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CONDITION SURVEY, K. I. SAWYER AIR FORCE BASE, MICHIGAN.(U)
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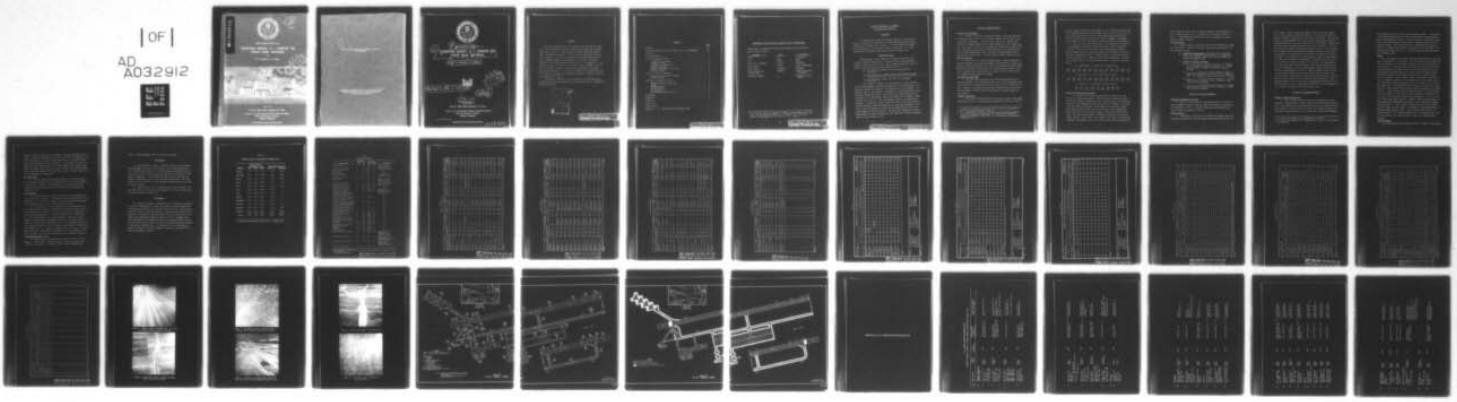

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MISCELLANEOUS PAPER S-73-15

CONDITION SURVEY, K. I. SAWYER AIR FORCE BASE, MICHIGAN

by

H. T. Thornton, Jr., S. J. Alford

April 1973

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

Conducted by U. S. Army Engineer Waterways Experiment Station
Soils and Pavements Laboratory
Vicksburg, Mississippi

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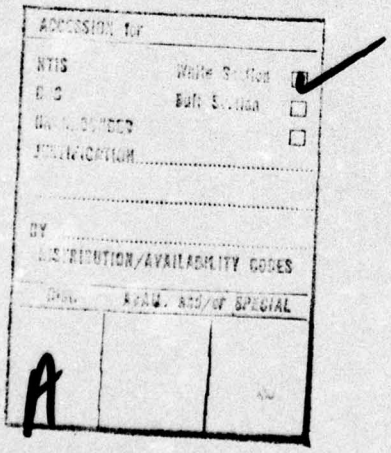
Foreword

The study reported herein was conducted under the general supervision of the Engineering Design Criteria Branch, Soils and Pavements Laboratory, of the U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi. Participating in this study were personnel from the U. S. Army Cold Regions Research and Engineering Laboratory (CRREL), Hanover, New Hampshire, and the WES. Personnel involved in the condition survey were Messrs. H. T. Thornton, Jr., R. N. Gordon, Sr., and S. J. Alford of WES; and G. Hines of CRREL. This report was prepared by Messrs. Thornton and Alford under the general supervision of Messrs. J. P. Sale, R. G. Ahlvin, R. L. Hutchinson, and P. J. Vedros of the Soils and Pavements Laboratory. Appendix A was obtained from the Air Force.

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



Contents

Conversion Factors, British to Metric Units of Measurement

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

Multiply	By	To Obtain
inches	2.54	centimeters
feet	0.3048	meters
miles (U. S. statute)	1.609344	kilometers
square inches	6.4516	square centimeters
pounds (mass)	0.45359237	kilograms
pounds (force) per square inch	0.6894757	newtons per square centimeter
Fahrenheit degrees	*	Celsius or Kelvin degrees

* To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula: $C = (5/9)(F - 32)$. To obtain Kelvin (K) readings, use: $K = (5/9)(F - 32) + 273.15$.

CONDITION SURVEY, K. I. SAWYER AIR FORCE BASE, MICHIGAN

Authority

1. Authority for conducting condition surveys at selected airfields is contained in amendment to FY 1972 RDTE Funding Authorization (MFS-MC-5, 16 February 1972), subject: "Air Force Airfield Pavement Research Program," from the Office, Chief of Engineers, U. S. Army, Directorate of Military Construction, dated 18 February 1972.

Purpose and Scope

2. The purpose of this report is to present the results of a condition survey performed at K. I. Sawyer Air Force Base (KISAFB), Michigan, during 24-25 April 1972. The following three major areas of interest were considered in this condition survey:

a. The structural condition of the primary airfield pavements;

b. The condition of pavement repairs and the types of maintenance materials that have been used at this airfield; and

c. Any detrimental effects of frost to the pavement facilities.

3. This report is limited to a presentation of visual observations of the pavement conditions, discussion of these observations, and pertinent remarks with regard to the performance of the pavements. No physical tests of the pavements, foundations, or patching materials were performed during this survey. Heave gages and thermocouples had been installed in two instrumented slabs in the apron area at KISAFB a number of years ago by the U. S. Army Cold Regions Research and Engineering Laboratory. During this survey, these slabs were to have been located, and the condition of the instruments was to have been determined. However, it was not possible to locate the instrumented slabs due to the large blanket of snow on the area. The Base Civil Engineering Office at KISAFB plans to obtain information on the condition of these instruments when the area is clear of snow.

Pertinent Background Data

Location and topography

4. KISAFB is situated in Marquette County in the upper peninsula of Michigan, about 12 miles* south of Lake Superior and 14 miles south of the city of Marquette. The airfield is located on a nearly level sand plain, slightly higher than the surrounding area. The runway area has a local relief of 5 to 10 ft, except for a swale that is about 20 ft deep. The general slope of the entire airfield is in a southerly direction toward Silver Lead Creek. The base is approximately 1180 ft above mean sea level (msl). A vicinity map is shown in plates 1 and 2.

Geology and soils

5. The site is on a glacial outwash plain of sands and gravels. The subsoil under a thin layer of organic sand top soil is a loose, nonplastic, nonfrost-susceptible sand, which is classified as SP and SP/SM materials according to the Unified Soil Classification System.** The soil is granular and free-draining to a depth of 100 ft or more below the average airfield pavement elevation.

Drainage and water table

6. The loose sand and gravel soil possesses good external and internal drainage. At an exploratory well site in 1954, the water table was found to be at elevation 1113 ft msl, which was 75 ft below the surface. Because of the previously mentioned characteristics of the soil and the deepness of the water table, subsurface drainage systems are not required.

Climatic conditions

7. The climatic characteristics of the area include a mean annual temperature of 42.2 F, an average annual rainfall of 31.14 in., and an

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

** U. S. Department of Defense, "Unified Soil Classification System for Roads, Airfields, Embankments, and Foundations," Military Standard MIL-STD-619B, June 1968, U. S. Government Printing Office, Washington, D. C.

average annual snowfall of approximately 113 in. Official records show that the temperatures have ranged from a high of 108 F to a low of -27 F. The winters are long and rigorous, with temperatures falling below freezing from November through April, while the summers are comparatively short and mild. The average relative humidity is 71 percent at 7 a.m. and 7 p.m. and 58 percent at noon. The probability of sunshine is approximately 43 percent, and the prevailing winds are from the northwest. The mean freezing index is 2100 degree-days, based on Weather Bureau records at Sault Ste. Marie, and the depth of frost penetration is approximately 64 in. Climatic data for the year 1971 are presented in table 1. A summary of the monthly temperature, rainfall, and snowfall means for relatively long periods of record is presented below:

a. Temperatures, F, based on an 82-year record:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
18.7	18.9	26.9	38.7	49.6	59.6	66.1	65.3	57.8	47.5	33.9	23.1

b. Rainfall, in., based on an 82-year record:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2.17	1.62	2.05	2.51	2.64	3.46	3.13	2.71	3.43	2.26	3.12	2.04

c. Snowfall, in., based on a 63-year record:

Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
0.2	2.7	15.8	21.6	24.0	18.8	19.2	9.2	1.1

General description of airfield

8. In April 1972, the airfield facilities consisted of both heavy- and light-load pavements. The heavy-load pavements included a N-S (19-01) runway, a primary taxiway, a warm-up apron, four connecting taxiways, a SAC operational apron and connecting taxiways, a SAC alert apron and taxiway, and hangar access aprons and connecting taxiways. The runway was 300 ft wide and 12,370 ft long; the SAC operational apron was 775 ft wide and 3007 ft long; and the taxiways were 75 ft wide. The light-load pavements included four taxiways, an ADC operational apron, an alert apron, and a hangar access apron and connecting taxiways. The taxiways were 75 ft wide; the ADC operational apron was

1301 ft long and 265 ft wide; and the operational apron extension was 700 ft long and 320 ft wide. A layout of the airfield is shown in plate 1. A pavement plan indicating the type of pavement on each facility is shown in plate 2.

Previous reports

9. Previous reports concerning the airfield facilities at KISAFB are listed below. Pertinent data were extracted from them for use in this condition survey.

a. Condition survey report: Ohio River Division Laboratories, CE, "Condition Survey Report, K. I. Sawyer Air Force Base, Michigan," March 1958, Rigid Pavement Laboratory, Mariemont, Ohio.

b. Pavement evaluation reports:

(1) U. S. Army Engineer District, Detroit, CE, "Evaluation of Pavements, Rigid and Flexible, K. I. Sawyer Air Force Base, Michigan," April 1957, Detroit, Michigan.

(2) _____, "Evaluation of Rigid Pavement, Warm-Up Apron and Primary Taxiway Extension, K. I. Sawyer Air Force Base, Michigan," August 1958, Detroit, Michigan.

(3) _____, "Airfield Evaluation Report, K. I. Sawyer Air Force Base, Marquette County, Michigan," March 1960, Detroit, Michigan.

(4) _____, "Airfield Evaluation Report, K. I. Sawyer Air Force Base, Marquette County, Michigan," October 1965, Detroit, Michigan.

History of Airfield Pavements

Design and construction history

10. Details of the design and construction history of the airfield pavements (extracted from the reports referenced in paragraph 9) are presented in table 2. Pavement thicknesses, descriptions, and other details are presented in table 3.

Traffic history

11. Information on the traffic at KISAFB was obtained from base operations personnel and other personnel familiar with the present and

past history. Prior to 1959, the amount of traffic was very light, with civilian aircraft accounting for about 50 cycles* per month and military aircraft accounting for about 5 cycles per month. The civilian traffic consisted mostly of DC-3 type aircraft operations, while the military traffic was primarily from C-47 and C-54 aircraft. During 1959 and 1960, F-101 aircraft accounted for the bulk of traffic. B-52 and KC-135 aircraft started operating from KISAFB in 1960. It was reported that the type traffic applied on the airfield from 1960 to 1971 would be comparable to present traffic conditions with respect to intensity and loads. The south (01) end of the runway is used for approximately 80 percent of the takeoffs and landings. During 1971, the facilities received 60 to 70 cycles per month of B-52 traffic and approximately 110 cycles per month of KC-135 traffic. The normal operating load for the B-52 during these cycles was approximately 390,000 lb and for the KC-135 was approximately 215,000 lb. There are about ninety B-52 and seventy KC-135 aircraft per year that, during practice alerts, taxi down the length of the runway, taxiway G, the primary taxiway, and taxiway H, and then return to their respective alert facilities. During these movements, the B-52 gross load is approximately 490,000 lb, and the KC-135 gross load is approximately 270,000 lb. These movements are not included in the cycles per month listed above.

Condition of Pavement Surfaces

Pavement inspection procedure

12. The following procedure was used in inspecting the rigid pavements. Representative features were selected for detailed inspection. The features were then inspected slab** by slab, and the defects were recorded. The locations of the individual pavement features, the inspection starting points, and the directions in which the pavements

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* A cycle of operation is one landing and one takeoff.

** A slab is the smallest unit, containing no joints, of a given pavement feature.

were inspected (shown by arrows) are indicated in plate 1. The results of the rigid pavement survey for those features that were inspected in detail are presented in table 4. This table shows a quantitative breakdown of the various types of defects and a condition rating for each pavement feature. The procedures used for determining the condition rating of a pavement are described in Appendix III of Department of the Army Technical Manual TM 5-827-3, "Rigid Airfield Pavement Evaluation," dated September 1965.

Runway

13. In general, the condition of the pavement surface on the runway was considered to be excellent. The first 1000 ft of the south (01) end of the runway was in excellent condition, with no major defects recorded (table 4). The first 1000 ft of the north (19) end was also in excellent condition, having only four slabs in the second 500 ft with major defects and eight slabs in the first 500 ft with major defects. The interior portion of the runway from sta 10+00 to 63+00 (feature R7C) was overlaid by the Air Force in 1965. The overlay consisted of 3 in. of asphaltic concrete (AC) extending for 24 ft on either side of the center line and then tapering to 0 in. at a distance of 60 ft from the center line. The condition of this feature was rated as very good, with only a minor amount of transverse cracking observed in the surface (photo 1). These cracks varied in width from 1/2 in. to approximately 1-1/2 in. (photo 2). The 75-ft-wide outside edges of the runway from sta 10+00 to 113+00 (feature R8D), which consisted of 3 in. of AC surface, were in very good condition. However, there was some evidence of crack opening at longitudinal joints and a minor amount of shrinkage cracking (photo 3). The interior 150-ft-wide portion of the runway from sta 63+00 to 113+00 (plate 1) consisted of various thicknesses of portland cement concrete (PCC): 15 in. (feature R9C, R11C), 14 in. (feature R10C), 17 in. (feature R12C), and 16 in. (feature R13C). All of these features were rated excellent, with only 12 major defects recorded.

Primary taxiways

14. The primary taxiway system consists of taxiway H, the primary

taxiway, taxiway G, and the apron taxiway. Taxiway H (feature T1A) contained no defects; the primary taxiway (features T2A, T3A, T4A, T5A, and T6A) contained only two major defects; and taxiway G (feature T7A) contained only five major defects (table 4). The conditions of these taxiways were rated as excellent. The SAC operational apron taxiway (features T9A, T10A, T11A, and T12A) was not surveyed, since these pavements were covered with snow at the time of this survey. However, these areas will be surveyed at a later date.

SAC facilities

15. The SAC alert apron (feature A9B) and the SAC operational apron (feature A4B) also were not surveyed due to snow on the pavement in these areas. Taxiway A (feature T8B) and the SAC warm-up apron (feature A1B) were in excellent condition, with no major defects observed (table 4).

ADC facilities

16. The ADC operational apron (feature A2B) was constructed of 15-in.-thick PCC in 1955, and the apron extension (feature A3B) was constructed of 12-in.-thick PCC in 1961. Both areas were rated excellent in this survey, with no major defects observed (table 4).

17. All taxiways to the ADC facilities were constructed of AC. The ADC alert access taxiway (feature T15B) consisted of only 1-1/2 in. of AC surfacing and was rated in poor condition due to longitudinal cracks and rutting (photo 4). Taxiway B (feature T14B) consisted of 3 in. of AC surfacing and was in good condition, with only a minor amount of transverse and longitudinal cracking at the joints (photo 5). Taxiway C (feature T16B) consisted of 4 in. of AC surfacing and was in good condition, with only slight rutting and longitudinal cracking from overloading (photo 6). Taxiway D (feature T17B), also 4 in. of AC pavement, contained a minor amount of cracking but did not appear to contain the rutting and overload cracking that were observed on taxiway C.

Connecting taxiways E and F

18. Both of these taxiways were constructed of 16 in. of PCC. Taxiway E (feature T18C) contained no major defects, and only about 5 percent of the slabs in taxiway F (feature T19C) contained major

defects. These pavements were both rated as excellent.

Maintenance

19. The maintenance program at KISAFB consists of joint resealing, replacement of slabs, crack sealing, slurry sealing, pop-out repair, and frost-heave repair. An annual pavement maintenance plan for the airfield, which was provided by the Air Force, is included in this report as Appendix A. This maintenance plan indicates the type and amount of maintenance that had been performed through 1971. The maintenance costs at KISAFB for FY 1972 amounted to $23,000, which is about the yearly average.

20. Pop-outs were noted in several areas at this airfield. However, they are not occurring in large numbers and are not a major problem from a maintenance standpoint.

Evaluation

21. The latest pavement evaluation for this airfield was reported in 1965 (see paragraph 9b). Since some changes in gear configurations and methods of evaluation have been made since that time, a new evaluation table (table 5) has been prepared. The physical properties of the materials as indicated in the past reports have been used for this evaluation, with engineering judgment applied to specific pavement areas where performance has indicated that the load-carrying capacity should be modified from that obtained in using the strength properties assigned in the physical property data. An evaluation for the frost-melting period was not made, since the subgrade at KISAFB is considered to be a nonfrost-susceptible material.

Table 1

Climatic Data,* 1 January-31 December 1971

Month	Average Daily Temperature, F			Precipitation, in.	
	Max	Min	Mean	Rainfall	Snowfall
January	14.7	-1.0	6.9	5.13	92.8
February	21.7	3.2	12.4	2.68	33.9
March	29.2	8.5	18.9	2.63	26.3
April	46.0	24.0	35.0	0.65	2.6
May	56.7	33.1	44.9	2.73	1.2
June	73.6	45.9	59.8	2.63	--
July	71.1	48.5	59.8	2.76	--
August	71.3	46.7	59.0	1.37	--
September	65.6	47.0	56.3	3.39	--
October	56.9	42.1	49.5	5.14	--
November	36.6	24.7	30.7	3.15	28.5
December	27.3	12.5	19.9	2.34	22.9
Annual	47.6	27.9	37.8	34.60	208.2

* Obtained from weather station at K. I. Sawyer AFB.

Table 2

Airfield Construction History

Pavement Facility	Pavement Thickness in.	Pavement Type	Construction Year(s)	Construction Agency	Design Criteria
ADC hangar access apron	13	PCC	1955	CE†	Gear load - 80,000 lb Contact area - 100 sq in.
N-S runway (sta 10+00 to 63+00)	4	AC	1955	CE	Gear load - 100,000 lb Contact area - 100 sq in.
N-S runway (sta 63+00 to 73+00)	15	PCC	1955	CE	↓
Taxiways C and D	4	AC	1955	CE	
ADC operational apron	15	PCC	1955	CE	
ADC alert apron and taxiway B	3	AC	1955	CE	Gear load - 25,000 lb Contact area - 100 sq in.
ADC alert rear access apron	2-1/2	AC	1958	AIO	--
ADC warm-up apron	15	PCC	1956	CE	Gear load - 100,000 lb Spacing - 37 in. c-c Contact area - 267 sq in.
N-S runway (sta 73+00 to 80+00)	14	PCC	1957	CE	Gear load - 100,000 lb Spacing - 37-1/2 in. c-c Contact area - 267 sq in.
N-S runway (sta 80+00 to 85+00)	15	PCC	1957	CE	
N-S runway (sta 85+00 to 90+00)	17	PCC	1957	CE	↓
Intermediate connecting taxiway F	16	PCC	1957	CE	
SAC alert apron and taxiway A	19	PCC	1958-59	CE	Gear load - 265,000 lb, Bicycle type Spacing - 37-62-37-in. Contact area - 267 sq in.
N-S runway (S end: 100-ft-wide sections, sta -0+70 to 2+50 and sta -0+70 to 5+00; N end: 100-ft-wide sections, sta 118+00 to 123+00 and sta 118+50 to 123+00)	20	PCC	1958-59	CE	↓
N-S runway (S end: 100-ft-wide sections, sta -0+70 to 5+75 and sta 5+00 to 10+00; N end: 100-ft-wide section, sta 113+00 to 118+00)	19	PCC	1958-59	CE	
N-S runway (S end: 100-ft-wide sections, sta 2+50 to 10+00 and sta 5+75 to 10+00; N end: 100-ft-wide sections, sta 113+00 to 118+50 and sta 113+00 to 123+00)	14	PCC	1958-59	CE	
N-S runway interior (150-ft-wide center section, sta 90+00 to 113+00)	16	PCC	1958-59	CE	
N-S runway interior (75-ft-wide sections, each side sta 10+00 to 113+00)	3	AC	1958-59	CE	
End connecting taxiways H and G	20	PCC	1958-59	CE	
Intermediate connecting taxiway E	16	PCC	1958-59	CE	
SAC warm-up apron	19	PCC	1958-59	CE	
Primary taxiway (sta 0+25 to 2+05)	20	PCC	1958-59	CE	
Primary taxiway (sta 2+05 to 86+87.5)	*	PCC	1958-59	CE	
Primary taxiway (sta 86+87.5 to 118+25)					
Center lane	20	PCC	1958-59	CE	
Outside lanes	19 to 20	PCC	1958-59	CE	
SAC operational apron access taxiways	20	PCC	1958-59	CE	
SAC operational apron taxiway					
Center lane	20	PCC	1958-59	CE	
Outside lanes	20 to 16	PCC	1958-59	CE	
SAC operational apron	16	PCC	1958-59	CE	↓
SAC hangar access aprons and taxiway	13	PCC	1958-59	CE	Gear load - 160,000 lb Bicycle type Spacing - 37-62-37 in. Contact area - 267 sq in.
ADC operational apron extension	12	PCC	1961	CE	Gear load - 100,000 lb Tricycle type Twin wheels spaced 37-1/2 in. c-c Contact area - 267 sq in.
ADC operational apron access taxiway	15	PCC	1962	CE	Gear load - 100,000 lb Tricycle type Spacing - 37-1/2 in. c-c Contact area - 267 sq in.
N-S runway (sta 10+00 to 63+00)	3**	AC	1965	AF	--

* Thicknesses vary as shown in table 3.

** Overlay extending for 24 ft on either side of the center line and then tapering to 0 in. at a distance of 60 ft from the center line.

† CE denotes Corps of Engineers.

Table 3

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
N-S Runway Sta -0+70 to 5+00 Center (100 ft), Sta -0+70 to 2+50 E Side (100 ft) R3A		100				20	Portland cement concrete	670				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta -0+70 to 5+75 W Side R4B		100				19	Portland cement	670				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta 5+00 to 10+00 Sta 113+00 to 118+00 R5B R14B	500	100				19	Portland cement concrete	670				Sand (SP)	350	Excellent
N-S Runway Sta 5+75 to 10+00 W Side Sta 2+50 to 10+00 E Side R6D		100				14	Portland cement concrete	670				Sand (SP)	350	Excellent
N-S Runway Sta 10+00 to 63+00 R7C	5,300	150	3	Asphaltic concrete (Center 48 ft)		4	Asphaltic concrete		8	Stabilized aggregate Crushed limestone (GW)	100+	Sand (SP and SP/SM)	26	Very good
N-S Runway Sta 10+00 to 113+00 Outside Edges R8D	10,300	75				3	Asphaltic concrete		9	Crushed limestone (GW)		Sand (SP and SP/SM)	26	Very good
N-S Runway Sta 63+00 to 73+00 R9C	1,000	150				15	Portland cement concrete	700				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta 73+00 to 80+00 R10C	700	150				14	Portland cement concrete	790				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta 80+00 to 85+00 R11C	500	150				15	Portland cement concrete	790				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta 85+00 to 90+00 R12C	500	150				17	Portland cement concrete	790				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta 90+00 to 113+00 R13C	2,300	150				16	Portland cement concrete	670				Sand (SP)	350	Excellent
N-S Runway Sta 118+00 to 123+00 R16A	500	200				20	Portland cement concrete	670				Sand (SP and SP/SM)	350	Excellent
N-S Runway Sta 113+00 to 123+00 W Side Sta 113+00 to 118+50 E Side R15D		100				14	Portland cement concrete	670				Sand (SP and SP/SM)	350	Excellent
South End Connecting Taxiway H T1A	900	75				20	Portland cement concrete	720				Sand (SP)	350	Excellent

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Table 3 (Continued)

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
Primary Taxiway Sta 0+25 to 2+05 T2A	180	75				20	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Center Lane) Sta 86+87.5 to 118+25 T6A	3,137.5	25				20	Portland cement concrete	730				Sand (SP)	350	Excellent
Primary Taxiway (Center Lane) Sta 2+05 to 13+45 T3A	1,140	25	8.5	Portland cement concrete	730	16 Eq. Thick 20.5	Portland cement concrete	700				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Right Lane) Sta 2+05 to 13+05 T3A	1,100	25	8.5	Portland cement concrete	730	15-16 Eq. Thick 19.8	Portland cement concrete	700				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Left Lane) Sta 2+05 to 13+85 T3A	1,180	25	11	Portland cement concrete	730	15-16 Eq. Thick 21.9	Portland cement concrete	700				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Center Lane) Sta 13+45 to 15+25 T4A	180	25	10.5	Portland cement concrete	730	13 Eq. Thick 19.3	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Right Lane) Sta 13+05 to 15+25 T4A	220	25	10.5	Portland cement concrete	730	13 Eq. Thick 19.3	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Left Lane) Sta 13+85 to 15+25 T4A	140	25	13	Portland cement concrete	730	13 Eq. Thick 21.4	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway Sta 15+25 to 70+47.5± T4A	5,522.5	75	16	Portland cement concrete	730	4	Asphaltic concrete	K = 500*	9	Stabilized aggregate Crushed stone	100+	Sand (SP and SP/SM)	26	Excellent
Primary Taxiway (Center Lane) Sta 70+47.5 to 71+37.5 T4A	90	25	13.5	Portland cement concrete	730	13 Eq. Thick 21.8	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Right Lane) Sta 69+75 to 71+37.5 T4A	162.5	25	13.5	Portland cement concrete	730	13 Eq. Thick 21.8	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Left Lane) Sta 71+17.5 to 71+62.5 T5A	45	25	16	Portland cement concrete	730	13 Eq. Thick 24.0	Portland cement concrete	730				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Center Lane) Sta 71+37.5 to 86+87.5 T5A	1,550	25	8	Portland cement concrete	730	17 Eq. Thick 21.0	Portland cement concrete	790				Sand (SP and SP/SM)	350	Excellent

* Asphaltic concrete surface.

OES FORM 1000 MAR 1958

Table 3 (Continued)

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
Primary Taxiway (Right Lane) Sta 71+37.5 to 86+87.5 T5A	1,550	25	8	Portland cement concrete	730	15-17 Eq. Thick 20.0	Portland cement concrete	790				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Left Lane) Sta 71+62.5 to 86+87.5 T5A	1,525	25	11	Portland cement concrete	730	15-17 Eq. Thick 22.2	Portland cement concrete	790				Sand (SP and SP/SM)	350	Excellent
Primary Taxiway (Outside Lanes) Sta 86+87.5 to 118+25 T6A	3,137.5	50	11	Portland cement concrete	730	19-20 Eq. Thick 19.5	Portland cement concrete	730				Sand (SP)	350	Excellent
North End Connecting Taxiway G T7A	1,251	75				20	Portland cement concrete	650				Sand (SP)	350	Excellent
SAC Operational Apron Access Taxiways (3) T9A T10A T11A	250	75				20	Portland cement concrete	680				Sand (SP)	350	
SAC Operational Apron Taxiway (Center Lane) T12A	3,682±	25				20	Portland cement concrete	680				Sand (SP)	350	
SAC Operational Apron Taxiway (Outside Lane) T12A	3,757±	50				16-20	Portland cement concrete	680				Sand (SP)	350	
SAC Operational Apron A4B	3,007	775				16	Portland cement concrete	680				Sand (SP)	350	
SAC Alert Apron and Taxiway A (74,130 sq yd) A9B T8B						19	Portland cement concrete	630				Sand (SP)	350	Excellent
SAC Warm-up Apron (25,900 sq yd) A1B						19	Portland cement concrete	720				Sand (SP)	350	Excellent
SAC Hangar Access Aprons and Taxiway (18,600 sq yd) T13B A5B						13	Portland cement concrete	650				Sand (SP)	350	
Taxiways C and D T16B T17B	835	75				4	Asphaltic concrete		9	Stabilized aggregate	100+	Sand (SP and SP/SM)	25	Good
ADC Alert Apron and Taxiway B A7B T14B	1,558.5					3	Asphaltic concrete		6	Stabilized aggregate	100+	Sand (SP and SP/SM)	26	Good
ADC Alert Rear Access Apron A10B	550±	150±				2.5	Asphaltic concrete		6	Stabilized aggregate	Assumed 80+	Sand (SP and SP/SM)	26	
ADC Warm-up Pad (6,300 sq yd) A8B						15	Portland cement concrete	740				Sand (SP)	300	

Table 3 (Continued)

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
Alert Apron Access Taxiway T15B	950	75				1.5	Asphaltic concrete		10	Stabilized aggregate	Assumed 80+	Sand (SP and SP/SM)	26	Poor
ADC Operational Access Taxiway T20B	425	90				15	Portland cement concrete	700				Sand (SP)	300	Very good
ADC Operational Apron A2B	1,301	265				15	Portland cement concrete	700				Sand (SP and SP/SM)	300	Excellent
ADC Operational Apron Extension A3B	700	320				12	Portland cement concrete	700				Sand (SP)	300	Excellent
Hangar Access Aprons A6B	280 150	160 184				13	Portland cement concrete	700				Sand (SP and SP/SM)	300	
Taxiways E and F T18C T19C	975	75				16	Portland cement concrete	680				Sand (SP)	300	Excellent
Overruns Each End R2X	150	300				2	Asphaltic concrete		6	Crushed limestone (GW)		Sand (SP and SP/SM)		Good
Overruns Each End R1X	850	300					Double bituminous surface treatment		6	Crushed limestone		Sand (SP and SP/SM)		Good

WES FORM 1000 MAR 1950

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Table 4

DATE: April 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD: K. I. Sawyer AFB, Michigan

FEATURE NO.	FEATURE DESIGNATION	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																	% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION
					I	—	\	Δ	*	K	~	S	J	J	J	⊕	M	P	O	C	D			
R3A R4B R6D	Runway 01 End 1st 500 ft	25x25	240	14 and 19 and 20															9			96	100	Excellent
R5B R6D	Runway 01 End 2nd 500 ft	25x25	276	14 and 19											4				8			96	100	Excellent
R9C	Runway Sta 63+00 to 73+00	25x25	240	15		5							1		7					4		95	98	Excellent
R10C	Runway Sta 73+00 to 80+00	25x25	168	14			2						2		5				1			94	99	Excellent
R11C	Runway Sta 80+00 to 85+00	25x25	120	15				1							2				9	1		88	99	Excellent
R12C	Runway Sta 85+00 to 90+00	25x25	120	17		1									3				17	1		84	99	Excellent
R13C	Runway Sta 90+00 to 113+00	25x25	608	16		1	2								1				17			97	99	Excellent
R14B R15D	Runway 19 End 2nd 500 ft	25x25	240	14 and 19	3	1							2		1				5	1		95	99	Excellent
R16A R15D	Runway 19 End 1st 500 ft	25x25	240	14 and 20	5	1	2				1								4			95	97	Excellent
T1A	Taxiway H	25x25	108	20																		100	100	Excellent

REMARKS:

LEGEND:

I	LONGITUDINAL CRACK	~	SHRINKAGE CRACK	M	MAP CRACKING
—	TRANSVERSE CRACK	S	SCALING	P	PUMPING JOINT
\	DIAGONAL CRACK	J	SPALL ON TRANSVERSE JOINT	O	POP-OUT
Δ	CORNER BREAK	J	SPALL ON LONGITUDINAL JOINT	C	UNCONTROLLED CONTRACTION CRACK
*	SHATTERED SLAB	J	CORNER SPALL	D	"D" CRACKING
K	KEYED JOINT FAILURE	⊕	SETTLEMENT		

WES FORM NO. 2004
JUN 1972

(1 of 3 sheets)

Table 4 (Continued)

DATE: April 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD: K. I. Sawyer AFB, Michigan

FEATURE		SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																	% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION
NO.	DESIGNATION				I	—	\	Δ	*	K	~	S	J	↓	J	⊕	M	P	O	C	D			
T2A	Primary Taxiway Sta 0+25 to 2+05	25x25 20x25	21	20																		100	100	Excel-lent
T3A	Primary Taxiway Sta 2+05 to 16+00	20x25 25x25	237	11-16 16		1							1	1	1				3	1		97	99	Excel-lent
T4A	Primary Taxiway Sta 16+00 to 71+50	25x25 22.5x25	669	16 4 AC		1					2		1		2				14			97	99	Excel-lent
T5A	Primary Taxiway Sta 71+50 to 86+87.5	25x25	183	8-11 16							1		2						3			97	100	Excel-lent
T6A	Primary Taxiway Sta 86+87.5 to 118+25	25x25	348	19-20 19							1		2						7			97	100	Excel-lent
T7A	Taxiway G	25x25 22.5x25	204	20	5								2									97	98	Excel-lent
T8B	Taxiway A	25x25	447	19											4				4	1		98	100	Excel-lent
A1B	SAC Warm-up Apron	25x25	448	19										1						3		99	100	Excel-lent
A2B	ADC Operational Apron	25x25	58*	15															2			97	100	Excel-lent
A3B	ADC Operational Apron Extension	25x25	364	12							4		3		1				20			93	100	Excel-lent

REMARKS: * A complete survey was not made due to snow on apron and parked aircraft.

LEGEND:

I	LONGITUDINAL CRACK	~	SHRINKAGE CRACK	M	MAP CRACKING
—	TRANSVERSE CRACK	S	SCALING	P	PUMPING JOINT
\	DIAGONAL CRACK	J	SPALL ON TRANSVERSE JOINT	O	POP-OUT
Δ	CORNER BREAK	↓	SPALL ON LONGITUDINAL JOINT	C	UNCONTROLLED CONTRACTION CRACK
*	SHATTERED SLAB	J	CORNER SPALL	D	"D" CRACKING
K	KEYED JOINT FAILURE	⊕	SETTLEMENT		

WES FORM NO. 2004
JUN 1972

(2 of 3 sheets)

Table 4 (Continued)

DATE: April 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD: K. I. Sawyer AFB, Michigan

FEATURE NO.	FEATURE DESIGNATION	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																	% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION
					I	—	\	Δ	*	K	~	S	J	↓	J	⊕	M	P	O	C	D			
T18C	Taxiway E	25x25	155	16										1	1				1			98	100	Excel-lent
T19C	Taxiway F	25x25	155	16		1	5	4			1		1		2				10			88	95	Excel-lent

REMARKS:

LEGEND:

I	LONGITUDINAL CRACK	~	SHRINKAGE CRACK	M	MAP CRACKING
—	TRANSVERSE CRACK	S	SCALING	P	PUMPING JOINT
\	DIAGONAL CRACK	J	SPALL ON TRANSVERSE JOINT	O	POP-OUT
Δ	CORNER BREAK	↓	SPALL ON LONGITUDINAL JOINT	C	UNCONTROLLED CONTRACTION CRACK
*	SHATTERED SLAB	J	CORNER SPALL	D	"D" CRACKING
K	KEYED JOINT FAILURE	⊕	SETTLEMENT		

WES FORM NO. 2004 JUN 1972

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Table 5

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: K. I. Sawyer DATE OF EVALUATION MONTH: April YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 630-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. × 46 IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 37-62-37 267-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
R3A	N-S Runway Sta -0+70 to 5+00 Center (100 ft)	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	540,000	
R5B	N-S Runway Sta 5+00 to 10+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	540,000	
R7C	N-S Runway Sta 10+00 to 63+00	Capacity	155,000+	65,000	155,000+	220,000+	200,000+	320,000	230,000+	380,000+	800,000+	420,000	
R9C	N-S Runway Sta 63+00 to 73+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	550,000	
R10C	N-S Runway Sta 73+00 to 80+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	550,000	
R11C	N-S Runway Sta 80+00 to 85+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	600,000+	
R12C	N-S Runway Sta 85+00 to 90+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	600,000+	
R13C	N-S Runway Sta 90+00 to 113+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	560,000	
R14B	N-S Runway Sta 113+00 to 118+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	540,000	
R16A	N-S Runway Sta 118+00 to 123+00	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	540,000	

Note: + sign denotes allowable gross loading greater than maximum gross weight of any existing aircraft having indicated gear configuration.
(a) denotes allowable gross loading less than minimum gross weight of any existing aircraft having indicated gear configuration.

WES FORM NO. 999 JUNE 1972 EDITION OF AUG 1960 IS OBSOLETE.

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Table 5 (Continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: K. I. Sawyer DATE OF EVALUATION MONTH: April YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 630-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. × 48 IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 37-62-37 267-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
T1A	South End Connecting Taxiway H	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	590,000	
T2A	Primary Taxiway Sta 0+25 to 2+05	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	600,000+	
T3A	Primary Taxiway (Center Lane) Sta 2+05 to 13+45	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	600,000+	
T3A	Primary Taxiway (Center Lane) Sta 13+45 to 15+25	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	550,000	
T3A T4A	Primary Taxiway Sta 15+25 to 70+47.5	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	550,000	
T4A	Primary Taxiway (Center Lane) Sta 70+47.5 to 71+37.5	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	600,000+	
T5A	Primary Taxiway (Center Lane) Sta 71+37.5 to 86+87.5	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	600,000+	
T6A	Primary Taxiway (Center Lane) Sta 86+87.5 to 118+25	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	580,000	
T7A	North End Connecting Taxiway G	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	580,000	

WES FORM NO. 999
JUNE 1972

EDITION OF AUG 1960 IS OBSOLETE.

Table 5 (Continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: K. I. Sawyer DATE OF EVALUATION MONTH: April YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	REMARKS
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 630-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. × 48 IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 37-62-37 267-SQ-IN. CONTACT AREA EACH TIRE	
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
T9A T10A T11A	SAC Operational Apron Access Taxiways (3)	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	540,000	
T12A	SAC Operational Apron Taxiway (Center Lane)	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	540,000	
A4B	SAC Operational Apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	310,000	230,000+	380,000+	800,000+	420,000	
A9B T8B	SAC Alert Apron and Taxiway A	Capacity	155,000+	85,000+	155,000	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	520,000	
A1B	SAC Warm-up Apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	560,000	
T13B A5B	SAC Hangar Access Aprons and Taxiway	Capacity	150,000	85,000+	155,000+	220,000+	200,000+	255,000	230,000+	380,000+	800,000+	360,000	
T16B T17B	Taxiway C Taxiway D	Capacity	155,000+	65,000	115,000	170,000	200,000+	200,000	230,000+	280,000	670,000	260,000	
A7B T14B	ADC Alert Apron Taxiway B	Capacity	85,000	55,000	80,000	110,000	150,000	140,000	170,000	190,000	560,000	(a)	
A10B	ADC Alert Rear Access Apron	Capacity	75,000	40,000	75,000	90,000	125,000	145,000	165,000	185,000	520,000	(a)	
A8B	ADC Warm-up Pad	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	280,000	230,000+	380,000+	800,000+	390,000	
T15B	Alert Apron Access Taxiway	Capacity	23,000	23,000	50,000	50,000	80,000	75,000	(a)	130,000	360,000	(a)	
T20B	ADC Operational Apron Access Taxiway	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	265,000	230,000+	380,000+	800,000+	370,000	
A2B	ADC Operational Apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	265,000	230,000+	380,000+	800,000+	370,000	

Table 5 (Continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: K. I. Sawyer DATE OF EVALUATION MONTH: April YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 630-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33 IN. × 48 IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 37-62-37 267-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
A3B	ADC Operational Apron Extension	Capacity	110,000	85,000+	155,000+	165,000	200,000+	190,000	230,000+	370,000	800,000+	270,000	
T18C T19C	Taxiway E Taxiway F	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	520,000	
A6B	Hangar Access Aprons	Capacity	135,000	85,000+	155,000+	220,000+	200,000+	230,000	230,000+	380,000+	800,000+	320,000	

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EDITION OF AUG 1960 IS OBSOLETE.

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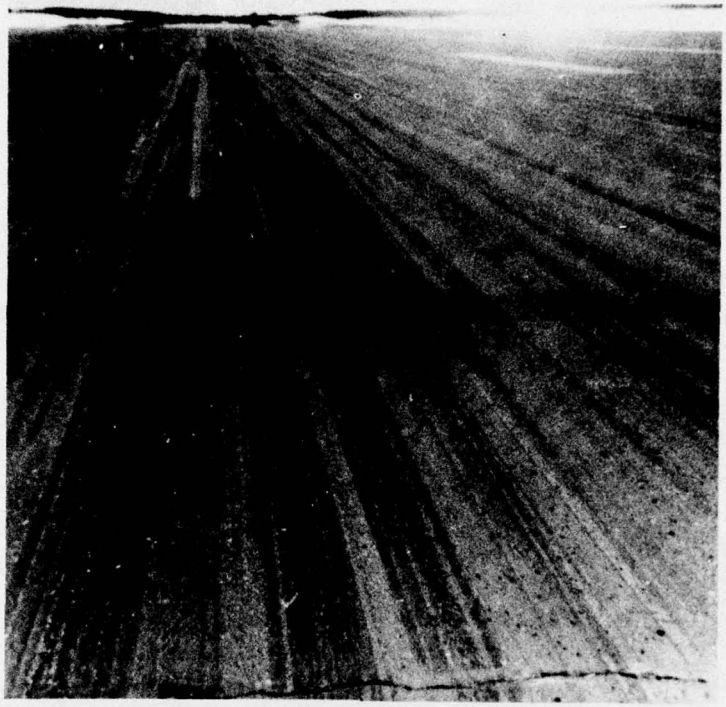


Photo 1. Runway surface (feature R7C), sta 10+00 to 63+00; condition rated very good

Photo 2. Transverse crack in runway (feature R7C), sta 10+00 to 63+00

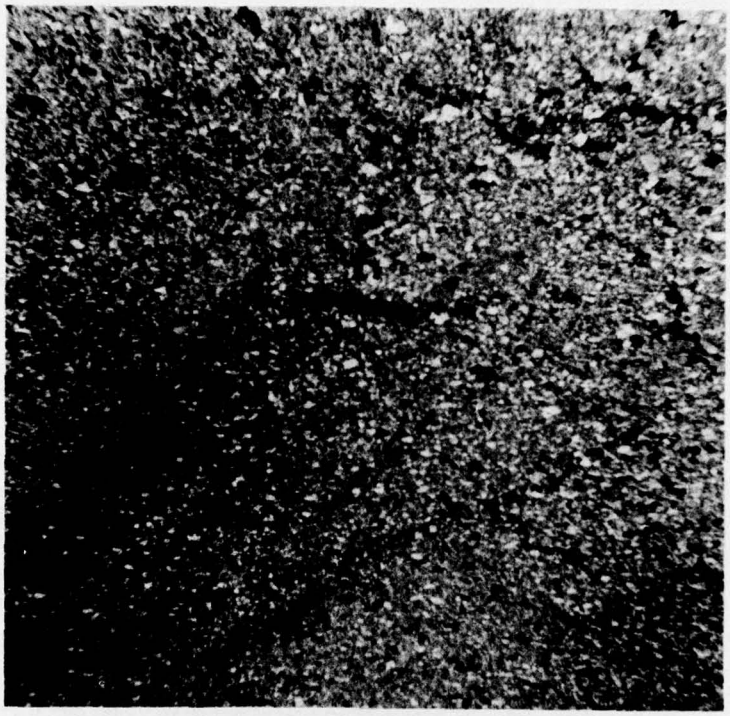


Photo 3. Shrinkage cracks in outside edges of runway (feature R8D), sta 10+00 to 113+00

Photo 4. Rutting and longitudinal cracks in ADC alert access apron taxiway (feature T15B)

Photo 5. Cracks in taxiway B (feature T14B)

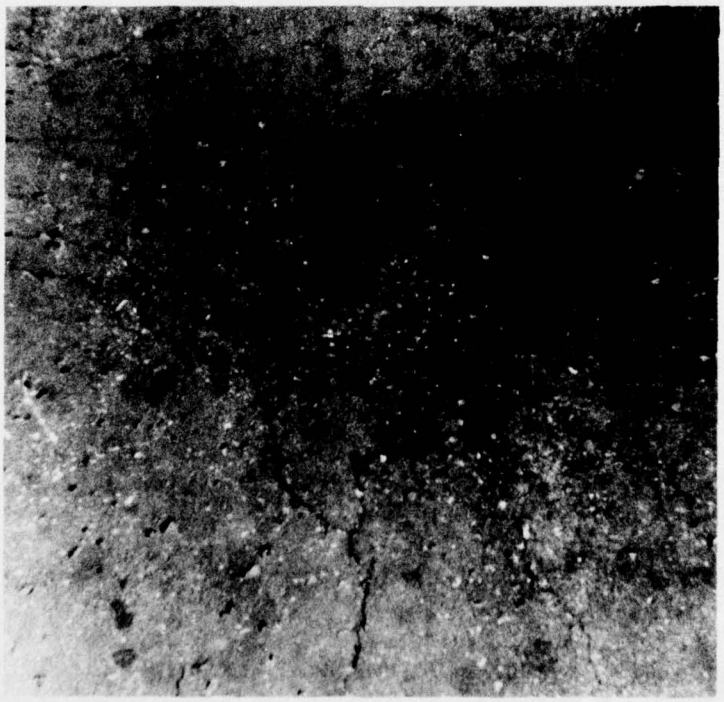
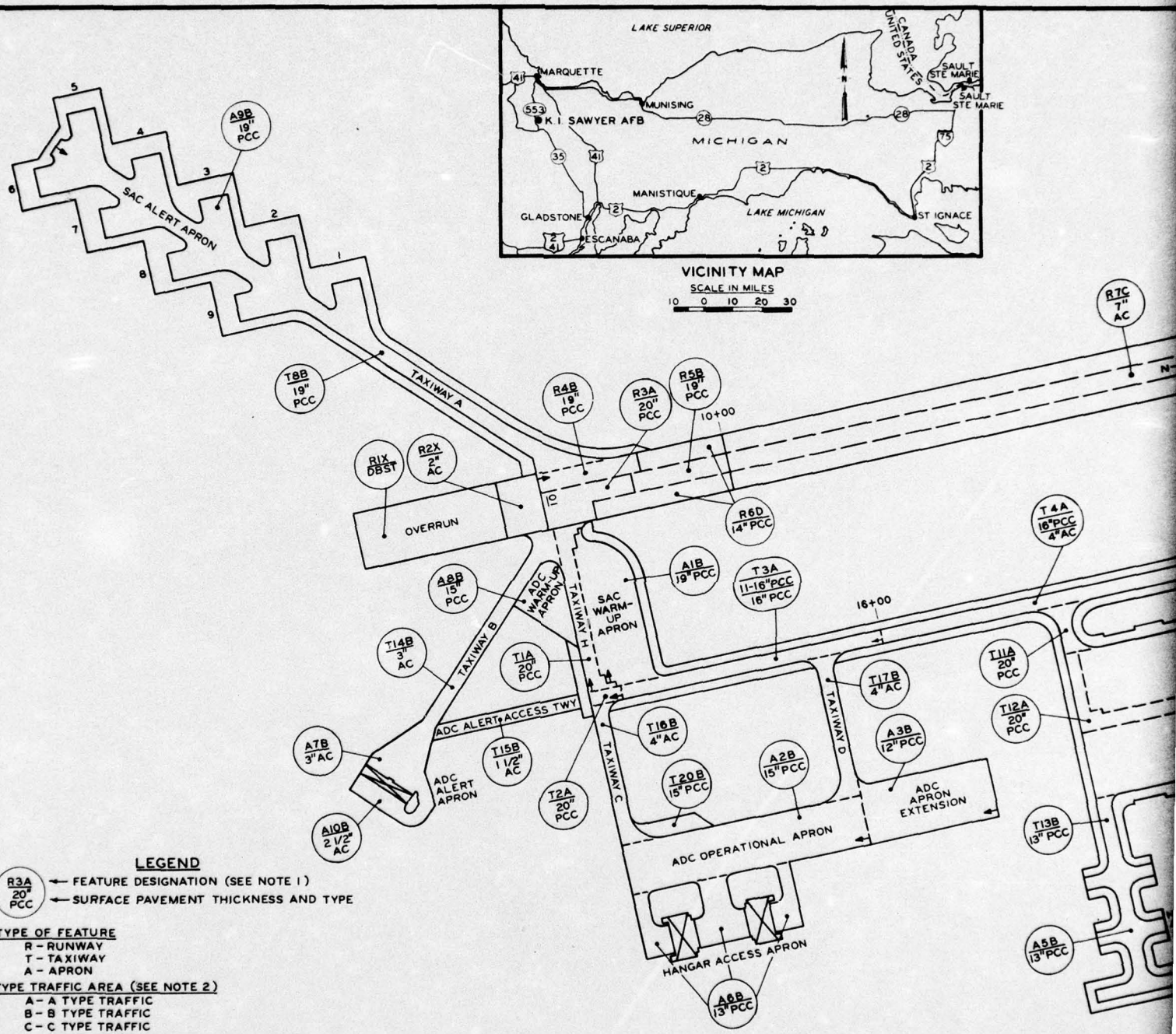


Photo 6. Distressed area of taxiway C
(feature T16B)



LEGEND

R3A / 20" PCC ← FEATURE DESIGNATION (SEE NOTE 1)
← SURFACE PAVEMENT THICKNESS AND TYPE

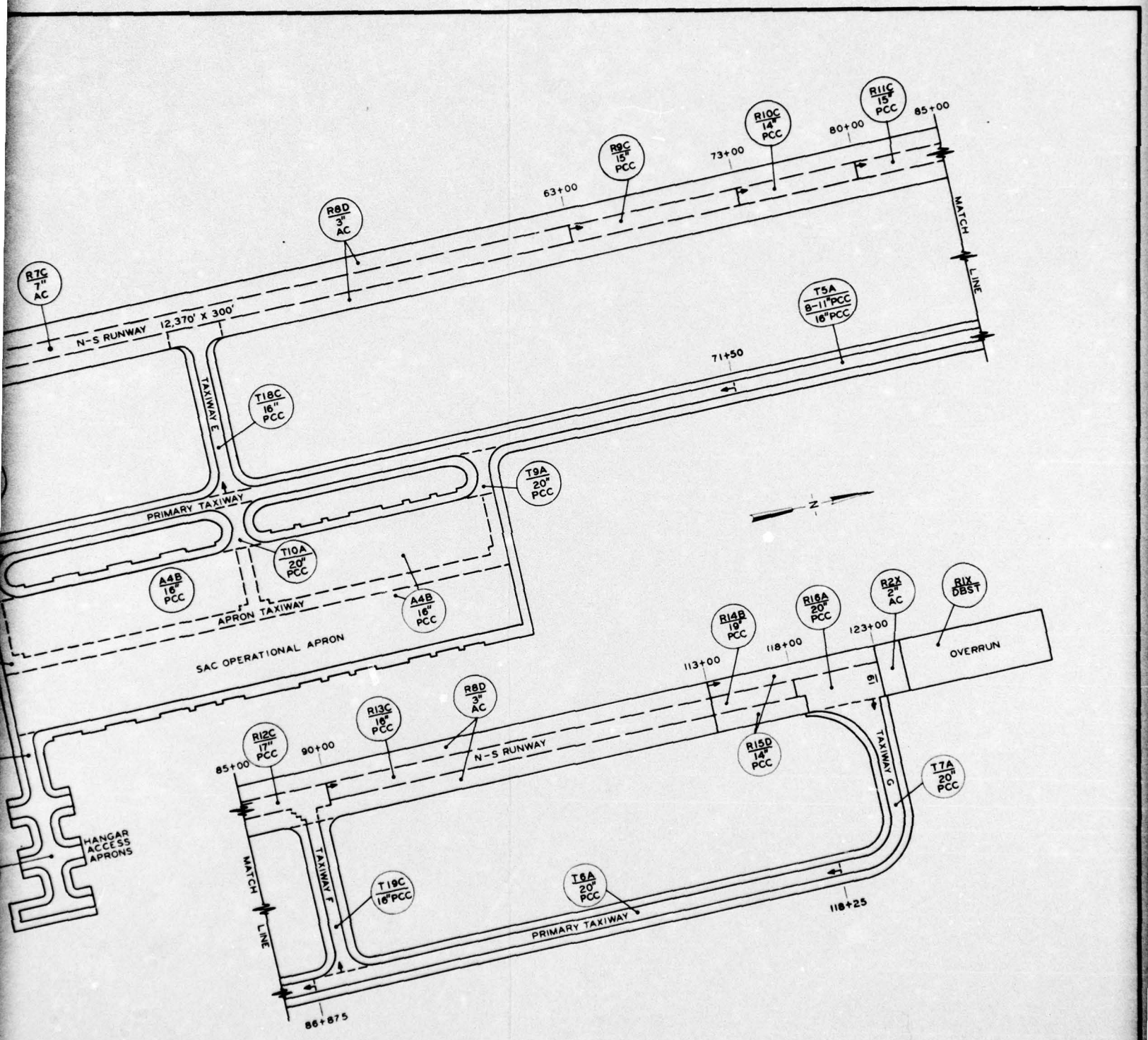
TYPE OF FEATURE
- R - RUNWAY
- T - TAXIWAY
- A - APRON

TYPE TRAFFIC AREA (SEE NOTE 2)
- A - A TYPE TRAFFIC
- B - B TYPE TRAFFIC
- C - C TYPE TRAFFIC
- D - D TYPE TRAFFIC
- X - NO TRAFFIC TYPE ASSIGNED

AC - ASPHALTIC CONCRETE
PCC - PORTLAND CEMENT CONCRETE
DBST - DOUBLE BITUMINOUS SURFACE TREATMENT
→ - DIRECTION OF SURVEY

NOTES: 1. FEATURE DESIGNATION DENOTES TYPES OF FEATURE, NUMBER OF FEATURE FOR GIVEN TYPE, AND TYPE TRAFFIC AREA.
2. TRAFFIC AREA DESIGNATIONS ARE BASED ON HEAVY LOAD CRITERIA.

SCALE IN FEET
300 0 300 600 900 1200

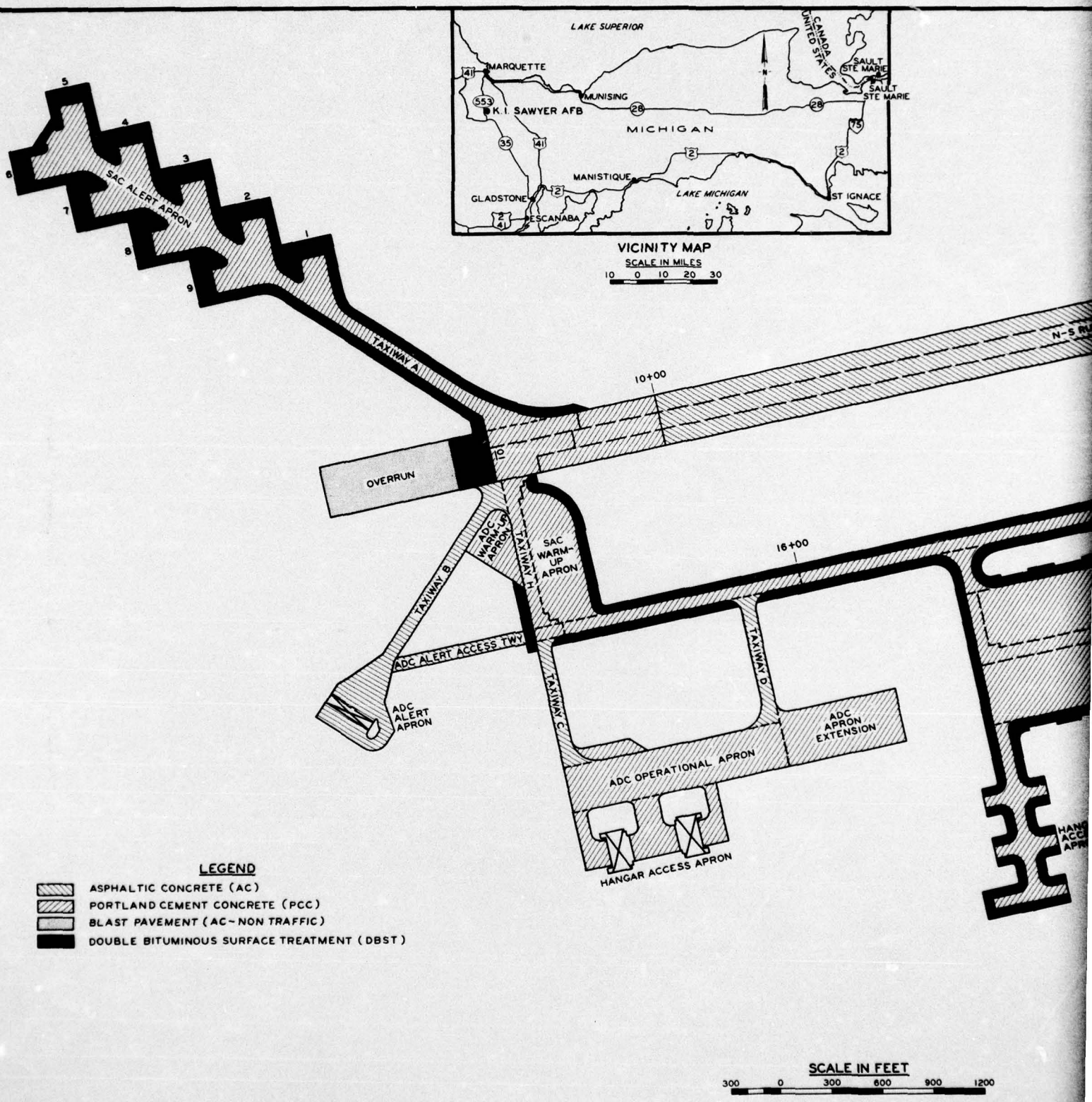


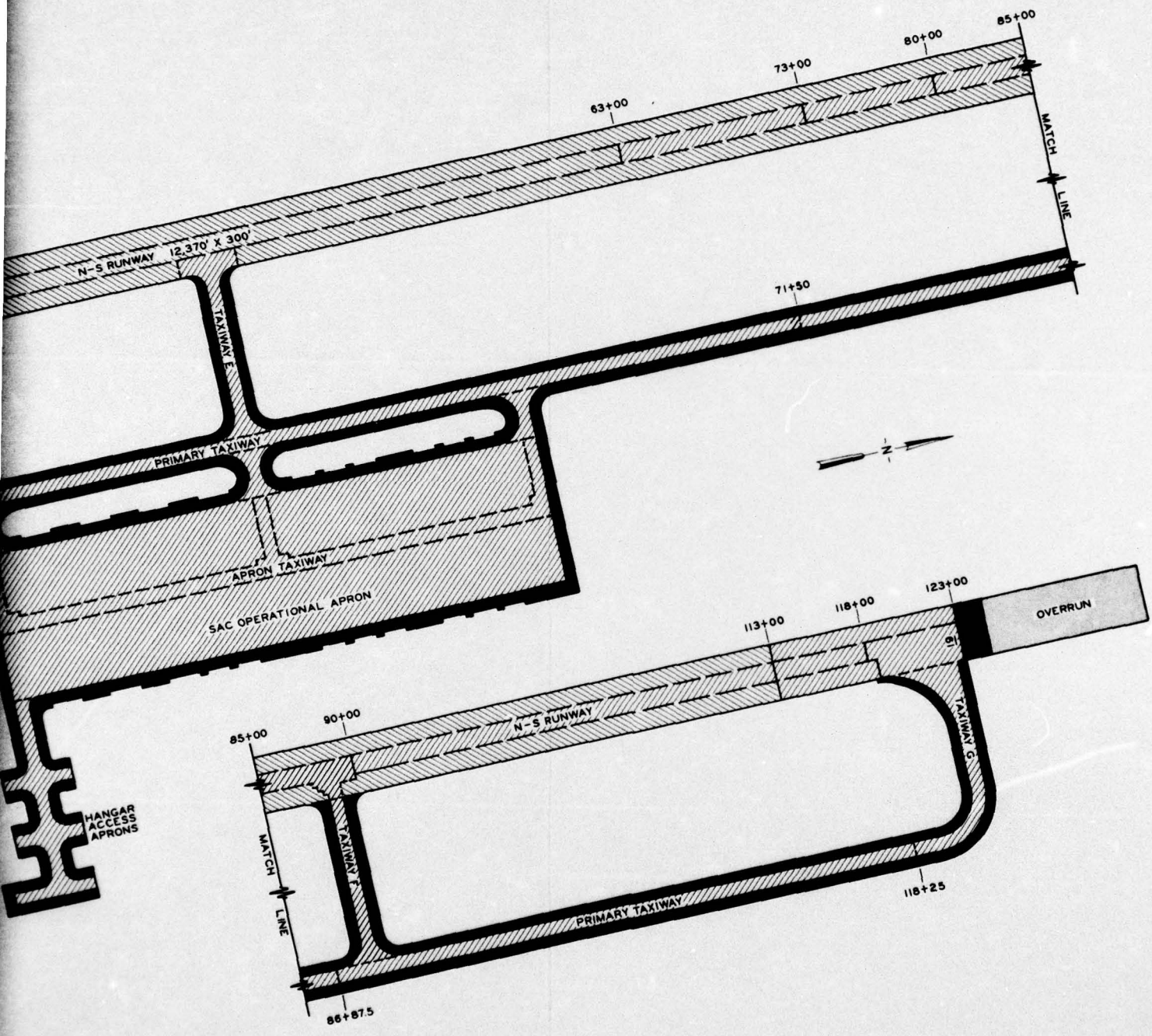
1200

K. I. SAWYER AFB

AIRFIELD LAYOUT

PLATE 1


LAKE SUPERIOR
CANADA
UNITED STATES
MARQUETTE
SAULT STE MARIE
SAULT STE MARIE
MUNISING
K. I. SAWYER AFB
MICHIGAN
MANISTIQUE
GLADSTONE
ESCANABA
LAKE MICHIGAN
ST IGNACE
VICINITY MAP
SCALE IN MILES
10 0 10 20 30
SAC ALERT APRON
TAXIWAY A
10+00
OVERRUN
ADC WARM-UP APRON
TAXIWAY H
SAC WARM-UP APRON
16+00
TAXIWAY B
ADC ALERT ACCESS TWY
TAXIWAY C
TAXIWAY D
ADC ALERT APRON
ADC APRON EXTENSION
ADC OPERATIONAL APRON
HANGAR ACCESS APRON
LEGEND
ASPHALTIC CONCRETE (AC)
PORTLAND CEMENT CONCRETE (PCC)
BLAST PAVEMENT (AC-NON TRAFFIC)
DOUBLE BITUMINOUS SURFACE TREATMENT (DBST)
SCALE IN FEET
300 0 300 600 900 1200



K.I. SAWYER AFB

PAVEMENT PLAN

PLATE 2

Appendix A: K. I. Sawyer Annual Maintenance Plan

K. I. Sawyer Annual Maintenance Plan

AIRCRAFT PAVEMENTS -RUNWAYS, TAXIWAY, APRON, MISSILE COMPLEX RUNWAY, ETC.

No.	Description	Pavement Type	Year Constructed	Maint & Repair History (Contract Only)	Present and Proposed Maint and Repair
A.	Runway, Prim, Inst 12,370' x 300'				
1.	Sta - 0 + 70 to Sta 10 + 00 300' wide 20" PCC 1st 570' 19" PCC 2nd 500'	Rigid Heavy	1959	Jts resealed '63, '67 Pop-out repair '62	Joint Sealing KIS 81-2 CY 73
2.	Sta 10 + 00 to Sta 63 + 00 Center 150' wide 7" A.C.C. 8" Stab Agg Base	Flexible Heavy	1955	Seal Coat 1956 Slurry Seal - 63 3" Bituminous overlay '65, Joints '67	Joint Sealing KIS 79-2 CY '72 Slurry Seal KIS 86-8 CY '73 1 1/2 Bit. Overlay KIS 91-5 CY '75
3.	Sta 63 + 00 to Sta 90 + 00 Center 150' wide 6300 - 7300 15" 7300 - 8000 14" 8000 - 8500 15" 8500 - 9000 17"	Rigid Heavy	1957	Joints resealed '67	Project KIS 81-2 Joint Sealing CY '73 In House - Repair Popouts
4.	Sta 90 + 00 to Sta 113 + 00 Center 150' wide 16" PCC	Rigid Heavy	1959	Replace 695 SY Frost Heave '63 Popout repair '62 Joints resealed '67	Project KIS 81-2 Joint Sealing CY '73

5.	Sta 113 + 00 to Sta 123 + 0 300' wide 113-118 - 19" Center 150' - 14" Outside 75' Ea Side 123-125 - 20" - 14" West 75'	Rigid Heavy	1959	Joints resealed '63, '67 Popout repair '62	Project KIS 81-2 Joint Sealing CY 73
6.	Sta 10 + 00 to Sta 113 + 00 75' wide ea side 3" A.C.C. 9" Stab. Agg. Base	Flexible Heavy	1959	Slurry Seal 1963 Joints resealed '66, '67	Project KIS 79-2 Joint Sealing CY '72 Slurry Seal CY '73 KIS 86-8
7.	South Overrun 930' x 300' 2" A.C.C. - 6" Stab. Agg. Base-1st 150' 1/2" Dbl B.T., 7 1/2" Stab. Agg. Base	Flexible Non-Traffic	1955	Reseal North & South South Overrun '66, '71	Reseal CY '75 Project KIS 85-4
8.	North Overrun 1,000' x 300' 2" A.C.C.-6" Stab. Agg. Base-1st 150'	Flexible Non-Traffic	1959	Resealed CY '66, '71	Replace 150' x 300' Blast Pad, Install Drains KIS 67-6 CY '72 KIS 85-4 Reseal CY '75
B.	SAC Alert				
9.	SAC Alert T/W & Aprons 3313' x 75' 245' x 150' 19" PCC	Rigid Heavy	1959	Joints resealed CY '70	Project KIS 88-5 Reseal Joints CY '75

C.	ADC Alert				
10.	ADC Alert Apron & Taxiway 1558' x 75' 3" ACC 9" Stab. Agg. Base	Flexible Light	1955	Slurry Seal '63	KIS 91-2 Slurry Seal CY '72
11.	ADC Alert Rear Access Apron & N-S Taxiway 15,000 SY 2 1/2" ACC 6" Stab. Agg. Base	Flexible Light	1958	Slurry Seal '63	KIS 91-2 Slurry Seal '72 KIS 76-8 Replace Log-Air Pave. CY 72
12.	ADC Warm-up Apron 6.300 SY 15" PCC	Rigid Light	1956	Joints resealed '63 625 SY replaced '63	KIS 80-3 Reseal Joints CY '73
D.	Taxiways				
13.	Primary Parallel (11,938' x 75') Varies - Overlayed on ACC	Rigid Heavy	1959	Joints resealed '63, '67	Project KIS 80-3 Joint Sealing PCC CY '73
14.	End connecting "H" & Warm-up Pad (900' x 75')-20'PCC (25,900 SY Warm-up)-19"PCC	Rigid Heavy	1959	Joints resealed '63, '67	Project KIS 80-3 Joint Sealing PCC CY '73
15.	Int. connecting "E" (900' x 75')-16"PCC	Rigid Heavy	1959	Joints resealed '63, '67	Project KIS 80-3 Joint Sealing CY'73

16.	Int. connecting "F" (900' x 75') 16" PCC	Rigid Heavy	1957	Joints resealed '63, '67 Replace fly-ash test sect. '63	Project KIS 80-3 Joint Sealing PCC CY '73
17.	End connecting "G" (1109' x 75') 20" PCC	Rigid Heavy	1959	Joint resealed '67	Project KID 80-3 Joint Sealing PCC CY '73
18.	ADC Operational Apron Access (760' x 75') 4" ACC Stab. Agg. Base	Flexible Light	1955	Slurry Seal '63 Joints resealed '67	Project KIS 91-2 Slurry Seal CY '73
19.	SAC Operational Apron Access (10,000 SY)	Rigid Heavy	1959	Joints resealed '68, '67 Shoulders Slurry seal '66	Project KIS 81-4 Joint Sealing PCC CY '74
E.	Aprons				
20.	ADC Operational (1300' x 300') (43,333 SY) 15" PCC	Rigid Light	1955	Joints resealed '70	Project KIS 88-5 Reseal Joints CY '75
21.	ADC Operational Addn (4,000 SY) 15" PCC	Rigid Light	1961	Joints resealed '70	Project KIS 88-5 Reseal Joints CY '75
22.	ADC Hangar Access Apron Center (8,300 SY) 13"PCC	Rigid Light	1955	Joints resealed '70	Project KIS 88-5 Reseal Joints CY '75
23.	ADC Hangar Access Apron (N. and S.) 4,400 SY 13" PCC	Rigid Light	1959	Joints resealed	Project KIS 88-5 Reseal Joints CY '75

24.	ADC Operational Apron Extension (700' x 320') 24,889 SY 12" PCC	Rigid Light	1962	Joints resealed '70	Project KIS 88-5 Reseal Joints CY '75
25.	SAC Operational (3,007' x 775') 16" PCC	Rigid Heavy	1958-59	Slurry Seal Shoulders CY '67	Project KIS 81-4 Reseal Joints CY '74
26.	SAC Hangar Access Apron 18,600 SY 13" PCC	Rigid Heavy	1959	Slurry Seal Shoulder '66 Joints Sealed CY '67	Project KIS 81-4 Reseal Joints PCC CY '73
F.	Non-Traffic Pavements				
27.	Shoulder Pavements 288,200 SY 2" ACC 6" Stab. Agg. Base	Flexible Non-Traffic	1959 (	Slurry Seal '63 ('67 Seal Ramp) Seal Joints Taxiways '67	Project KIS 79-2 Reseal T/W Joints CY '72 Project KIS 88-2 Slurry Seal Taxiway CY '72 Project KIS 90-8 Slurry Seal SAC Alert & Ops Aprons CY '72 (KIS 91-2)
28.	Helicopter Pad 70' x 70' 20" ACC 6" Stab. Agg. Base	Flexible Non-Traffic	1962		
29.	ADC Power Check 21,100 SY 15" PCC	Rigid Light	1958	PCC Grout & ADD Blast Deflectors (Rubble) CY '66	Reseal Joints PCC Relocate Pad to Provide Taxiway Clearance