contained numerous cracks. Views of typical pavements of the taxiway and apron are shown in photographs 4 and 5, respectively. The cracks in the taxiway were approximately 25 ft apart in each direction and appeared to be contraction cracks. Neither the taxiway nor the apron showed any structural distress.

Airfield Maintenance

10. The only maintenance that has been done on the airfield since it was constructed consisted of slurry seal coats applied in 1966 and 1969.

Evaluation

11. An evaluation of the pavements based on this visual inspection cannot be made without supporting field tests. The Facilities Engineer has requested the Omaha District, Corps of Engineers, to prepare an estimate for the performance of field testing and for an evaluation of the pavement facilities. Due to the fact that one area of the runway is showing considerable distress and another area shows distress to a lesser degree, it must be assumed that the load-carrying capacity of the runway pavement structure has been or is being exceeded.

Table 1

Construction History

<u>Facility</u>	<u>Length ft</u>	<u>Width ft</u>	<u>Pavement</u>		<u>Construction</u>	
			<u>Thickness in.</u>	<u>Type</u>	<u>Period</u>	<u>Agency</u>
NW-SE runway	5077	150	3	AC	1959-60	IE
Taxiway	1040	60	3	AC	1959-60	IE
Apron	510	360	3	AC	1959-60	IE

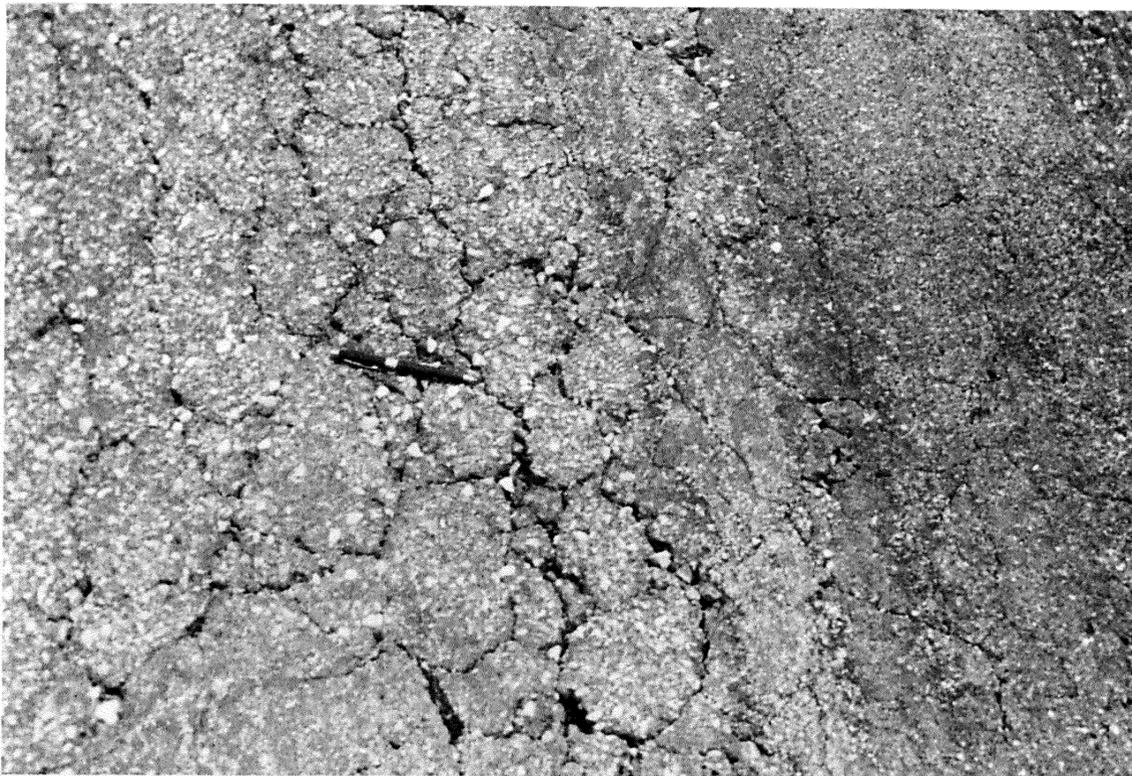
Table 2

Typical Aircraft Use of FAAF Facilities

<u>Type Aircraft</u>	<u>No. of Cycles</u>
Fairchild F227	4 per day
Convair 580	4 per day
C-9	1 per day
Electra 188	1 per week
C-141	1 per quarter
C-97	1 per year
C-124	1 per year



Photograph 1. Typical condition of runway pavement



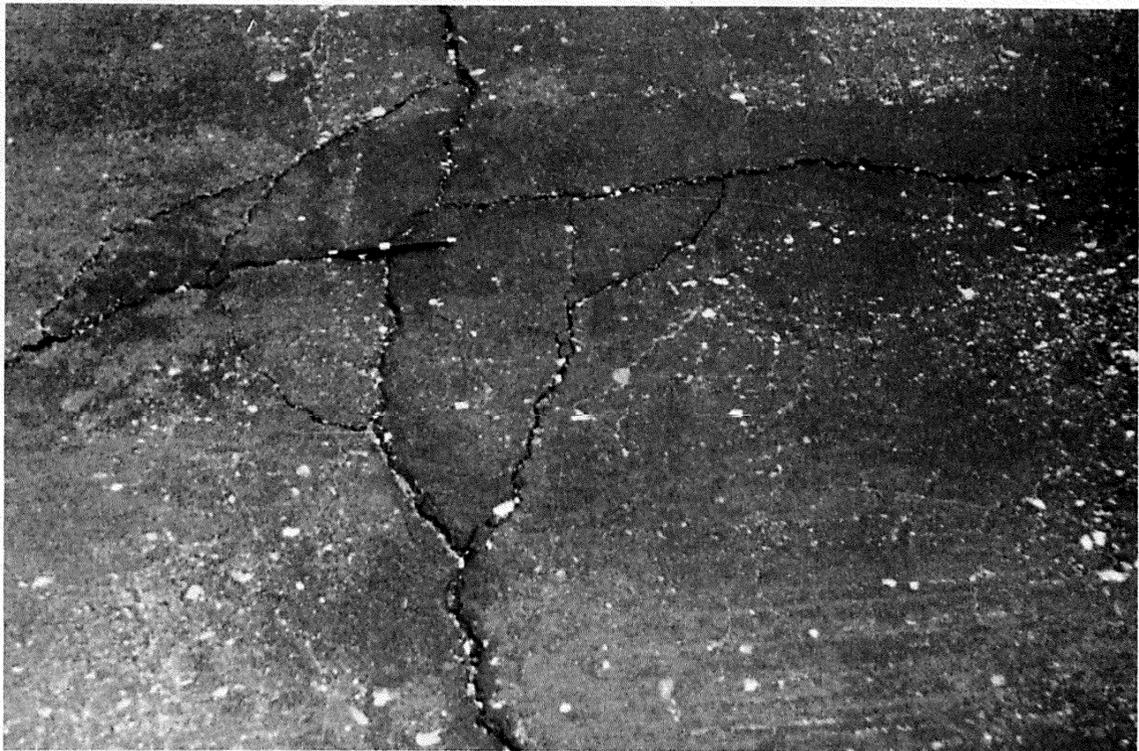
Photograph 2. Distressed area near middle of runway



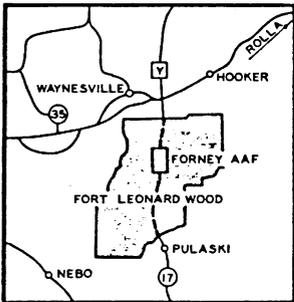
Photograph 3. Distressed area near north end of runway



Photograph 4. Typical condition of taxiway pavement



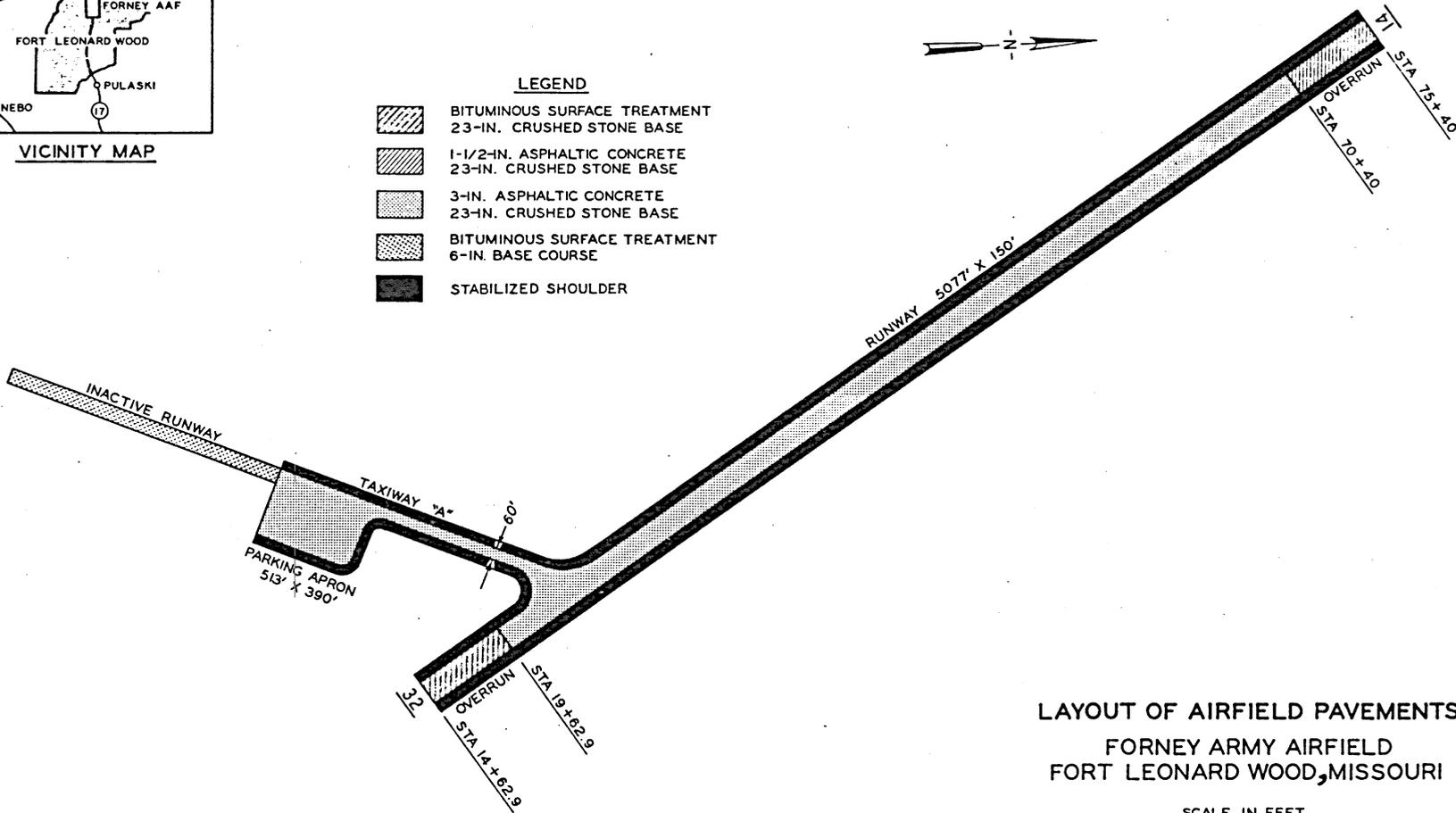
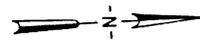
Photograph 5. Typical condition of apron area



VICINITY MAP

LEGEND

-  BITUMINOUS SURFACE TREATMENT
23-IN. CRUSHED STONE BASE
-  1-1/2-IN. ASPHALTIC CONCRETE
23-IN. CRUSHED STONE BASE
-  3-IN. ASPHALTIC CONCRETE
23-IN. CRUSHED STONE BASE
-  BITUMINOUS SURFACE TREATMENT
6-IN. BASE COURSE
-  STABILIZED SHOULDER



LAYOUT OF AIRFIELD PAVEMENTS
FORNEY ARMY AIRFIELD
FORT LEONARD WOOD, MISSOURI

