



DEPARTMENT OF THE AIR FORCE
AIR FORCE CIVIL ENGINEER CENTER
TYNDALL AIR FORCE BASE FLORIDA

26 August 2021

MEMORANDUM FOR DISTRIBUTION

FROM: AFCEC/COAP
139 Barnes Drive, Suite 1
Tyndall AFB, FL 32403-5319

SUBJECT: Desktop Airfield Pavement Evaluation, Wright-Patterson AFB, Ohio.

1. **AUTHORITY:** At the request of Ms. Megan Brinson, 88th Civil Engineer Squadron, a desktop airfield pavement evaluation was conducted by AFCEC/COAP personnel in order to update the PCNs and AGLs for seven reconstructed sections of the Wright-Patterson AFB airfield that includes Taxiway B2, Taxiway Delta, and Runway 05R/23L.

2. **AFCEC TEAM MEMBERS:** The following AFCEC personnel conducted a desktop airfield pavement evaluation based on recent as-built drawings and previous pavement condition reports:

Capt David Jones, david.jones.173@us.af.mil, DSN 523-6081
TSgt Nikita Kraev, nikita.kraev.1@us.af.mil, DSN 523-6085

3. **OBJECTIVE:** The objective of this desktop airfield pavement evaluation was to provide updated PCNs/AGLs for recently reconstructed airfield sections. The latest structural report for Wright-Patterson AFB was published in May 2018. Since then, portions of Taxiway B2, Taxiway D, and Runway 05R/23L have been reconstructed. In accordance with AFI 32-1041, an updated publication of PCNs and AGLs was requested to reflect the new capability of those pavement sections. This memo and supporting attachments provide the requested information.

4. **FIELD or REMOTE PROCEDURES:** AFCEC personnel utilized the last structural evaluation report published in 2018 and user provided as-built drawings from the recent construction project. Based on the physical property data provided therein, an APE Analysis was performed using PCASE version 2.09.07 August 2020 to determine the new PCNs and AGLs for those newly reconstructed sections.

5. **TEST RESULTS:** The following sections were evaluated in this desktop exercise: R13A, R14C, R15A, T11C, T12C, T28C (West of Taxiway B), and T29C. Structural results are attached. Sections R13A, R14C, R15A were part of the mill and overlay project on Runway 05/23L. Sections T11C, T12C, T28C (West of Taxiway B), and T29C were fully reconstructed with PCC. Previous reports have included a frost evaluation for the thaw-weakened periods. However, frost penetration only occurs up to 22 inches below the pavement surface at Wright-Patterson AFB. Therefore, due to the pavement thickness in the evaluated sections the potential for freezing and subsequent thaw weakening of the subgrade are not likely.

6. **CONCLUSIONS and RECOMMENDATIONS:** As a result of this evaluation an updated PCN is required for Runway 05R/23L. The standard PCNs published in the National Geospatial-Intelligence Agency (NGA) references for U.S. Air Force airfields are based on the most restrictive primary runway section (full-width over 1,000 feet at the ends and the 75-foot wide keel section for the entire length of the

runway) and maximum allowable weight of a C-17 aircraft at 50,000 passes. **For the Wright-Patterson AFB runway, the recommended PCN for publication is:**

Runway 05R/23L: 111/R/B/W/T

7. Please forward any questions to Capt David Jones, DSN 523-6081, commercial (850) 283-6081, or via email to david.jones.173@us.af.mil.

DAVID M. JONES, Capt, USAF
Chief, Airfield Pavement Evaluation Team

4 Attachments:

1. Airfield Map of Evaluated Sections
2. Physical Property Data
3. Structural Data
4. Provided As-Built Information/Submittals

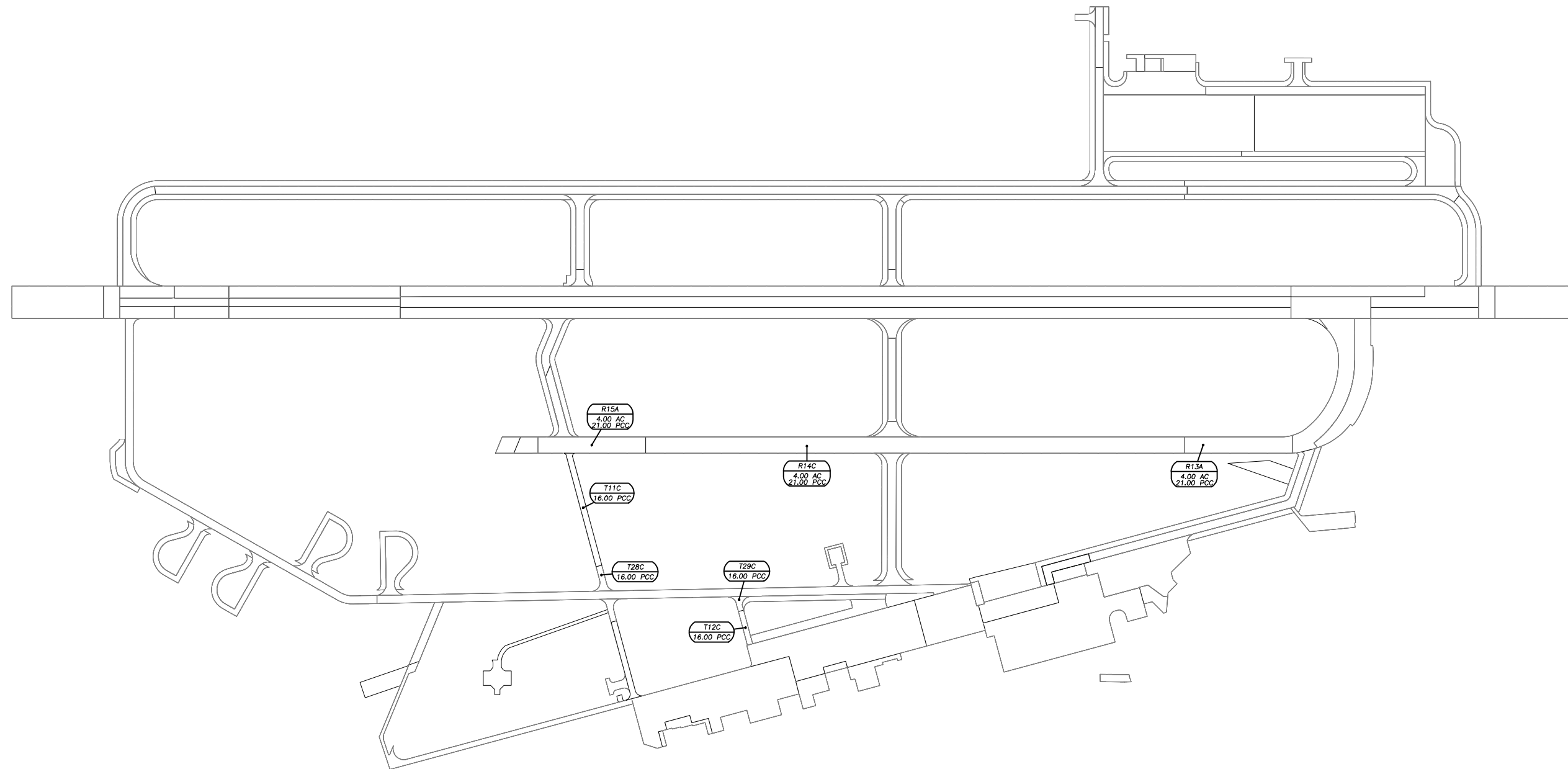
DISTRIBUTION:

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National Geospatial-Intelligence Agency
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ATTACHMENT 1. AIRFIELD MAP OF EVALUATED SECTIONS

LEGEND

PAVEMENT TYPE	
AC	ASPHALTIC CONCRETE
PCC	PORTLAND CEMENT CONCRETE
—	CHANGE IN SECTION BOUNDARY
SECTION # PAVEMENT	SECTION DESIGNATION (SEE NOTE 1)



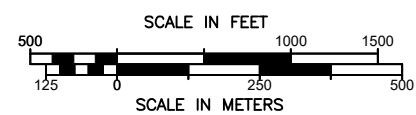
NOTES

1. PAVEMENTS NOT ASSESSED ARE THOSE THAT ARE NOT AIR FORCE REAL PROPERTY, CLOSED, ABANDONED, UNDER CONSTRUCTION, OR SHOULDERS.

AIR FORCE
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TYNDALL AIR FORCE BASE, FLORIDA

TABLETOP EVALUATION WRIGHT-PATTERSON AFB, OH MAIN BASE

ENGINEER JONES	DATE 25 AUG 2021	DRAWING NUMBER 1
DRAWN KRAEV	SCALE GRAPHIC	SHEET 1 OF 1



ATTACHMENT 2. PHYSICAL PROPERTY DATA

SUMMARY OF PHYSICAL PROPERTY DATA

Wright-Patterson AFB, OH

SECT	IDENT	LAYER 1 PAVEMENT			LAYER 2 PAVEMENT			LAYER 3 PAVEMENT			LAYER 4 PAVEMENT			BASE			SUBBASE			SUBGRADE		
		THICK (in)	DESCRP	FLEX (psi)	THICK (in)	DESCRP	FLEX (psi)	THICK (in)	DESCRP	FLEX (psi)	THICK (in)	DESCRP	FLEX (psi)	THICK (in)	DESCRP	K/CBR	THICK (in)	DESCRP	K/CBR	DESCRP	K/CBR	
R13A	Runway 05R/23L	4.00 ⁵	AC ⁵	-	21.00 ⁵	PCC ₀₉	800 ₀₉	-	-	-	-	-	-	-	-	-	-	-	-	-	Clayey Sand w/ Gravel (SC) ₀₉	<u>225</u> ₀₉
R14C	Runway 05R/23L	4.00 ⁵	AC ⁵	-	21.00 ⁵	PCC ₀₉	800 ₀₉	-	-	-	-	-	-	5.00 ₀₉	Clayey Sand w/ Gravel (SC) ₀₉	<u>200</u> ₀₉	-	-	-	-	Clayey Sand w/ Gravel (SC) ₀₉	<u>150</u> ₀₉
R15A	Runway 05R/23L	4.00 ⁵	AC ⁵	-	21.00 ⁵	PCC ₀₉	800 ₀₉	-	-	-	-	-	-	-	-	-	-	-	-	-	Clayey Sand w/ Gravel (SC) ₀₉	<u>300</u> ₀₉
T11C	Taxiway D	16.00 ⁵	PCC ⁵	700	4.00 ⁵	Drainage Layer ⁵	-	-	-	-	-	-	-	6.00 ⁵	Graded Course Aggregate ⁵	<u>500</u> ⁵	12.00 ⁵	Cement Stabilized Fill ⁵	<u>500</u> ⁵	Sandy Lean Clay w/ Gravel (CL) ₀₉	<u>200</u> ₀₉	
T12C	Taxiway B2	16.00 ⁵	PCC ⁵	700	4.00 ⁵	Drainage Layer ⁵	-	-	-	-	-	-	-	6.00 ⁵	Graded Course Aggregate ⁵	<u>500</u> ⁵	12.00 ⁵	Cement Stabilized Fill ⁵	<u>500</u> ⁵	Sandy Lean Clay w/ Gravel (CL) ₀₉	<u>250</u> ₀₉	
T28C	Taxiway D	16.00 ⁵	PCC ⁵	700	4.00 ⁵	Drainage Layer ⁵	-	-	-	-	-	-	-	6.00 ⁵	Graded Course Aggregate ⁵	<u>500</u> ⁵	12.00 ⁵	Cement Stabilized Fill ⁵	<u>500</u> ⁵	Sandy Lean Clay w/ Gravel (CL) ₀₉	<u>200</u> ₀₉	
T29C	Taxiway B2	16.00 ⁵	PCC ⁵	700	4.00 ⁵	Drainage Layer ⁵	-	-	-	-	-	-	-	6.00 ⁵	Graded Course Aggregate ⁵	<u>500</u> ⁵	12.00 ⁵	Cement Stabilized Fill ⁵	<u>500</u> ⁵	Sandy Lean Clay w/ Gravel (CL) ₀₉	<u>250</u> ₀₉	

- NOTES:
1. Flexural strengths for PCC pavements determined using split tensile method on samples taken from in-situ concrete and previous evaluations, capped at 800 psi.
 2. Abbreviations: PCC - Portland Cement Concrete; AC - Asphalt Concrete.
 3. All laboratory soil classifications conform to ASTM standards. Subscript denotes year of USCS laboratory soil classification.
 4. Data taken from neighboring section(s).
 5. Data taken from construction drawings.
- * - Soil strength (K and CBR) values were capped based on soil classification and/or observations in the field.

ATTACHMENT 3. STRUCTURAL DATA

PAVEMENT CLASSIFICATION NUMBERS AND SUMMARY OF ALLOWABLE GROSS LOADS
 Wright-Patterson AFB, OH
 Non-Frost Period

PAVEMENT CAPACITY IN KIPS FOR AIRCRAFT GROUP INDEX NUMBERS

SECTION	PCN	PASS INTENSITY LEVEL	1	2	3	4	5	6	7	8	9	10	11	12	13	14
R13A	111/R/B/W/T	I	435	296	464	780	393	436	407	758	862	1326	2351	1215	1734	738
		II	560	365	577	932	455	505	470	866	991	1503	2694	1398	1989	901
		III	687	431	682	1188	571	637	585	1055	1225	1829	3313	1739	2459	1183
		IV	968	559	888	1553	787	881	798	1333	1643	2392	4413	2351	3286	1616
R14C	139/R/C/W/T	I	466	333	512	836	448	492	463	835	931	1378	2421	1300	1846	787
		II	584	405	626	986	516	566	530	949	1060	1549	2736	1483	2094	941
		III	701	472	730	1280	642	704	654	1153	1294	1851	3287	1818	2547	1202
		IV	938	600	937	1683	868	951	871	1469	1699	2350	4217	2396	3319	1579
R15A	147/R/B/W/T	I	596	379	617	1095	506	567	524	978	1125	1742	3115	1603	2264	958
		II	804	478	789	1262	596	671	614	1113	1311	2009	3627	1882	2631	1198
		III	1037	577	954	1539	775	875	793	1346	1670	2513	4612	2409	3347	1644
		IV	1647	781	1287	2055	1129	1295	1142	1769	2232	3428	6483	3427	4663	2396
T11C	150/R/C/W/T	I	601	420	646	1074	563	617	579	1016	1133	1651	2938	1585	2246	969
		II	772	517	800	1283	654	717	668	1163	1300	1869	3337	1822	2570	1176
		III	940	610	949	1582	830	906	838	1405	1610	2258	4066	2263	3159	1527
		IV	1307	790	1234	2108	1149	1267	1148	1794	2151	2920	5315	3047	4196	2057
T12C	150/R/B/W/T	I	692	465	736	1266	631	697	650	1155	1301	1911	3389	1837	2573	1099
		II	909	582	931	1493	743	819	759	1330	1507	2183	3900	2132	2972	1352
		III	1137	695	1117	1852	957	1062	970	1608	1897	2686	4838	2697	3723	1799
		IV	1674	924	1501	2554	1385	1545	1381	2102	2571	3578	6517	3762	5084	2521
T28C	150/R/C/W/T	I	601	420	646	1074	563	617	579	1016	1133	1651	2938	1585	2246	969
		II	772	517	800	1283	654	717	668	1163	1300	1869	3337	1822	2570	1176
		III	940	610	949	1582	830	906	838	1405	1610	2258	4066	2263	3159	1527
		IV	1307	790	1234	2108	1149	1267	1148	1794	2151	2920	5315	3047	4196	2057
T29C	150/R/B/W/T	I	692	465	736	1266	631	697	650	1155	1301	1911	3389	1837	2573	1099
		II	909	582	931	1493	743	819	759	1330	1507	2183	3900	2132	2972	1352
		III	1137	695	1117	1852	957	1062	970	1608	1897	2686	4838	2697	3723	1799
		IV	1674	924	1501	2554	1385	1545	1381	2102	2571	3578	6517	3762	5084	2521

ATTACHMENT 4. PROVIDED AS-BUILT INFORMATION/SUBMITTALS

