Alabama Statewide Airport Pavement Management Program Update

Huntsville Executive Airport - Tom Sharp Jr Field (MDQ)

Final Report

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Submitted to

Alabama Aeronautics Bureau

Submitted by

JVIATION

All About Pavements, Inc (API)
www.allaboutpavements.com
Pavement Management – Evaluation – Testing - Design

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Executive Summary

¢ΚŜ ẄØλΙ·ΰλ2ƴLƴŎΦ ΰŜΙ·ΥΣ ØΚλŎΚ λƴŎfdzŘŜŘ !ff !ō2dzΰ tΙ·ØŜΥŜƴΰăΣ LƴŎΦΣ ó! tLú ØΙ·ă Ι·ØΙ·ℕŘŜŘ Ι· Ŏ2ƴΰℕ·Ŏΰ ōè ΰΚŜ !fΙ·ōΙ·ΥΙ· 5ŜLJΙ·ℕΰΥŜƴΰ 2Ŧ ¢ℕΙ·ƴăLJ2ℕΰΙ·ΰλ2ƴΩă !Ŝℕ2ƴΙ·dzΰΰŎă .dzℕŜΙ·dz ó! [5h¢ú λƴнлму ΰ2 dzLJŘΙ·ΰŜ ΰΚŜ ŜÈλăΰλƴΞ !fΙ·ōΙ·ΥΙ· {ΰΙ·ΰŜØλŘŜ !λℕLJ2ℕΰ tΙ·ØŜΥŜƴΰ aΙ·ƴΙ·ΞŜΥŜƴΰ tℕ2ΞℕΙ·Υ ó! t a túΦ ¢ΚŜ ăŎ2LJŜ 2Ŧ ΰΚλă LJℕ2ΩŜŎΰ λƴŎfdzŘŜă ΰΚŜ Ι·λℕăλ ŘŜ LJΙ·ØŜΥŜƴΰ ƴŜΰØ2ℕ] Ι·ΰ Ι dzƴΰăØλfŜ 9ÈŜŎdzΰλØŜ !λℕLJ2ℕΰκ¢2Υ {ΚΙ·ℕLJ Ẅℕ CλŜfŘ óa5vúΦ

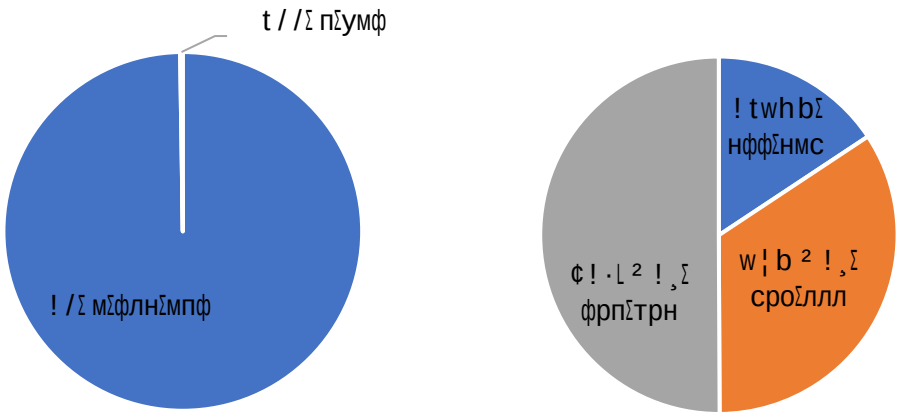
¢ΚŜ Ŧ2ff2ØλƴΞ !tat ΰΙ·ă] ØŜℕŜ Ŏ2ΥLJfŜΰŜŘ ΰ2 Ι·ŎΚλŜØŜ ΰΚŜ LJℕ2ΩŜŎΰ 2ōΩŜŎΰΰØŜă Ι·ΰ a5vƳ

- ü ¦LJŘΙ·ΰŜ ΰΚŜ t!±9w Ø2ℕ] Kλăΰ2ℕè ØλΰΚ ℕŜŎ2ℕŘă ℕŜØλŜØ λƴŦ2ℕΥΙ·ΰλ2ƴLJℕ2ØλŘŜŘ ōè ![5h¢
- ü /2ƴŘdzŎΰ Ι· ØλădzΙ·f LJΙ·ØŜΥŜƴΰ Ŏ2ƴŘλΰλ2ƴădzℕØŜè 2Ŧ ΰΚŜ Ι·λℕŦλŜfŘ LJΙ·ØŜΥŜƴΰă
- ü ¦LJŘΙ·ΰŜ ΰΚŜ t!±9w ŘΙ·ΰΙ·ōΙ·ăŜ ØλΰΚ λƴØŜƴΰ2ℕè Ι·ƴŘ Ŏ2ƴŘλΰλ2ƴŘΙ·ΰΙ·
- ü ¦LJŘΙ·ΰŜ aΙ·λƴΰŜƴΙ·ƴŎŘ Ι·ƴŘ wŜKΙ·ōλfΰΰΙ·ΰλ2ƴó a ɔwú LJ2fΰŎλŜă Ι·ƴŘ dzƴΰ Ŏ2ăΰă
- ü 5ŜØŜf2LJ Ι· τπ¸ŜΙ·ℕ tΙ·ØŜΥŜƴΰ /Ι·LJλΰΙ·f LΥLJℕ2ØŜΥŜƴΰ tℕ2ΞℕΙ·Υ ót/Ltú ØλΰΚ Ι·ăă2ŎλΙ·ΰŜŘ Ŏ2ăΰ ŜăΰλΥΙ·ΰŜă

ES.1 Pavement Inventory

¢ΚŜℕŜ Ι·ℕŜ мм ōℕΙ·ƴŎΚŜă Ι·ƴŘ нм ăŜŎΰλ2ƴã ØλΰΚλƴ a5vΩă LJΙ·ØŜΥŜƴΰ ƴŜΰØ2ℕ] ØλΰΚ Ι· ΰ2ΰΙ·f ădzℕŦΙ·ŎŜ Ι·ℕŜΙ· 2Ŧ Ι·LJLJℕ2ÈλΥΙ·ΰŜfè мΦфм ΥλffΛ2ƴăIjdzΙ·ℕŜ ŦŜŜΰ óăŦúΦ CλΞdzℕŜ 9{πм ăK2Øă ΰΚŜ Řλăΰℕλōdzΰλ2ƴ2Ŧ ΰΚŜ LJΙ·ØŜΥŜƴΰ ƴŜΰØ2ℕ] ōè ădzℕŦΙ·ŎŜ ΰèLJŜ Ι·ƴŘ ōℕΙ·ƴŎK dzăŜΦ

CλΞdzℕŜ 9{πмΥ tΙ·ØŜΥŜƴΰ !ℕŜΙ· óăŦú ōè {dzℕŦΙ·ŎŜ ¢èLJŜ Ι·ƴŘ .ℕΙ·ƴŎK ¦ăŜΦ



ES.2 Pavement Condition

±λădzΙ·f LJΙ·ØŜΥŜƴΰ λƴãLJŜŎΰλ2ƴã ØŜℕŜ Ŏ2ƴŘdzŎΰŜŘ λƴ hŎΰ2ōŜℕ нлму dzăλƴΞ ΰΚŜ tΙ·ØŜΥŜƴΰ /2ƴŘλΰλ2ƴLƴŘŜÈ ótt/Lú ΥŜΰΚ2Ř Ι·ă ăLJŜŎλŦλŜŘ λƴ!{¢a 5роплπмн Ι·ƴŘ C!! !/ мрлкроулπс/Φ ¢ΚŜ t/L λă Ι· ƴdzΥŜℕΛŎΙ·f ℕΙ·ΰλƴΞ ăŎΙ·fŜ ŦℕΥ л ΰ2 млл ΰΚΙ·ΰ LJℕ2ØλŘŜă Ι· ΥŜΙ·ădzℕŜ 2Ŧ ΰΚŜ LJΙ·ØŜΥŜƴΰΩă ŦdzƴŎΰλ2ƴΙ·f ădzℕŦΙ·ŎŜ Ŏ2ƴŘλΰλ2ƴΦ ¢ΚŜ 2ØŜℕΙ·ff Ι·ℕŜΙ·π

ØŜλ∃KűŜŘ ySűØ2₦ t /L ó! ² t /Lú ₮2₦ űKŜ a 5v LJI·ØŜYŜyű ySűØ2₦ λă cnΣ ₦ŜLJ₦ŜăŜyűλy∃ I· áCI·λ₦é Ŏ2yŘλűλ2y℗ ¢KŜ ySűØ2₦ I·₦ŜI·πØŜλ∃KűŜŘ LJI·ØŜYŜyű I·∃Ŝ ó! ² !∃Ŝú λă мт ècŜI·₦ă℗

¢I·ōfŜ 9{πм λă I· fλăűλy∃ 2₮ űKŜ ăŜŎűλ2y t /L ØI·fdzŜă I·yŘ ₦I·űλy∃ă℗

¢I·ōfŜ 9{πмY a 5v {ŜŎűλ2y t /L ±I·fdzŜă I·yŘ wI·űλy∃ă℗

.₦I·yŎK L5	bI·YŜ	{ŜŎűλ2y L5	{dz₦₮I·ŎŜ	!₦ŜI·Σ ă₮	t /L	t /L /I·űŜ∃2₦è
!лм	!LJ₦2yлм	лм	! /	нффΣнмс	ср	CI·λ₦
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wмyос	wdzyØlè муπос	лн	! /	мрлΣллл	фп	D22Ř
¢!	¢I·Èλølè !	лм	! /	нпоΣсум	рр	t22₦
¢!	¢I·Èλølè !	лн	! /	уфΣмтл	ус	D22Ř
¢!м	¢I·Èλølè !м	лм	! /	мфΣлсо	сс	CI·λ₦
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¢!м	¢I·Èλølè !м	лп	! /	пΣуфт	рп	t22₦
¢!м	¢I·Èλølè !м	лр	! /	пΣстл	пр	t22₦
¢!м	¢I·Èλølè !м	лс	! /	орΣмус	то	{I·űλă₮I·ŎűØ2₦è
¢!м	¢I·Èλølè !м	лт	t / /	пΣумф	млл	D22Ř
¢.	¢I·Èλølè .	лм	! /	пнΣсрс	пф	t22₦
¢/	¢I·Èλølè /	лм	! /	нфΣпфс	ро	t22₦
¢5	¢I·Èλølè 5	лм	! /	нсΣснн	рс	CI·λ₦
¢9	¢I·Èλølè 9	лм	! /	нрΣтрс	рс	CI·λ₦
¢I !bDлм	¢I·Èλølè I I·y∃I·₦ лм	лм	! /	млнΣнфф	тм	{I·űλă₮I·ŎűØ2₦è
¢I !bDлн	¢I·Èλølè I I·y∃I·₦ лн	лм	! /	мсрΣунп	сл	CI·λ₦
¢I !bDло	¢I·Èλølè I I·y∃I·₦ ло	лм	! /	рΣфлл	пр	t22₦
¢I !bDло	¢I·Èλølè I I·y∃I·₦ ло	лн	! /	мтΣмфо	фп	D22Ř
¢I !bDло	¢I·Èλølè I I·y∃I·₦ ло	ло	! /	прΣурм	рр	t22₦

ES.3 Pavement Maintenance and Repair Funding Levels

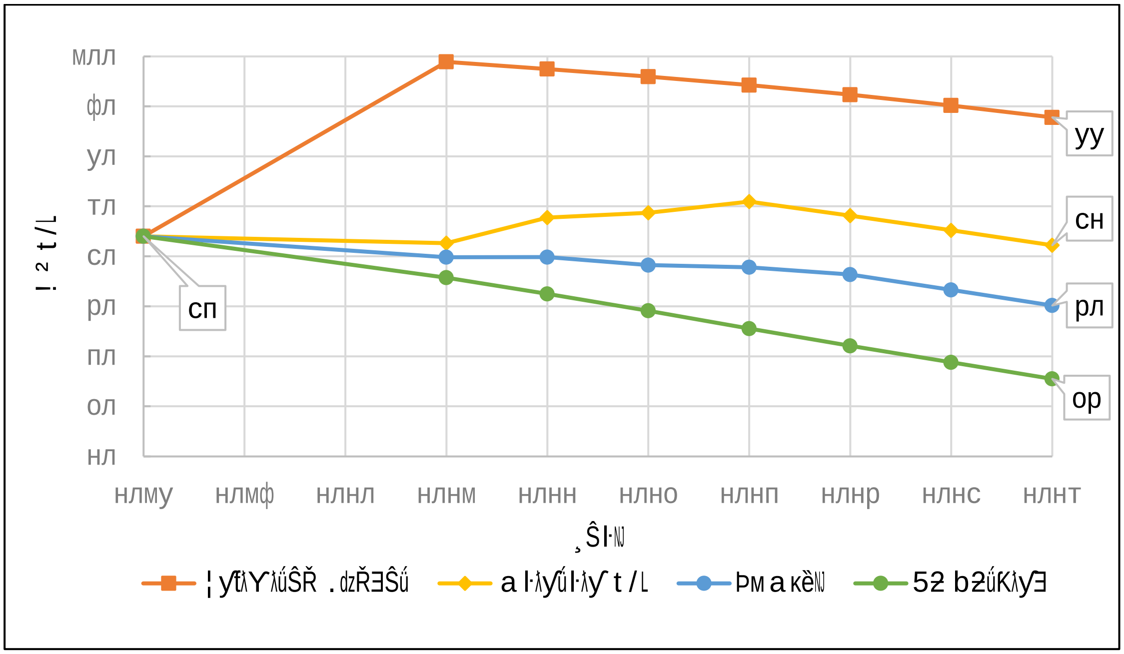
¢KŜ t !±9w ŘI·űI·ōI·ăŜ ØI·ă dzLJŘI·ûŜŘ ØλűK нлму Ŏ2yŘλűλ2yŘI·űI·Σ YI·λyűŜyI·yŎŜ I·yŘ ₦ŜLJI·λ₦ óa ƨwú LJ2₮ŎλŜăΣ I·yŘ dzyλű Ŏ2ăűăT ØKλŎK ØŜ₦Ŝ űKŜyˇdzăŜŘ ú2 ŜØI·fdzI·ûŜ ûKŜ ŜŦŦŜŎű 2₮ YdzfűλLJfŜ ₮dzyŘλy∃ fŜØŜfă 2yˇűKŜ 2ØŜ₦I·ff ₮dzűdz₦Ŝ LJI·ØŜYŜyű Ŏ2yŘλűλ2y℗ Cλ∃dz₦Ŝ 9{πн LJ₦ŜăŜyűă ûKŜ ₮2₦ŜŎI·ăűŜŘ a 5v ySűØ2₦ t /L ØI·fdzŜă ₮2₦ ŜI·ŎK ₮dzyŘλy∃ fŜØŜf℗

ES.4 Pavement Capital Improvement Program (PCIP)

¢KŜ I·yI·fèăλă 2dzűLJdzű ₮₦2Y ûKŜ dzyfλYλűŜŘ ₮dzyŘλy∃ ōdzŘ∃Ŝű ăŎŜyI·₦λ2 øI·ă dzăŜŘ I·ă I· ăűI·₦ûλy∃ LJ2λyű λyˇ ŘŜØŜf2LJλy∃ ûKŜ t /Lt℗ C2₦ ûKλă ăŎŜyI·₦λ2Σ ăŜŎűλ2yã ØŜ₦Ŝ ∃₦2dzLJŜŘ λyú2 LJ₦2ΩŜŎűă ú2 I·ff2ø ₮2₦ I· f2∃λŎI·f Ŏ2yãű₦dzŎűλ2yˇăŜIjdzŜyŎŜ℗ ¢I·ōfŜ 9{πн ădzYYI·₦λÎŜă ûKŜ тπèŜI·₦ t /LtΣ ØKλŎK KI·ă I·yˇŜăűλYI·ûŜŘ ú2úI·f Ŏ2ăű 2₮ I·LJLJ₦2ÈλYI·ûŜfè Рмп℗м Yλffλ2y℗ ¢KŜăŜ ₦ŜŎ2YYŜyŘI·ûλ2yã I·₦Ŝ ōI·ăŜŘ 2yˇI· ySűØ2₦ˇπfŜØŜf ŜØI·fdzI·ûλ2y℗ t₦2ΩŜŎűπfŜØŜf ŜØI·fdzI·ûλ2yã ăK2dzfŘ ōŜ Ŏ2yŘdzŎûŜŘ LJ₦λ2₦ ú2 ŘŜØŜf2LJλy∃ ŘŜăλ∃yˇI·yŘ ōλŘ LJI·Ŏ]I·∃Ŝ Ř2ŎdzYŜyűă℗

Lÿ l·ŘŘλůλ2ÿ ů2 ůKŜ Ÿl·ƨ2Ŋ ŊŜKl·ōλfλůl·ůλ2ÿ ÿŜŜŘă ůKl·ů l·ŊŜ λŘŜÿůλŦλŜŘ λÿ ůKŜ t/Ltΐ t!±9w ől·ă dzăŜŘ ů2 ŘŜØŜf2LJ Ÿl·λÿůŜÿl·ÿŎŜ l·ŎůλØλůλŜă ů2 ŊŜLJl·λŊ ăLJŜŎλŦλŎ t/L Řλăůŋ ŜăăŜă λÿ ¸Ŝl·Ŋ мφ ¢KŜ ŜăůλŸl·ůŜŘ Ŏ2ăůă Ŧ2Ŋ ůKŜăŜ Ÿl·λÿůŜÿl·ÿŎŜ l·ŎůλØλůλŜă l·ŊŜ Þмп΅унс l·ă ădzŸŸl·ŊλÎŜŘ λÿ ¢l·ōfŜ 9{πоφ

CλƎdzŊŜ 9{πнΥ a ϧw CdzÿŘλÿƎ [ŜØŜfăφ



¢l·ōfŜ 9{πнΥ {dzŸŸl·Ŋè 2Ŧ t l·ØŜŸŜÿů /l·LJλůl·f LŸLJŊ2ØŜŸŜÿů tŊ2ƎŊl·Ÿφ

tŊ2ƨŜŎů ¸Ŝl·Ŋ	/Lt tŊ2ƨŜŎů	¢2ůl·f tŊ2ƨŜŎů /2ăů	¢2ůl·f tŊ2ƨŜŎů !ŊŜl· óăŦú	! ² t/L .ŜŦ2ŊŜ	! ² t/L !ŦůŜŊ
нлнм	a5vψнмπлмψwdzÿől·è мупос tŊŜăŜŊØl·ůλ2ÿ	Þмср΅рну	ноф΅мтл	ус	фн
	a5vψнмπлнψwdzÿől·è мупос wŜKl·ōλfλůl·ůλ2ÿ	Þп΅мно΅лрм	снт΅рол	пс	млл
	a5vψнмπлоψ I l·ÿƎl·Ŋ ¢l·Ȅλől·è ло tŊŜăŜŊØl·ůλ2ÿ	Þмр΅лтм	мт΅мфо	уу	фс
нлнн	a5vψннπлмψ¢l·Ȅλől·è !м wŜKl·ōλfλůl·ůλ2ÿ	Þфоо΅уфм	мрр΅пур	рн	млл
нлно	a5vψноπлмψ¢l·Ȅλől·è ! wŜŎ2ÿăůŊdzŎůλ2ÿ	Þн΅флр΅смт	нпо΅сум	пл	млл
	a5vψноπлнψ I l·ÿƎl·Ŋ ¢l·Ȅλől·è ло wŜKl·ōλfλůl·ůλ2ÿ	Þсмт΅лтм	рм΅трм	оф	млл
нлнп	a5vψнпπлмψ I l·ÿƎl·Ŋ ¢l·Ȅλől·èă лмϧлн wŜŎ2ÿăůŊdzŎůλ2ÿ	Þн΅тло΅ном	нсу΅мно	пп	млл
	a5vψнпπлнψwdzÿől·è мупос {dzŊŦl·ŎŜ ¢ŊŜl·ůŸŜÿů	Þофф΅оул	снт΅рол	фс	фф
нлнр	a5vψнрπлмψ!LJŊ2ÿwŜKl·ōλfλůl·ůλ2ÿ	Þн΅ллу΅офт	нфф΅нмс	рм	млл
	a5vψнрπлнψ¢l·Ȅλől·è !м {dzŊŦl·ŎŜ ¢ŊŜl·ůŸŜÿů	Þмлм΅фнп	мрр΅пур	фс	фф
нлнс	a5vψнсπлмψ¢l·Ȅλől·è ! {dzŊŦl·ŎŜ ¢ŊŜl·ůŸŜÿů	Þмсп΅ром	нпо΅сум	фс	фф
	¢2ůl·f	**Þмп΅мот΅сфо**			

¢Ι·õfŜ 9{πoϒ {dzΥΥΙ·ℕè 2Ŧ [2ŏΙ·fλÎŜŘ aΙ·λyΰŜyΙ·yŎŜ tfΙ·y◊

t2fλŎè	² 2ℕ]ϟ 5ŜăŎℕλLJΰλ2Y	² 2ℕ]ϟ vdzΙ·yΰλΰè	² 2ℕ]ϟ ¦yλΰ	² 2ℕ]ϟ /2ăΰ
tℕŜØŜyΰλØŜ	/ℕΙ·Ŏ]ϟ {ŜΙ·fλyƎ π ! /	oΣoнн	Cΰ	ÞмoΣмнн
{Ι·ŦŜΰè	/ℕΙ·Ŏ]ϟ {ŜΙ·fλyƎ π ! /	мот	Cΰ	Þрпм
	t Ι·ΰŎKλyƎ π ! / Cdzffπ5ŜLJΰK	пс	{ljCΰ	ÞмΣмco
			¢2ΰΙ·f	**ÞмпΣунс**

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

! LJLJŜyŘλÈ ! Y t l·ØŜY ŜyŭLyØŜyŭƨNè wŜLJƨNŭ

! LJLJŜyŘλÈ . Y t a t a l·LJă

. M Y LyØŜyŭƨNè a l·LJă

. M ! Y . Nl·yŎK LŘŜyŭλŦλŎl·ŭλ2y

. M . Y {ŜŎŭλ2yLŘŜyŭλŦλŎl·ŭλ2y

. M / Y {l·YLJfŜ ¦yλŭ [l·è2dzŭ

. M 5 Y t l·ØŜY Ŝyŭ ¢èLJŜ

. M 9 Y . Nl·yŎK ¦ăŜ

. M C Y t l·ØŜY Ŝyŭ ! ∃Ŝ

. H Y {dzNŦl·ŎŜ / 2yŘλŭλ2y a l·LJă

. H ! Y Tπ / 2f2N t / L

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. H / Y Ch5 wl·ŭλy∃

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. o Y t l·ØŜY Ŝyŭ / l·LJλŭl·f LYLJN2ØŜY Ŝyŭ tN2∃Nl·Y ót / Ltú a l·LJă

. o ! Y нлнт C2NŜŎl·ăűŜŘ t / L øλŭK2dzŭ t / Lt

. o . Y wŜLJl·λN ¢èLJŜ

. o / Y t / Lt wŜŎ2YY ŜyŘl·ŭλ2yã

! LJLJŜyŘλÈ / Y hØŜNØλŜø 2Ŧ t l·ØŜY Ŝyŭ 5λăúNŜăăŜă

! LJLJŜyŘλÈ 5 Y 5ŜŭI·λfŜŘ t l·ØŜY Ŝyŭ / 2yŘλŭλ2y 5 l·ŭ l· óŜfŜŎŭN2yλŎ ØŜNăλ2y 2yfèú

! LJLJŜyŘλÈ 9 Y 5λăúNŜăă {dzYY l·Nè wŜLJƨNŭ

! LJLJŜyŘλÈ C Y t l·ØŜY Ŝyŭ / 2yŘλŭλ2y wŜLJƨNŭă

C M Y {ŜŎŭλ2y C2NŜŎl·ăűŜŘ t l·ØŜY Ŝyŭ / 2yŘλŭλ2y wl·ŭλy∃

C H Y . Nl·yŎK t / L wl·ŭλy∃

C o Y . Nl·yŎK Ch5 wl·ŭλy∃

! LJLJŜyŘλÈ D Y {l·ŦŜüè l·yŘ tNŜØŜyŭλØŜ a l·λyűŜyl·yŎŜ t2ŭŎλŜă

! LJLJŜyŘλÈ I Y a ƨw ¦yλŭ / 2ăűă

! LJLJŜyŘλÈ L Y t l·ØŜY Ŝyŭ / l·LJλŭl·f LYLJN2ØŜY Ŝyŭ tN2∃Nl·Y ót / Ltú

L M Y / Lt {dzYY l·Nè

L H Y ¸Ŝl·N M a l·λyűŜyl·yŎŜ tfl·y

! LJLJŜyŘλÈ W Y ¦{ . ¢KdzYō 5NλØŜ ς CLb ! [hb[¸

- CλyI·f wŜLJƨNŭ λy t5C Ŧ2NYl·ŭ
- DŜ2πNŜŦŜNŜyŎŜŘ CλŜfŘ tK2ű2ă

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1 Introduction

1.1. Overview

¢KŜ !fI·ōI·YI· 5ŜLJI·NűŮYŜyű 2Ŧ ¢NJI·yãLJ2NűI·űλ2yQă !ŜN2yV·dzűλŐă .dzNŜI·dz ó![5h¢ú λă NŜăLJ2yãλōfŜ Ŧ2N LJNŜăŜNØλyƎ I·yŘ ŜyKI·yŐλyƎ !fI·ōI·YI·Qă I·λN úNJI·yãLJ2NűI·űλ2yˇăèăűŜYΣ ØKλŐK Ŏ2yãλăűă 2Ŧ тн I·λNLJ2NűŭK2dzƎK2dzű űKŜ {űI·ûŜΦ ![5h¢ λYLJfŜYŜyűŜŘ I·yˇ !λNLJ2Nű tI·ØŜYŜyű aI·yV·ƎŜYŜyű tN2ƎNJI·Yˇ ó!tatú λyˇнллу dzăλyƎ űKŜ t!±9w ăèăűŜYΦ ![5h¢ I·ø I·NŘŜŘ I· LJN2ȼŜŐű λyˇнлму ű2 WØλI·ûλ2yˇLyŐΦ óWØλI·ûλ2yű ű2 dzLJŘI·ûŜ űKŜ {ègűŜYˇ tfI·yˇI·yŘ Ŏ2yŘdzŐű I·yˇ9Ŏ2y2YλŎ !yV·fèăλă Ŧ2N úKŜ !fI·ōI·YI· I·λNLJ2NűăΦ ¢KŜ ăŐ2LJŜ 2Ŧ ø2NV I·fă2 λyŐfdzŘŜŘ I·yˇdzLJŘI·ûŜ 2Ŧ úKŜ !tatŦ2N pφ I·λNLJ2NűăΣ ØKλŐK øI·ă Ŏ2yŘdzŐűŜŘ ōè !ff !ō2dzű tI·ØŜYŜyűăΣ LyŐΦΣó!tLúΣ I· WØλI·ûλ2yˇűŜI·Y YˆŜYˆōŜNΦ

² λűK űKλă dzLJŘI·ûŜ 2Ŧ űKŜ !tatΣ úKŜ !fI·ōI·YI· I·λNLJ2Nűă Ŏ2yűλyűzŜ ű2 ōŜ ŜfλƎλōfŜ Ŧ2N C!! ŦdzyŘλyƎ Ŧ2N YI·ȼ2N LJI·ØŜYˆŜyű NŜKI·ōλfλúI·ûλ2yˇø2NV dzyŘŜN úKŜ !λNLJ2Nűú LYˇLJN2ØŜYˆŜyű tN2ƎNJI·Yˇ ó!Ltú ăλyŐŜ I·yˇ !tat YˆŜŜűă úKŜ LJI·ØŜYˆŜyű YI·λyűŜyI·yŐŜ YI·yV·ƎŜYˆŜyű NŜIjdzλNŜYˆŜyűă ŘŜăŐNλōŜŘ λyˇ !LJLJŜyŘλÈ ! 2Ŧ !/ мрлкроулπс/Φ

¢Kλă NŜLJ2Nú ŘλăŐdzăăŜă úKŜ ŜØI·fdzI·ûλ2yˇ2Ŧ úKŜ I·λNăλŘŜ LJI·ØŜYˆŜyűă I·ú IdzyűăØλffŜ 9ÈŜŐdzűλØŜ !λNLJ2Nú ¢2Yˇ {KI·NLJ WN CλŜfŘ óa5vúΣ úKŜ ŐdzNNŜyű I·yŘ Ŧ2NŜŐI·ăűŜŘ LJI·ØŜYˆŜyű Ŏ2yŘλúλ2yΣ I·yŘ úKŜ ŘŜØŜf2LJYˆŜyű 2Ŧ úKŜ tI·ØŜYˆŜyű /I·LJλúI·f LYˇLJN2ØŜYˆŜyű tN2ƎNJI·Yˇ ótL/túΦ

1.2. Work Scope

¢KŜ Ǝ2I·fă 2Ŧ úKŜ !fI·ōI·YI· {űI·ûŜØλŘŜ !λNLJ2Nú tI·ØŜYˆŜyű aI·yV·ƎŜYˆŜyű ¦LJŘI·ûŜ LJN2ƎNJI·Yˇ I·NŜ I·ă Ŧ2ff2øăY

- ü /2yŘdzŐű I· ØλădzI·f LJI·ØŜYˆŜyű λyãLJŜŐűλ2yˇ2Ŧ úKŜ I·ăLJKI·fű ădzNŦI·ÖŜŘ LJI·ØŜYˆŜyűă Ŧ2N pφ 2Ŧ úKŜ тн LJdzōfλŐ dzăŜ I·λNLJ2NűăλyˇfI·ōI·YI·Φ
- ü .I·ăŜŘ 2yˇúKŜ ØλădzI·f λyãLJŜŐűλ2yˇI·yV·fèăλă NŜădzfűăΣ ŘŜØŜf2LJ I· тπèŜI·N t/Lt Ŧ2N ŜI·ÖK I·λNLJ2NűΦ

¢KŜ ăŐ2LJŜ 2Ŧ ø2NV λă I·ă ăK2øyˇōŜf2øY

- ü /2yŘdzŐű I· wŜŐ2NŘă wŜØλŜø
- ü ¦LJŘI·ûŜ tI·ØŜYˆŜyű bŜűø2NV 5ŜŦλyλúλ2yˇ
- ü /2yŘdzŐű tI·ØŜYˆŜyű /2yŘλúλ2yˇ{dzNØŜèă
- ü ¦LJŘI·ûŜ I·yŘ Ödzăű2YλÎŜ ŜÈλăűλyƎ !tatt!±9w ŘI·úI·ōI·ăŜ
- ü 5ŜØŜf2LJ t/Lt I·yŘ I·ăă2ŐλI·ûŜŘ LJN2ȼŜŐű Ŏ2ăű ŜăúλYI·ûŜă
- ü tNŜLJI·NŜ 5NJI·Ŧű I·yŘ CλyV·fwŜLJ2Nűă
- ü 5ŜØŜf2LJ I· øŜōπōI·ăŜŘ ØλŜøŜN Ŧ2N NŜLJ2NűλyƎ !tatŘI·úI·

!ă NŜIjdzλNŜŘ λyˇúKŜ {Ŏ2LJŜ 2Ŧ ² 2NV I·ŘŜűI·λfŜŘ LJI·ØŜYˆŜyű Ŏ2yŘλúλ2yˇădzNØŜè øI·ă yƵű Ŏ2yŘdzŐűŜŘ Ŧ2N I·yè t2NűfI·yŘ /ŜYˆŜyű /2yŐNŜűŜ ótt//ú I·LJN2yã I·yŘ tt// űI·Èλøl·èă f2yƎŜN úKI·yˇнΣллл ŦűΦ LyãűŜI·ŘΣ I· Ŏ2yŘλúλ2yˇ NJI·ûλyƎ 2Ŧ άD22ŘéΣ άCI·λNéΣ 2N άt22Né øI·ă I·ăăλƎyŜŘ ōI·ăŜŘ 2yˇúKŜ 2ØŜNJI·ff LJI·ØŜYˆŜyű Ŏ2yŘλúλ2yΦ

¢KŜ ŘŜfłØŜ₪I·ōfŜ LJ₪2ŘdzŎűă λyŎfdzŘŜ I· t !±9w τΦл ŘI·ű I·ōI·ăŜΣ λyŘλØλŘdzI·f I·λ₪LJ2₪ú ŜØI·fdzI·ûλ2y˝₪ŜLJ2₪ûăΣ I· ăűI·ûŜØλŘŜ ădzY˝YI·₪è ₪ŜLJ2₪ûΣ I·yŘ ûKŜ ØŜō ØλŜØŜ₪Φ ¢KŜ a5v ₪ŜLJ2₪ú ØλftōŜ 2yŜ 2ŦûKŜ pφ λyŘλØλŘdzI·f I·λ₪LJ2₪ú ₪ŜLJ2₪ûă ûKI·ú ØλftōŜ I·ØI·λfI·ōfŜ 2y˝![5h¢Ωă ØŜōăλúŜΦ

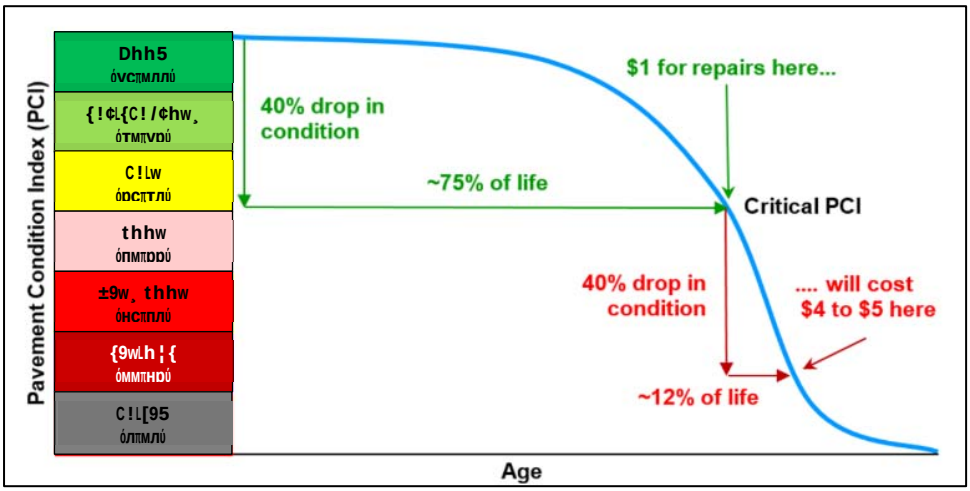
1.3. Pavement Management Concept

!y˝!tat LJ₪2ØλŘŜă I·yˇλyűŜƎ₪I·úŜŘ Ŧ₪I·Y˝ŜØ2₪ℸ Ŧ2₪ Ō2Y˝LJ₪ŜKŜyăλØŜ ŜØI·fdzI·ûλ2y˝I·yŘ ŘŜŎλăλ2y˝YI·ℸλyƎ Ŧ2₪ Y˝I·yI·ƎλyƎ I·λ₪ŦλŜfŘ LJI·ØŜY˝Ŝyűă¢ ¢KŜ ŜăăŜyűλI·f Ō2Y˝LJ2yŜyűă 2Ŧ I·y˝ŜŦŦŜŎûλØŜ !tat LJ₪2ØλŘŜ Ŧ2₪ I·y˝2ōȼŜŎûλØŜ ŜØI·fdzI·ûλ2y˝2Ŧ ûKŜ Ō2yŘλûλ2y˝2Ŧ ŜÈλăûλyƎ LJI·ØŜY˝Ŝyűă˝ λŘŜyűλŦλŎI·ûλ2y˝2Ŧ ăK2₪ŭπűŜ₪Y˝ I·yŘ f2yƎπ₪I·yƎŜ YI·ȼ2₪ ₪ŜKI·ōλfłűI·ûλ2y˝ ø2₪ℸΣ ySŎŜăăI·₪è λY˝LJ₪2ØŜY˝Ŝyűă λy˝ûKŜ LJI·ØŜY˝Ŝyű ăû₪dzŎűdz₪I·f ŎI·LJI·ŎλűèΣ I·yŘ ûKŜ ₪ŜŎdz₪₪λyƎ YI·λyűŜyI·yŎŜ ø2₪ℸ ûKI·ú ăK2dzfŘ ōŜ Ō2Y˝LJfŜûŜŘ ŜI·ŎK èŜI·₪Φ ¢KŜ !tat øλftI·fă2 LJ₪2ØλŘŜ I· ōdzŘƎŜú Ŧ2₪ ŜI·ŎK 2Ŧ úKŜăŜ úèLJŜă 2Ŧ LJI·ØŜY˝Ŝyű Ō2yăû₪dzŎûλ2yΦ

I λăű2₪λŎI·ffèΣ Y˝2ăű 2₪ƎI·yλÎI·ûλ2yã KI·ØŜ YI·ŘŜ YI·λyűŜyI·yŎŜ ŘŜŎλăλ2yã ōI·ăŜŘ 2y˝LJI·ăű ŜÈLJŜ₪λŜyŎŜΣ øλúK2dzú úKŜ ōŜyŜŦλú 2Ŧ Ř2ŎdzY˝ŜyűŜŘ ŘI·úI· 2₪ I·yI·fèăλăΦ ¢KλăLJ₪I·ŎûλŎŜ Ř2Ŝă y2ú ŜyŎ2dz₪I·ƎŜ fλŦŜ ŎèŎfŜ Ō2ăű I·yI·fèăλăΣ y2₪ úKŜ ŜØI·fdzI·ûλ2y˝2Ŧ Ō2ăű ŜŦŦŜŎûλØŜySŝă 2Ŧ I·fûŜ₪yI·ûŜ ăŌŜyI·₪λ2ăΣ I·yŘ ŌI·y˝fŜI·Ř ú2 ûKŜ λyŜŦŦλŎλŜyű dzăŜ 2Ŧ ŦdzyŘăΦ ² λúK fλY˝λúŜŘ I·ff2ŎI·ûŜŘ ŦdzyŘλyƎ Ŧ2₪ aI·λyűŜyI·yŎŜ I·yŘ wŜLJI·λ₪ óa ɔwú t₪2ƎI·Y˝ LJ₪2ȼŜŎûăΣ I· ŘŜŦλySŘ LJ₪2ŎŜŘdz₪Ŝ Ŧ2₪ ăŜűûλyƎ LJ₪λ2₪λûλŜă I·yŘ ăŌKŜŘdzfŜă ûKI·ú øλftYI·ÈλYλÎŜ ûKŜ ŦdzyŘă I·ØI·λfI·ōfŜ λă Y˝2₪Ŝ λY˝LJ2₪úI·yű ûKI·y˝ŜØŜ₪Φ

LyˇŜÈI·Y˝λyλyƎ úKŜ fλŦŜăLJI·y˝2Ŧ I· нлπèŜI·₪ LJI·ØŜY˝ŜyűΣ I· άD22Řέ ú2 άCI·λ₪έ Ō2yŘλûλ2y˝₪I·ûλyƎ YI·è fI·ăű 2yfè p ú2 мp èŜI·₪ăΦ !ŦûŜ₪ úKI·ú LJ2λyűΣ ûKŜ ₪I·ûŜ 2Ŧ ŘŜûŜ₪λ2₪I·ûλ2y˝2Ŧ LJI·ØŜY˝Ŝyűă I·ŎŌŜfŜ₪I·ûŜă ăKI·₪LJfè I·ă ûKŜ I·ƎŜ 2Ŧ ûKŜ LJI·ØŜY˝Ŝyű λyŎ₪ŜI·ăŜăΣ I·yŘ øλúKλy˝fλØŜ èŜI·₪ăΣ ûKŜ LJI·ØŜY˝Ŝyű YI·è ŘŜûŜ₪λ2₪I·ûŜ ú2 ûKŜ LJ2λyű 2Ŧ ŦI·λfdz₪ŜΦ Ly˝ 2₪ŘŜ₪ ú2 ŜÈűŜyŘ LJI·ØŜY˝Ŝyű fλŦŜz YI·λyűŜyI·yŎŜ I·yŘ ₪ŜLJI·λ₪ă yŜŜŘ ú2 ōŜ ăŎKŜŘdzfŜŘ I·yŘ LJŜ₪Ŧ2₪Y˝ŜŘ ōŜŦ2₪Ŝ ûKŜ LJI·ØŜY˝Ŝyű ădz₪ŦI·ŌŜ ŘŜŎfλySă ú2 I· άŦI·λ₪έ Ō2yŘλûλ2yΦ ¢KŜ LJ2λyű I·ű øKλŎK ₪ŜKI·ōλfłűI·ûλ2y˝ŌI·y˝ōŜ Ř2yŜ ōŜŦ2₪Ŝ ûKŜ ăúŜŜLJ ŘŜŎfλySŜ 2ŎŎdz₪ă λă ŎI·ffŜŘ ûKŜ άŎ₪λûλŎI·f t/LέΣ I·yŘ λă ƎŜySŜ₪I·ffè Ō2yãλŘŜ₪ŜŘ ú2 2ŎŎdz₪ øKŜy˝ûKŜ tI·ØŜY˝Ŝyű /2yŘλûλ2y˝LyŘŜÈ ót/Lú λă ōŜűØŜŜy˝cл I·yŘ тл Ŧ2₪ ƎŜySŜ₪I·f I·ØλI·ûλ2y˝I·λ₪LJ2₪ûă¢ LŦ ûKŜ ø2₪ℸ λă Ř2yŜ ōŜŦ2₪Ŝ ŘŜûŜ₪λ2₪I·ûλ2y˝I·ŎŎŜfŜ₪I·ûŜăΣ ûKŜ Ō2ăű 2Ŧ ₪ŜKI·ōλfłűI·ûλ2y˝ŌI·y˝ōŜ ₪ŜŘdzŌŜŘ I·ă ăK2øy˝λy˝CλƎdz₪Ŝ м¢м¢

CλƎdz₪Ŝ м¢мY tI·ØŜY˝Ŝyű aI·yI·ƎŜY˝Ŝyű /2yŌŜLJű¢



2 Airfield Pavement Inventory

2.1. Introduction

a 5 v λă I· DŜyŜNJI·f ! ØλI·úλ2y´óD ! ú I·ΛNJLJ2NJú f2ŎI·úŜŘ I·LJLJNJ2ÈλY´I·úŜfè м Y´λfŜ yŽNJúK ŜI·ăú 2Ŧ I dzyΰăØλffŜ¢ ¢KŜ I·ΛNJLJ2NJΰ λă 2ØyŜŘ I·yŘ 2LJŜNJI·úŜŘ ōè úKŜ a I·Řλă2y´/2dzyΰè 9ÈŜŎdzΰλØŜ ! ΛNJLJ2NJú ! dzúK2NJλúè¢ CλƎdzNJŜ н¢м ăK2Øă I·y´ I·ŜNJλI·f λY´I·ƎŜ 2Ŧ úKŜ I·ΛNJLJ2NJú¢

CλƎdzNJŜ н¢мY I dzyΰăØλffŜ 9ÈŜŎdzΰλØŜ ! ΛNJLJ2NJúк¢2Y´ {KI-NJLJ WNJ CλŜfŘ¢

(Source: Google Earth)

2.2. Pavement Inventory

a 5 v Ŏ2yãλăΰă 2Ŧ 2yŜ NJdzY´Ø I·èΣ I· LJI·NJI·ffŜf ΰI·ÈλØI·èΣ Ŧ2dzNJ Ŏ2yŷYŜŎΰ2NJ ΰI·ÈλØI·èăΣ I·yŘ Y´dzfΰλLJfŜ I·LJNJ2yã¢ ¢KŜ ΰ2ΰI·f LJI·ØŜY´Ŝyΰ I·NJŜI· λă I·LJLJNJ2ÈλY´I·ΰŜfè м¢фм Y´λffλ2y´ălјdzI·NJŜ ŦŜŜΰ¢ ¢KŜ LJI·ØŜY´Ŝyΰă I·ΰ a 5 v I·NJŜ LJNJλY´I·NJλfè ! ăLJKI·fΰ /2yŎNJŜΰŜ ó ! /ú ădzNJŦI·ŎŜŘΣ ØλΰK I· ăY´I·ff ăŜŎΰλ2y´ Ŏ2yΰI·ŷyŷY t2NJΰfI·yŘ /ŜY´Ŝyΰ /2yŎNJŜΰŜ ót / /ú¢ ! Ŏ2Y´LJfŜΰŜ fŷăΰŷY 2Ŧ úKŜ LJI·ØŜY´Ŝyΰ ăŜŎΰλ2yã λă ŷYŎfdzŘŜŘ ŷY´ ! LJLJŜyŘλÈ !¢ wdzY´Ø I·è мyποc λă cΣрол Ŧΰ¢ f2yƎ I·yŘ млл Ŧΰ¢ ØλŘŜ¢

! NJŜŎ2NJŘă ăŜI·NJŎK Ø I·ă dzyŘŜNJΰI·ˆŜy´ΰ2 λŘŜyΰλŦè I·yè LJNJŜăŜNJØI·ΰλ2y´2NJ NJŜKI·ōλfΰI·ΰλ2y´ Ø2NJˆ ΰKI·ΰ KI·ă 2ŎŎdzNJNJŜŘ I·ΰ a 5 v ăŷyŎŜ ΰKŜ fI·ăΰ ! t a t dzLJŘI·ΰŜ ŷY´ нллф¢ ¢KŜ Ŧ2ffŽØŷyƎ NJŜŎ2NJŘă ΰKI·ΰ ØŜNJŜ LJNJ2ØλŘŜŘ ōè ![5h¢ ØŜNJŜ NJŜØλŜØŜŘΣ I·yŘ ΰKŜ t ! ±9w ŘI·ΰI·ōI·ăŜ Ø I·ă dzLJŘI·ΰŜŘ ØλΰK Ø2NJˆ KλăΰŽNJè ŷYŦ2NJY I·ΰλ2yY

- ü wdzY´Ø I·è мукос 9ÈΰŜyãλ2yΣ нлмо
- ü ! LJNJ2y´wŜŎ2yãΰNJdzŎΰλ2yΣ нлмо

2.3. Climatic Conditions

¢I·ōfŜ o¢м LJNJ2ØλŘŜă I· ădzY´Y´I·NJè 2Ŧ úKŜ ŎfλY´I·úλŎ ŘI·ΰI· Ŧ2NJ ΰKŜ ƎŜŽƎNJI·LJKλŎ NJŜƎλ2y´ΰKI·ΰ ŷY´ŎfdzŘŜă a 5 v¢ ! ă úKŜ ΰI·ōfŜ ăK2Øăΰ úKŜ LJI·ØŜY´Ŝyΰă I·ΰ a 5 v I·NJŜ ŜÈLJ2ăŜŘ ΰŽ ŦNJŜŜÎŜπΰKI·Ø ŎèŎfŜă ŷY´WI·yΰzI·NJè¢ ¢KŜ Y´ŜI·y´I·ΛNJ ΰŜY´LJŜNJI·ΰdzNJŜ Ŧ2NJ WI·yΰzI·NJè NJI·yƎŜă ŦNJ2Y´ I·y´I·ØŜNJI·ƎŜ f2Ø 2Ŧ ом ŘŜƎNJŜŜă ²C ΰ2 I·y´I·ØŜNJI·ƎŜ KλƎK 2Ŧ пф ŘŜƎNJŜŜă ²C¢ ¢KŜ I·ØŜNJI·ƎŜ I·yŷΰzI·f NJI·ŷYŦI·ff I·ΰ a 5 v ăă yŜI·NJ рт ŷYŎKŜă¢

¢I·ōfŜ нΦмY ! ØŜNI·ƎŜ ! yӯdzI·f ¢ŜYLJŜNI·ŭdzNŜă I·yŘ wI·ʎyŦI·ff Ŧ2N a 5vΦ

	WI·Y	CŜō	a I·N	! LJN	a I·è	WdzY	Wdzf	! dzƎ	{ŜLJ	hŎŭ	b2Ø	5ŜŎ
I ʎƎK ¢ŜYLJ ó²C ú	пф	рр	со	тн	ул	ут	уф	уф	уо	то	сн	рн
[2ø ¢ŜYLJ ó²C ú	ом	оп	пм	пу	рт	ср	тл	су	сн	рл	пм	оп
tNŜŎʎLJΦ ó ʎY ú	pΦp	пΦф	cΦт	пΦр	pΦн	пΦн	пΦп	oΦo	пΦo	oΦp	pΦн	pΦc

Source: www.intellicast.com

2.4. Pavement Network Definition

! ʅŜè ŜfŜYŜyŭ ʎY ŘŜØŜf2LJʎyƎ I·Y ! t a t ăëăűŜY ʎă ŘŜŦʎyʎyƎ űKŜ LJI·ØŜYŜyŭ ySűø2NʅΣ ØKʎŎK ʎă űKŜ LJN2ŎŜää 2Ŧ ŘʎØʎŘʎyƎ I·Y I·ƎSyŎèΩă LJI·ØŜYŜyŭă ʎyŭ2 I· KʎŜNJI·NŎKʎŎI·f 2NŘŜN ŭKI·ŭ ŦI·ŎʎfŭI·ŭŜă ʎyãLJŜŎŭʎ2Y I·yŘ a ɘw LJfI·yYʎyƎΦ ¢KŜ a 5v ySűø2NʅΣ óŜΦƎΦ I·ff I·ʎNăʎŘŜ LJI·ØŜYŜyŭăú ʎă ŭKŜY ŘʎØʎŘŜŘ ʎyŭ2 ōNJI·yŎKŜăΣ ØKʎŎK I·NŜ I· NŜI·Řʎfè ʎŘŜyŭʎŦʎI·ōfŜ LJI·Nŭ 2Ŧ ŭKŜ LJI·ØŜYŜyŭ ăëăűŜY I·yŘ KI·ØŜ ŘʎăŭʎyŎŭ ŦdzyŎŭʎ2yãΦ C2N I·ʎNLJ2NŭăΣ ōNJI·yŎKŜă ûèLJʎŎI·ffè Ŏ2yãʎăŭ 2Ŧ ʎyŘʎØʎŘdzI·f NdzyӯøI·èăΣ ŭI·ÈʎøI·èă I·yŘ I·LJN2yãΦ CƎdzNŜ .м! ʎY ! LJLJŜyŘʎÈ . ăK2øă ŭKŜ ōNJI·yŎKŜă I·ú a 5vΦ

hyŎŜ ōNJI·yŎKŜă KI·ØŜ ōŜŜY ŘŜŦʎyŜŘΣ LJI·ØŜYŜyŭ ŜØI·fdzI·ŭʎ2Y I·yŘ I·yI·fèăʎă ŭŜŎKyʎIjdzŜă NŜIjdzʎNŜ ŭKŜ I·ʎNŦʎŜfŘ LJI·ØŜYŜyŭ ăëăűŜY ŭ2 ōŜ ōN2ʅŜY dzLJ ʎyŭ2 ŘʎăŎNŜűŜ ăŜŎŭʎ2yãΦ ! LJI·ØŜYŜyŭ úăŜŎŭʎ2yɛ ʎă ŭKŜ ăYI·ffŜăű YI·yI·ƎSYŜyŭ dzyʎű ŭKI·ŭ ʎă dzăŜŘ øKŜY Ŏ2yãʎŘŜNʎyƎ ŭKŜ I·LJLJfʎŎI·ŭʎ2Y I·yŘ ăŜfŜŎŭʎ2Y 2Ŧ YI·ʎyűŜyI·yŎŜ I·yŘ NŜKI·ōʎfʎűI·ŭʎ2Y ó a ɘwú ŭNŜI·ŭYŜyŭăΣ I·yŘ ʎă ŘŜŦʎyŜŘ ʎY {ŜŎŭʎ2Y нΦмΦy 2Ŧ !{¢a 5 роплπмн I·ă *áI· Ŏ2yűʎƎdz2dză LJI·ØŜYŜyŭ I·NŜI· KI·ØʎyƎ dzyʎŦ2NY Ŏ2yãűNdzŎűʎ2yΣ YI·ʎyűŜyI·yŎŜΣ dzăI·ƎŜ KIăűʎ2NèΣ I·yŘ Ŏ2yŘʎűʎ2yΦ ! ăŜŎŭʎ2YăK2dzfŘ I·fă2 KI·ØŜ ŭKŜ ăI· YŜ ŭNJI·ŦŦʎŎ Ø2fdzYŜ I·yŘ f2I·Ř ʎyűŜyãʎúèΦé* ! Ŏ2YLJfŜűŜ fIăű 2Ŧ ŭKŜ LJI·ØŜYŜyŭ ʎyØŜyű2Nè I·yŘ ŭKŜ Ŏ2NNŜăLJ2yŘʎyƎ ăŜŎŭʎ2YŘŜăƎyI·ûʎ2yã I·NŜ ʎyŎfdzŘŜŘ ʎY ! LJLJŜyŘʎÈ !Φ CƎdzNŜ .м. LJNŜăŜyűă ŭKŜ ăŜŎŭʎ2YfI·è2dzűΦ

¢2 ŦI·ŎʎfʎúI·ûŜ úKŜ Ø1ădzI·f ădzNØŜè 2Ŧ ŭKŜ I·ʎNăʎŘŜ LJI·ØŜYŜyűΣ ŜI·ŎK ăŜŎŭʎ2YʎăŦdzNűKŜN ădzōŘʎØʎŘŜŘ ʎyű2 Ŏ2yØŜyIŜyűfè ŘŜŦʎyŜŘ ădzōπăŜŎŭʎ2YI·NŜI·ăΣ 2N ăI·YLJfŜ dzyʎűăΦ {ʎYʎfI·N ăʎÎʎyƎ ʎă ŎNŨʎûʎŎI·f I·ă ăűdzŘʎŜă KI·ØŜ Ŧ2dzyŘ ŭKI·ŭ YI·ʎyűI·ʎyʎyƎ úKŜ ăʎÎŜ 2Ŧ ŭKŜ ăI·YLJfŜ dzyʎűă ŭ2 øʎűKʎyпл LJŜNŌŜyű 2Ŧ ŭKŜ ŜăűI·ōfʎăKŜŘ y2NY YI·è NŜŘdzŌŜ ŭKŜ ăűI·yŘI·NŘ ŜNN2N 2Ŧ ŭKŜ I·ØŜNJI·ƎŜ t/L ØI·fdzŜăΦ ¢2 YŜŜŭ ŭKI·ŭ ŎNŨʎûŜNŨʎI·Σ !{¢a NŜŎ2YYŜyŘă ŭKI·ŭ ăI·YLJfŜ dzyʎűă Ŧ2N I·ăLJKI·fú LJI·ØŜYŜyűă ōŜ pΣллл ăljdzI·NŜ ŦŜŜű óƍ нΣллúΦ

¢I·ōfŜ нΦн øI·ă dzăŜŘ I·ă I· ƎdzʎŘŜfʎyŜ ʎY ŘŜØŜf2LJʎyƎ ăI·YLJfʎyƎ NJI·ûŜă ŭKI·ŭ NŜŦfŜŎű úèLJʎŎI·f NJI·ûŜă ŭKI·ŭ I·NŜ dzăŜŘ Ŧ2N 2ŭKŜN fI·NƎŜ LJI·ØŜYŜyŭ ySűø2NʅăΦ LY ƎŜySNJI·fΣ ŭKʎă ăI·YLJfʎyƎ NJI·ûŜ øʎff yƵű LJN2ØʎŘŜ I· ΦpƍΣ Ŏ2yŦʎŘŜyŎŜ fŜØŜf øʎűK I· ăűI·yŘI·NŘ ŜNN2N 2Ŧ p t/L LJ2ʎyűăΦ ! KʎƎKŜN fŜØŜf 2Ŧ ăI·YLJfʎyƎ ʎă NŜŎ2YYŜyŘŜŘ ōŜŦ2NŜ I· LJN2ƨŜŎűπfŜØŜf NŜKI·ōʎfʎúI·ûʎ2YŘŜăʎƎY ʎă ŘŜØŜf2LJŜŘ Ŧ2N I· LJI·ØŜYŜyŭ ăŜŎŭʎ2Y2N ŦI·ŎʎfʎűèΦ

{I·YLJfŜ dzyʎűă ŭKI·ŭ ʎyŎfdzŘŜ I· 2yŜπűʎYŜ 2ŎŎdzNNŜyŎŜ 2Ŧ I· ŘʎăúNŜăă óʎΦŜΦ I· fI·NƎŜ LJI·ûŎKú 2N I·Y dzyűdzădzI·f ăŜØŜNʎűè 2N IjdzI·yűʎűè 2Ŧ I· ŘʎăúNŜăă ăŜŜyŜfăŜøKŜNŜΣ øŜNŜ ŘŜăƎyI·ûŜŘ I·ă áI·ŘŘʎûʎ2yI·fé ăI·YLJfŜ dzyʎűă I·ă ŘŜăŎNʎōŜŘ ʎY ŭKŜ !{¢a 5роплt/L LJN2ŎŜŘdzNŜΦ ¢Kʎă I·ff2øă ŭKŜ t/L ŭ2 ōŜ ŎI·fŎdzfI·ûŜŘ øʎűK2dzű ŜÈúNJI·LJ2fI·ûʎƎ ŭKŜ I·ōŜNNJI·yű ŘʎăúNŜăă ŭKN2dzƎK2dzű ŭKŜ ăŜŎŭʎ2Y I·ă I· øK2fŜΦ LY ! LJLJŜyŘʎÈ .Σ CƎdzNŜ .м/ ăK2øă ŭKŜ ăI·YLJfŜ dzyʎű fI·è2dzű Ŧ2N a 5vΦ

¢Ι·ōƒŜ нΦнΥ t/L {Ι·ƳǇƒλyƺ wΙ·ǘŜ ŦƵǋ ! / {ǆǋŦΙ·ŎŜăΦ

¢Ƶǘ̂Ι·ƒ {Ι·ƳǇƒŜă	{Ι·ƳǇƒŜă ǘƵ Lyă̂ǇŜŎǘ
м	м
н	н
о ς с	о
т ς мо	п
мп ς оф	р
ҕ оф	мр ǇŜǋŎŜyǘΣ ōǆǘ ƒŜăă ǘΚΙ·ƴ мн

2.5. Inventory Summary

¢ΚŜǋŜ Ι·ǋŜ мм ōǋΙ·yŎΚŜă ǿŦΙ·ŎλƒλǘλŜăύ Ι·ǘ a5v ǘΚΙ·ǘ λyŎƒǆŘŜ нм ǇΙ·ǿŜƳŜyǘ ăŜŎǘλƵyă Ι·yŘ Ι· ǘƵǘΙ·ƒ Ι·ǋŜΙ· ƵŦ Ι·ǇǇǋƵȄλƳΙ·ǘŜƒè мΦфм ƳλƒƒλƵyă ǎǉǆΙ·ǋŜ ŦŜŜǘ ƵŦ ǇΙ·ǿŜŘ ǎǆǋŦΙ·ŎŜăΣ Ι·ă ăΚƵǿy λy ¢Ι·ōƒŜ нΦоΦ

¢Ι·ōƒŜ нΦоΥ a5v tΙ·ǿŜƳŜyǘ .ǋΙ·yŎΚŜăΦ

.ǋΙ·yŎΚ L5	.ǋΙ·yŎΚ bΙ·ƳŜ	.ǋΙ·yŎΚ ¦ăŜ	!ǋŜΙ·Σ ăŦ	bǆƳōŜǋ ƵŦ {ŜŎǘλƵyă
!лм	!ǇǋƵy лм	!twhb	нффΣнмс	м
wмуос	wǆyǿΙ·è мулос	w¦b² !¸	сроΣллл	н
¢!	¢Ι·ȄλǿΙ·è !	¢!·L² !¸	оонΣурм	н
¢!м	¢Ι·ȄλǿΙ·è !м	¢!·L² !¸	мслΣолп	т
¢.	¢Ι·ȄλǿΙ·è .	¢!·L² !¸	пнΣсрс	м
¢/	¢Ι·ȄλǿΙ·è /	¢!·L² !¸	нфΣпфс	м
¢5	¢Ι·ȄλǿΙ·è 5	¢!·L² !¸	нсΣснн	м
¢9	¢Ι·ȄλǿΙ·è 9	¢!·L² !¸	нрΣтрс	м
¢I!bDлм	¢Ι·ȄλǿΙ·è IΙ·yƺΙ·ǋ лм	¢!·L² !¸	млнΣнфф	м
¢I!bDлн	¢Ι·ȄλǿΙ·è IΙ·yƺΙ·ǋ лн	¢!·L² !¸	мсрΣунп	м
¢I!bDло	¢Ι·ȄλǿΙ·è IΙ·yƺΙ·ǋ ло	¢!·L² !¸	суΣфпп	о
		¢ƵǘΙ·ƒ	**мΣфлсΣфсу**	**нм**

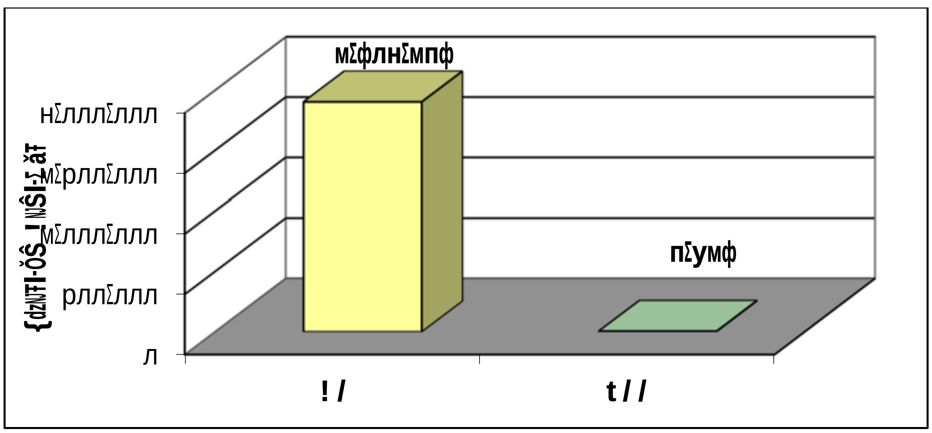
¢Ι·ōƒŜ нΦп ăΚƵǿă ǘΚŜ Řλăǘǋλōǆǘλƴƺ Ι·ǹŦλŜƒŘ ǇΙ·ǿŜƳŜyǘ ōè Ι·ƺŜ ǿλǘΚ ǘΚŜ Ι·ǋŜΙ·πǿŜλƺΚǘŜŘ Ι·ƺŜ ōŜλyƺ мт èŜΙ·ǋă ŦƵǋ Ι·ƒƒ Ι·ǹăλŘŜ ǇΙ·ǿŜƳŜyǘă Ι·ǘ a5vΦ

¢l·ōſŜ нфпΥ a5v tl·ǿŜϒŜyű !ƎŜф

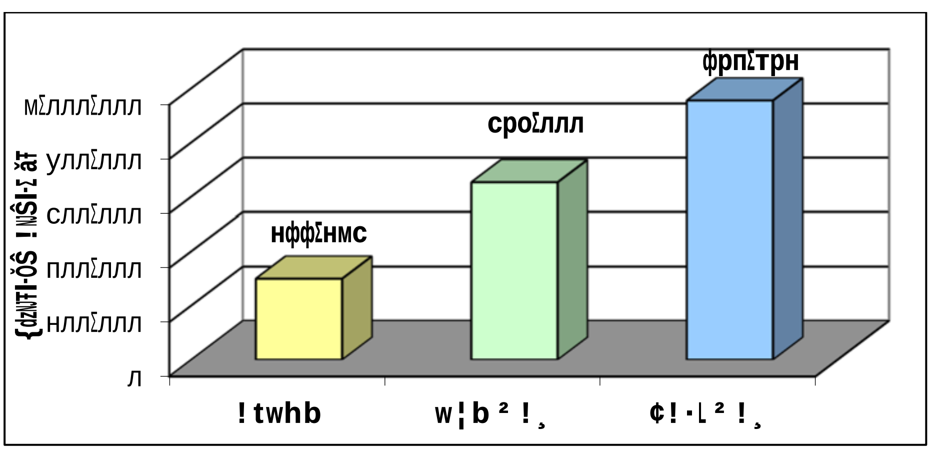
!ƎŜ ó¸ Ŝl·ǋăú	bdzϒōŜǋ ƻŦ {ŜŎűƛƻyã	tŜǋŎŜyű ƻŦ !ǋŜl·	!ǋŜl·Σ ăŦ
л ς р	л	л	л
с ς мл	п	мп	нсмΣмун
мм ς мр	н	о	рсΣмуу
мс ς нл	мн	ум	мΣросΣотн
ђ нл	о	о	роΣннс

CƛƎdzǋŜ нфн ăKƻǿă űKŜ Řƛăűǋƛōdzűƛƻʏ ōè ădzǋŦl·ŎŜ űèLJŜф CƛƎdzǋŜ нфо LJǋŜăŜyűă űKŜ Řƛăűǋƛōdzűƛƻʏ ōè LJl·ǿŜϒŜyű dzăŜ óŜфƎф ǋdzʏǿl·èΣ űl·ȄƛǿŁl·èΣ l·yŘ l·LJǋƻyűф

CƛƎdzǋŜ нфнΥ a5v tl·ǿŜϒŜyű !ǋŜl· ōè {dzǋŦl·ŎŜ ¢èLJŜф



CƛƎdzǋŜ нфоΥ a5v tl·ǿŜϒŜyű !ǋŜl· ōè .ǋl·yŎK ¦ăŜф



a l·LJă .м5Σ .м9Σ l·yŘ .мC ăKƻǿ űKŜ LJl·ǿŜϒŜyű űèLJŜΣ ōǋl·yŎK dzăŜΣ l·yŘ LJl·ǿŜϒŜyű l·ƎŜΣ ǋŜăLJŜŎűƛǿŜſèф

3 Pavement Condition

3.1. Introduction

! ØλădzI·f t /L ădzNWØŜè 2Ŧ űKŜ I·λNWăλŘŜ LJI·ØŜY·Ŝyűă I·ű a 5v ø I·ă Ŏ2yŘdzŎűŜŘ λy·2NWŘŜNW ű2 I·ăăλăű λy·ûKŜ ŘŜØŜf2LJY·Ŝyű 2Ŧ I· NWŜI·fλăűλŎ t /Lt¢ ¢KŜ t /L ădzNWØŜè Y·ŜI·ădzNWŜă I·yŘ NWŜŎ2NWŘă LJI·ØŜY·Ŝyű ŘλăúNWŜăăŜă ûKI·ű ŜÈλăű øλúKλy·ŜI·ŎK 2Ŧ űKŜ λyãLJŜŎűŜŘ ăI·Y·LJfŜ dzyλűă¢ ¢Kλă ădzNWØŜè ø I·ă Ŏ2yŘdzŎűŜŘ λy·hŎű2ōŜNW нлму ōè I· ű ø2 нπLJŜNWă2y·ûŜI·Y·¢ ¢KŜ ădzNWØŜè ø I·ă LJŜNWŦ2NWY·ŜŘ λy·I·ŎŎ2NWŘI·yŎŜ øλúK ûKŜ Y·ŜűK2Řă ŘŜăÒNWλōŜŘ λy·! {¢a 5 роплπмн I·yŘ C! ! ! / мрлкроулπт .Σ dzăλyЭ ûKŜ ăI·Y·LJfλyЭ NWI·ûŜă ŦNW2Y· /KI·LJűŜNW н 2Ŧ ûKλă ! tL NWŜLJ2NWú¢

5dzNWλyЭ ûKŜ LJI·ØŜY·Ŝyű ădzNWØŜèΣ vdzI·fűûè /2yúNW2f óv /ú I·yŘ ŘI·ûI· ØŜNWλŦλŎI·ûλ2y· øŜNWŜ LJŜNWŦ2NWY·ŜŘ 2y·ō2űK ûKŜ λyŘλØλŘdzI·f ŘλăúNWŜăăŜă I·yŘ ûKŜ ŎI·fŎdzfI·ûŜŘ ăŜŎűλ2y·t /L ØI·fdzŜă¢ v / λyŎfdzŘŜŘ ûKŜ Ŧ2ff2øλyЭ I·ŎűλØλúλŜăT

- ü wŜØλŜø 2Ŧ ŘλăúNWŜăă Ijdz I·yűλúλŜă ű2 λŘŜyűλŦè ŘI·úI· ŜyúNWè ŜNWNW2NWă ómлƒ̂ς NWŜØλŜø I·ű ûKŜ ăI·Y·LJfŜ dzyλű fŜØŜfú¢ DŜySNWI·f ЭdzλŘI·yŎŜ øI·ă dzăŜŘ ŦNW2Y· !{¢a 5роплπмнΣ ăŜŎűλ2y·моΣ øKλŎK I·ŘŘNWŜăăŜă ûKŜ LJNWŜŎλăλ2y·2Ŧ Řλăú NWŜăă IjdzI·yűλúλŜă ûKI·ű I·NWŜ NWŜŎ2NWŘŜŘ ŘdzNWλyЭ t /L ădzNWØŜèă¢
- ü 5dzLJfλŎI·ûŜ ădzNWØŜèă øŜNWŜ LJŜNWŦ2NWY·ŜŘ ű2 Ŝyãdz NWŜ Ŏ2yãλăúŜyŎè ōŜűøŜŜy·ŜI·ŎK 2Ŧ ûKŜ λyãLJŜŎűŜ2NWă λy·I· нπ LJŜNWă2y·t /L ădzNWØŜè ûŜI·Y·¢

3.2. Pavement Condition Rating Methodology

¢KŜ t /L λă I· Y·ŜI·ădzNWŜ 2Ŧ ûKŜ LJI·ØŜY·ŜyűΩă ŦdzyŎúλ2yI·f ădzNWŦI·ŎŜ Ŏ2yŘλűλ2y¢ Lű LJNW2ØλŘŜă λyãλ∃Kú λyű2 ûKŜ ŎI·dzăŜă 2Ŧ ŜI·ŎK ŘλăúNWŜăăΣ I·yŘ øKŜűKŜNW ûKŜ ŘλăúNWŜăă λă LJNWλY·I·NWλfè ŎI·dzăŜŘ ōè f2I·ŘΣ ŎfλY·I·ûλŎ Ŏ2yŘλűλ2yãΣ I·yŘ 2űKŜNW Y·I·ûŜNWλI·f NWŜfI·ûŜŘ ŘŜŦλŎλŜyŎλŜă¢ ¢KŜ t /L λă I· yűzY·ŜNWλŎI·f NWI·ûλyЭ ó2y·I· ăŎI·fŜ 2Ŧ л ű2 мллú ûKI·ű λă ōI·ăŜŘ 2y·ûKŜ úèLJŜΣ ăŜØŜNWλúè I·yŘ IjdzI·yűλúè 2Ŧ ŜI·ŎK ŘλăúNWŜăă ûKI·ű λă Ŧ2dzyŘ λy·I·y·λyãLJŜŎűŜŘ ăI·Y·LJfŜ dzyλű¢

¢KŜ t /L ădzNWØŜè NWŜădzfűă I·NWŜ ŘλăLJfI·èŜŘ dzăλyЭ ăŜØŜy·ŎI·ûŜЭ2NWλŜă I·yŘ NWI·ûλyЭă λy·I·ŎŎ2NWŘI·yŎŜ øλúK ûKŜ !{¢aΣ ōdzű ŎI·y·I·fă2 ōŜ LJNWŜăŜyűŜŘ dzăλyЭ I· ăλY·LJfλŦλŜŘ oπŎI·ûŜЭ2NWè NWI·ûλyЭ ăèăúŜY· Ŧ2NW dzăŜ λy·Ŏ2Y·LJI·NWλyЭ øλúK 2ûKŜNW ŘλăúNWŜăă NWŜfI·ûŜŘ λyŘλŎŜăΣ I·ă ăK2øy·λy·¢I·ōfŜ o¢м¢

¢I·ōfŜ o¢ᴍY tI·ØŜYŜyű /2yŘλűλ2y˙ʟyŘŜÈ wI·űλyƎ {ŎI·fŜ¢

	{λY˙LJfλŦλŜŘ t /L /2f2ℕ [ŜƎŜyŘ	!{¢a t /L /2f2ℕ [ŜƎŜyŘ	t /L wI·yƎŜ	t /L wI·űλyƎă I·yŘ 5ŜŦλYűλ2y˙
Dhh5			ycπмллл	Dhh5Y tI·ØŜY˙ŜyűKI·ă Yλy2ℕ 2ℕ y2 ŘλăúℕŜăăŜă I·yŘ ăK2dztŘ ℕŜIjdzΛℕŜ 2yfè ℕ2dzűλyŜ YI·λyűŜyI·yŎŜ¢
			тмπyp	{!¢L{C!/¢hw˛Y tI·ØŜY˙ŜyűKI·ă ăŎI·úűŜℕŜŘ f2ǿπăŜØŜℕΛúè ŘλăúℕŜăăŜă űKI·ű ăK2dzfŘ ℕŜIjdzΛℕŜ 2yfè ℕ2dzűλyŜ YI·λyűŜyI·yŎŜ¢
C!lw			pcπтл	C!lwY tI·ØŜY˙ŜyűKI·ă I· Ŏ2Yōλy1·úλ2y˙2Ŧ ƎŜySŜℕI·ffè f2ǿπ I·yŘ Y˙ŜŘλdzYπăŜØŜℕΛúè ŘλăúℕŜăăŜă¢ bŜI·ℕπűŜℕY Y I·λyűŜy1·yŎŜ I·yŘ ℕŜLJI·Λℕ ySŜŘă YI·è ℕI·yƎŜ ŦℕƎY ℕ2dzűλyŜ ű2 YI·ƨ2ℕ¢
thhw			пмππpp	thhwY tI·ØŜY˙ŜyűKI·ă f2ǿπΣ Y˙ŜŘλdzYπΣ I·yŘ KλƎKπăŜØŜℕΛúè ŘλăúℕŜăăŜă űKI·ű LJℕ2ōI·ōfè ŎI·dzăŜ ă2YŜ 2LJŜℕI·úλ2y1·f LJℕ2ōfŜYă¢ bŜI·ℕπűŜℕY a ƨw ySŜŘă ℕI·yƎŜ ŦℕƎY ℕ2dzűλyŜ ű2 YI·ƨ2ℕ¢ ℕŜIjdzΛℕŜY˙ŜyűŦ2ℕ
			нсппл	±9w˛thhwY tI·ØŜY˙ŜyűKI·ă LJℕŜŘ2YλY1·yűfè Y˙ŜŘλdzYπ I·yŘ KλƎKπ ăŜØŜℕΛúè ŘλăúℕŜăăŜă úKI·ű ŎI·dzăŜ Ŏ2yăλŘŜℕI·ōfŜ YI·λyűŜy1·yŎŜ ƨ 2LJŜℕI·úλ2y1·f LJℕ2ōfŜYă¢ bŜI·ℕπűŜℕY a ƨw ySŜŘă ǿλff ōŜ YI·ƨ2ℕ¢
			ммπнр	{9wLh¦{Y tI·ØŜY˙ŜyűKI·ă YI·λyfè KλƎKπăŜØŜℕΛúè ŘλăúℕŜăăŜă úKI·ú ŎI·dzăŜ 2LJŜℕI·úλ2y1·f ℕŜăúℕΛŎúλ2yãT λY˙YŜŘλI·úŜ ℕŜLJI·ΛℕĂ I·ℕŜ ySŜŘŜŘ¢
			лππмл	C!L[95Y tI·ØŜY˙ŜyűŘŜűŜℕΛ2ℕI·úλ2y˙KI·ă LJℕ2ƎℕŜăăŜŘ ű2 úKŜ LJ2λyű ŭKI·ú ăI·ŦŜ I·ΛℕŎℕI·Ŧú 2LJŜℕI·úλ2yã I·ℕŜ y2 f2yƎŜℕ LJ2ăăλōfŜT Ŏ2Y˙LJfŜűŜ ℕŜŎ2yãúℕdzŎúλ2y˙λă ℕŜIjdzΛℕŜŘ¢

3.3. Distress Types

¢KŜ !{¢a 5роπл ăúI·yŘI·ℕŘ Ŏ2yãλŘŜℕă мт ŘλăúℕŜăăŜăΣ ǿKλŎK űŜyŘ ű2 ŦI·ff λyű2 2yŜ 2Ŧ úKŜ Ŧ2ff2ǿλyƎ Ŧ2dzℕ ŎI·dzăŜ ŎI·úŜƎ2ℕΛŜăY

- ü [2I·Ř ℕŜfI·úŜŘY ! / ŘλăúℕŜăăŜă λyŎfdzŘŜ I·ffλƎI·ű2ℕ ŎℕI·Ŏ˥λyƎΣ Ŏ2ℕΛdzƎI·úλ2yΣ ŘŜLJℕŜăăλ2yΣ LJ2fλăKŜŘ I·ƎƎℕŜƎI·úŜΣ ℕdzűúλyƎ I·yŘ ăfλLJLJI·ƎŜ ŎℕI·Ŏ˥λyƎT t / / ŘλăúℕŜăăŜă λyŎfdzŘŜ Ŏ2ℕyŜℕ ōℕŜI·˥ăΣ f2yƎλűdzŘλy1·f ŎℕI·Ŏ˥λyƎΣ ŘλØλŘŜŘ ăfI·ōăΣ LJ2fλăKŜŘ I·ƎƎℕŜƎI·úŜΣ LJdzY˙LJλyƎ I·yŘ ƨ2λyű ăLJI·ffλyƎ¢
- ü /fλY˙I·úŜ I·yŘ ŘdzℕI·ōλfλúè ℕŜfI·úŜŘY ! / ŘλăúℕŜăăŜă λyŎfdzŘŜ ōfŜŜŘλyƎΣ ōf2Ŏ˥ ŎℕI·Ŏ˥λyƎΣ ƨ2λyű ℕŜŦfŜŎűλ2y˙ ŎℕI·Ŏ˥λyƎΣ f2yƎλűdzŘλy1·f I·yŘ úℕI·yăØŜℕăŜ ó[ƨ¢ú ŎℕI·Ŏ˥λyƎΣ ăǿŜfλyƎΣ ℕI·ØŜfλyƎΣ I·yŘ ǿŜI·úKŜℕΛyƎT t / / ŘλăúℕŜăăŜă λyŎfdzŘŜ ōf2ǿπdzLJăΣ ά5έ ŎℕI·Ŏ˥λyƎΣ f2yƎλűdzŘλy1·f ŎℕI·Ŏ˥λyƎΣ LJ2LJπ2dzűăΣ LJdzY˙LJλyƎΣ ăŎI·fλyƎΣ ăKℕΛy˥I·ƎŜ ŎℕI·Ŏ˥ăΣ I·yŘ ƨ2λyű I·yŘ Ŏ2ℕyŜℕ ăLJI·ffλyƎ¢
- ü a2λăűdzℕŜ ƨ 5ℕI·λy1·ƎŜ ℕŜfI·úŜŘY ! / ŘλăúℕŜăăŜă λyŎfdzŘŜ I·ffλƎI·ű2ℕ ŎℕI·Ŏ˥λyƎΣ ŘŜLJℕŜăăλ2yãΣ LJ2úK2fŜă I·yŘ ăǿŜfλyƎT t / / ŘλăúℕŜăăŜă λyŎfdzŘŜ Ŏ2ℕyŜℕ ōℕŜI·˥ăΣ ŘλØλŘŜŘ ăfI·ōă I·yŘ LJdzY˙LJλyƎ¢
- ü húKŜℕ ŦI·ŎűƨℕăY hλf ăLJλffI·ƎŜΣ ƨŜú ōfI·ăú Ŝℕƨăλ2yΣ ōfŜŜŘλyƎΣ LJI·úŎKλyƎ I·yŘ Ŏ2yŎℕŜúŜ ăfI·ō ƨ2λyű ŦI·dzfűλyƎ¢

! ă ŘŜăŎ·ű·ōŜŘ I·ō2ØŜΣ Ř·ăűŝŜää Y·I·è KI·ØŜ Y·2ŝŜ űKI·y·2yŜ ŎI·dzăŜΦ C2ŝ ŜÈI·Y·LJfŜΣ ŘŜLJŝŜää·2yã Y·I·è ōŜ ŎI·dzăŜŘ ōè ·yŎ2ŝŝŝŜŎű Ŏ2Y·LJI·ŎűŭŁ2y· ŘdzŝŭŁyƎ Ŏ2yãűŝdzŎűŭŁ2yΣ 2ŝ ōè ădzōƎŝI·ŘŜ ă2ŦűŜyŁyƎ ŘdzŜ ű2 ŜyØ·ŝŝ2yY·Ŝyű I·f ŦI·ŎűŭŁ2ŝŝăΦ Ly· I·ŘŘ·ŭŁ2yΣ I· Ř·ăűŝŜää Y·I·è ōŜ ·yŁűŭ·I·ûŜŘ ōè 2yŜ ŎI·dzăŜ ōdzű Y·I·è LJŝ2ƎŝŜää ű2 I· Ř·ăűŝŜää 2Ŧ KŁƎKŜŝ ăŜØŜŝŭŁûè ōè I·y2űKŜŝ ŎI·dzăŜΦ ¢KŜŝŜŦ2ŝŜΣ ŜyƎ·yŜŜŝŭŁyƎ ∂dzŘƎY·Ŝyű ·ă ŎŝŭŁŭŁŎI·f ·y·I·yI·fèÎ·yƎ űKŜ I·ŎűdzI·f ŎI·dzăŜă 2Ŧ űKŜ Ř·ăűŝŜää

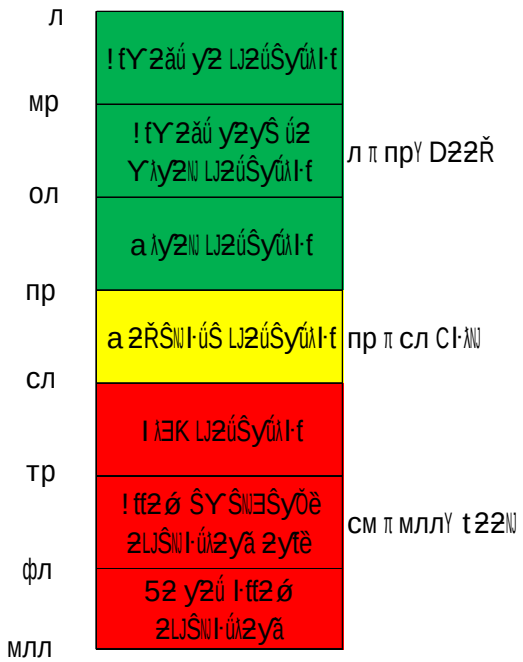
5·ăűŝŜää ŘŜăŎŝŭŁLJűŁ2yã LJŝ2ØŁŘŜŘ ·y· ! LJLJŜyŘ·È / ØŜŝŜ û·ˆŜy·ŦŝŭŁ2Y· űKŜ ά t / L C·ŜfŘ a I·yűzI·f£é ŘŜØŜf2LJŜŘ ōè ûKŜ ¦Φ{Φ ! ŝY·è /2yãűŝdzŎűŭŁ2y·9yƎ·yŜŜŝŭŁyƎ wŠăŜI·ŝŎK [I·ō ó / 9w[úΣ fI·ûŜăű ŜŘ·ûŭŁ2yΦ ! LJLJŜyŘ·È / LJŝŝ2ØŁŘŜă I· ŘŜûI··fŜŘ ŜÈLJfI·yI·ûŭŁ2y·2Ŧ ŜI·ŎK ûèLJŜ 2Ŧ ! / I·yŘ t / / ădzŝŦI·ŎŜ Ř·ăűŝŜääΦ

3.4. Additional PCI-based Indices

¢KŜ Ř·ăűŝŜää ŘI·ûI· dzăŜŘ ű2 Ŏ2Y·LJdzűŜ t / L ŎI·y·I·fă2 ōŜ dzăŜŘ ű2 ŎI·fŎdzfI·ûŜ I·ŘŘ·ŭŁ2yI·f ·yŘ·ŎŜă ûKI·û I·ŝŜ KŜfLJFdzf ·y· dzyŘŜŝăűI·yŘ·yƎ ûKŜ Ŏ2yŘ·ûŭŁ2y·2Ŧ ûKŜ LJI·ØŜY·Ŝyű I·yŘ ŘŜØŜf2LJ·yƎ t / L t ŝŜŎ2Y·Y·ŜyŘI·ûŁ2yãΦ hyŜ I·ŘŘ·ŭŁ2yI·f ·yŘŜÈ ûKI·û ØI·ă Ŏ2Y·LJdzűŜŘ ·ă ûKŜ C2ŝŜ·ƎY·hō2ŜŎű 5I·Y·I·ƎŜ óCh5ú LJ2űŜyű·I·f ·yŘŜÈΦ

¢KŜ Ch5 ·yŘŜÈ ØI·ă ŘŜØŜf2LJŜŘ ōè ûKŜ ¦{ ! ·ŝ C2ŝŎŜ I·yŘ ·ă ŘŜăŎŝŭŁōŜŘ ·y· ŘŜûI··f ·y· ûKŜ ¦{ ! ŝY·è /2ŝLJ 2Ŧ 9yƎ·yŜŜŝă 9yƎ·yŜŜŝŭŁyƎ ¢ŜŎKyŁŎI·f [ŜűűŜŝ ó9¢[ú лпплфΣ tI·ØŜY·Ŝyű 9yƎ·yŜŜŝŭŁyƎ ! ăăŜăăY·Ŝyű ó9 ! ú {ű·yŘI·ŝŘΦ [22ăŜ 2ō2ŜŎűă 2y·I·y·I·ŁŝŦ·ŁŜfŘ LJI·ØŜY·Ŝyű ădzŝŦI·ŎŜ ŝŜădzfű·ŁyƎ ŦŝŦ2Y· LJI·ØŜY·Ŝyű Ř·ăűŝŜää·Ŝă ŎI·y·ōŜ ŘŜûŝŭŁY·Ŝyű I·f ű2 I··ŁŝŎŝI·Ŧű ŜyƎ·yŜă·ăLJŜŎŁŦ·ŁŎI·ffè ŜyƎ·yŜă ûKI·û I·ŝŜ f2ø ű2 ûKŜ Ǝŝ2dzyŘΦ ¢KŜ 2ō2ŜŎűă I·ŝŜ ·yƎŜăűŜŘ ·yű2 ûKŜ ŜyƎ·yŜă ŎI·dzăŁyƎ Ŏ2ăűfè ŘI·Y·I·ƎŜ I·yŘ LJŝŜăŜyű·yƎ I· ă I·ŦŜûè KI·Î I·ŝŘΦ b2ű I·ff LJI·ØŜY·Ŝyű Ř·ăűŝŜää·Ŝă ŎŝŜI·ûŜ I· Ch5 LJ2űŜyű·I·fΦ ¢KŜŝŜŦ2ŝŜΣ I·y·I·Ř·ŁŭŁ2yI·f ·yŘŜÈ ø I·ă ·ŘŜyűŁŦŁŜŘ ûKI·û dzăŜă ûKŜ ŝŜădzfűă 2Ŧ ûKŜ t / L Ř·ăűŝŜää ădzŝØŜèΦ ! ă ăK2ø·y·ŁyƎ C·ƎdzŝŜ oΦмΣ ûKŜ ăŎI·fŜ ŝI·yƎŜă ŦŝŦ2Y· л ű2 млл ø·ŁűK л ŌŜŁyƎ y2 Ch5 LJ2űŜyű·I·fΦ b2ûŜ ûKI·û ûKŜ Ch5 ·yŘŜÈ dzăŜă I· ă·Y·LJfŁŦŁŜŘ ûKŝŜŜ Ŏ2f2ŝ ăŎI·fŜΦ

C·ƎdzŝŜ oΦмY Ch5 t2ûŜyű·I·f wI·ûŁyƎ {ŎI·fŜΦ

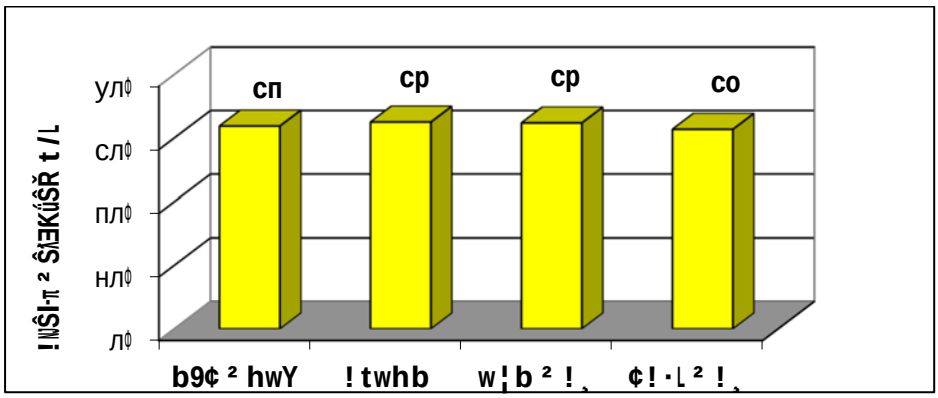


3.5. PCI Survey Results

¢ΚŜ Ι·ΛΝΩăλŘŜ LJΙ·ØŜΥŜγΰă Ι·ΰ a 5 v ΛγŎfdzŘŜ нм ăŜŎΰΛ2γã ØΛΰΚ ост ăΙ·ΥLJfŜ dzγΛΰă¢ ¢ΚŜ ăΙ·ΥLJfŜ γΩzΥōŜΝ 2Ŧ ăΙ·ΥLJfŜ dzγΛΰă ΰΚΙ·ΰ ØŜΝŜ ădzΝØŜèŜŘ ΛγΎΰΚŜ ŦΛŜfŘ λă млнΣ ØΚΛŎΚ λă ну LJŜΝŎŜγΰ 2Ŧ ΰΚŜ ΰ2ΰΙ·f ăΙ·ΥLJfŜă¢ 5Ι·ΰΙ· ŦΝ2Υ ΰΚŜ ΛγãLJŜŎΰŜŘ ăΙ·ΥLJfŜ dzγΛΰă ØŜΝŜ ΛγLJdzΰ ΛγΰΖ ΰΚŜ t ! ±9w ŘΙ·ΰΙ·ōΙ·ăŜ Ι·γŘ Ι· ΝŜădzfΰΙ·γΰ t / L ŦΖΝ ŜΙ·ŎΚ ăŜŎΰΛ2γ Ø Ι·ă Ŏ2ΥLJdzΰŜŘ¢

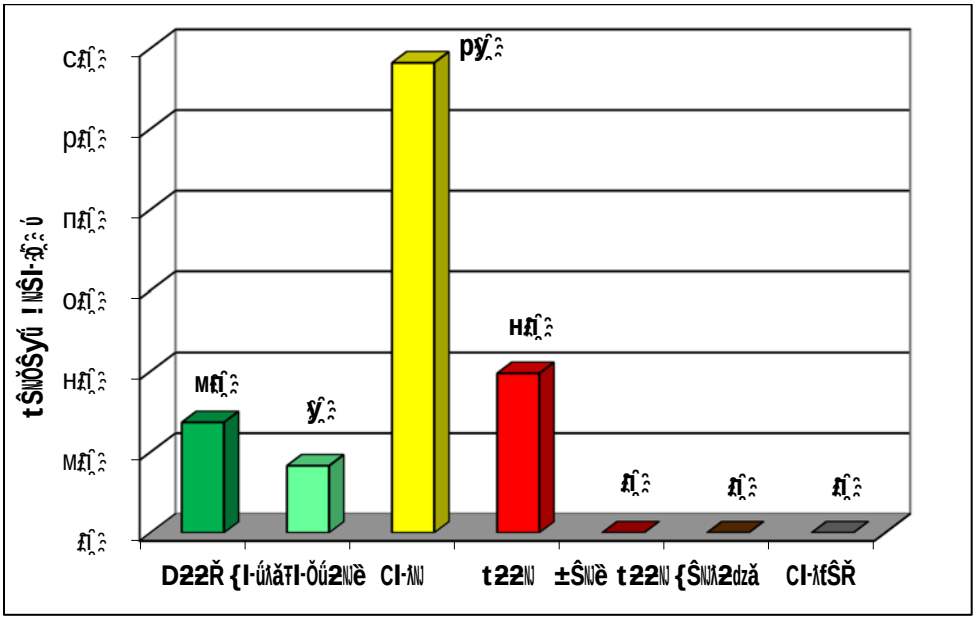
CΛƎdzΝŜ o¢н LJΝŜăŜγΰă ΰΚŜ Ι·ΝŜΙ·πØŜΛƎKΰŜŘ t / L ōè dzăŜ Ι·γŘ ΰΚŜ 2ØŜΝΙ·ff Ι·ΛΝăλŘŜ γŜΰØ2ΝϽ¢

CΛƎdzΝŜ o¢нY tΙ·ØŜΥŜγΰ / 2γŘΛΰΛ2γ ōè . ΝΙ·γŎK ¦ăŜ¢



CΛƎdzΝŜ o¢o ăK2Øă ΰΚŜ ŘΛăΰΝΛōdzΰΛ2γ 2Ŧ ΰΚŜ a 5 v LJΙ·ØŜΥŜγΰ γŜΰØ2ΝϽ ōè Ŏ2γŘΛΰΛ2γ¢ ! LJLJΝ2ÈΛΥΙ·ΰŜfê нл LJŜΝŎŜγΰ 2Ŧ ΰΚŜ γŜΰØ2ΝϽ ΛăλγάΤ22Νέ 2Ν Ø2ΝăŜ Ŏ2γŘΛΰΛ2γ¢

CΛƎdzΝŜ o¢oY tΙ·ØŜΥŜγΰ / 2γŘΛΰΛ2γ ōè tŜΝŎŜγΰ 2Ŧ ! ΝŜΙ·¢



¢I·ōfŜ oΦн λă I· fλăűλyƎ 2Ŧ űKŜ ăŜŎűλ2y´t /L

¢I·ōfŜ oΦнY {ŜŎűλ2y´t /L

.NJI·yŐK L5	bI·Y´Ŝ	{ŜŎűλ2y´ L5	{dzN⁊I·ÔŜ	!NŜI·Σ ăŦ	t /L	t /L /I·ű̇ŜƎ2N̈è	Ch5
!лм	!LJN2y´лм	лм	! /	нффΣнмс	ср	CI·λNJ	пу
wмуос	wdzyǿI·ѐ мупос	лм	! /	рлоΣллл	рс	CI·λNJ	рф
wмуос	wdzyǿI·ѐ мупос	лн	! /	мрлΣллл	фп	D22Ř	мр
¢!	¢I·ÈλǿI·ѐ !	лм	! /	нпоΣсум	рр	t22NJ	сл
¢!	¢I·ÈλǿI·ѐ !	лн	! /	уфΣмтл	ус	D22Ř	нр
¢!м	¢I·ÈλǿI·ѐ !м	лм	! /	мфΣлсо	сс	CI·λNJ	пт
¢!м	¢I·ÈλǿI·ѐ !м	лн	! /	тлΣсст	см	CI·λNJ	ро
¢!м	¢I·ÈλǿI·ѐ !м	ло	! /	нмΣллн	тн	{I·ű̇λăŦI·ŐűƋNè	пм
¢!м	¢I·ÈλǿI·ѐ !м	лп	! /	пΣуфт	рп	t22NJ	см
¢!м	¢I·ÈλǿI·ѐ !м	лр	! /	пΣстл	пр	t22NJ	тл
¢!м	¢I·ÈλǿI·ѐ !м	лс	! /	орΣмус	то	{I·ű̇λăŦI·ŐűƋNè	пл
¢!м	¢I·ÈλǿI·ѐ !м	лт	t / /	пΣумф	млл	D22Ř	л
¢.	¢I·ÈλǿI·ѐ .	лм	! /	пнΣсрс	пф	t22NJ	сс
¢/	¢I·ÈλǿI·ѐ /	лм	! /	нфΣпфс	ро	t22NJ	сн
¢5	¢I·ÈλǿI·ѐ 5	лм	! /	нсΣснн	рс	CI·λNJ	рф
¢9	¢I·ÈλǿI·ѐ 9	лм	! /	нрΣтрс	рс	CI·λNJ	рф
¢I !bDлм	¢I·ÈλǿI·ѐ II·yƎI·N лм	лм	! /	млнΣнфф	тм	{I·ű̇λăŦI·ŐűƋNè	пн
¢I !bDлн	¢I·ÈλǿI·ѐ II·yƎI·N лн	лм	! /	мсрΣунп	сл	CI·λNJ	рл
¢I !bDло	¢I·ÈλǿI·ѐ II·yƎI·N ло	лм	! /	рΣфлл	пр	t22NJ	тл
¢I !bDло	¢I·ÈλǿI·ѐ II·yƎI·N ло	лн	! /	мтΣмфо	фп	D22Ř	мр
¢I !bDло	¢I·ÈλǿI·ѐ II·yƎI·N ло	ло	! /	прΣурм	рр	t22NJ	рт

CλƎdzNŜ .н! I·yŘ .н. λy´!LJLJŜyŘλÈ . I·NŜ Y´I·LJă 2Ŧ űKŜ ăŜŎűλ2y´t /L λy´тπ I·yŘ oπăŎI·fŜ ŎI·ű̇ŜƎ2NŴŜăΣ NŜăLJŜŎűλØŜfè¢ CλƎdzNŜă .н/ λă I· Y´I·LJ 2Ŧ űKŜ Ch5 NJI·ű̇λyƎ¢ !LJLJŜyŘλÈ 5 Ŏ2yűI·λyă I· ŘŜűI·λfŜŘ NŜLJ2Nű 2Ŧ űKŜ t /L ØI·fdzŜă I·yŘ ŘλăúNŜăă úèLJSΣ Ijdz I·yűλúèΣ I·yŘ ăŜØŜNŴλúè ŘI·úI· Ŧ2N ŜI·ŐK ăI·Y´LJfŜ dzyλú űKI·ú ǿI·ă ădzNØŜèŜŘ λy´I· ăŜŎűλ2y¢ !LJLJŜyŘλÈ 9 λă I· ădzY´Y´I·Nè NŜLJ2Nű 2Ŧ űKŜ ŜÈűNJI·LJ2fI·ű̇ŜŘ ŘλăúNŜăă ŘI·úI· I·ú űKŜ ăŜŎűλ2y´fŜØŜf¢

!LJLJŜyŘλÈ C Ŏ2yűI·λyã ŎdzNNŜyű ăŜŎűλ2y´I·yŘ ōNJI·yŐK t /L ŘI·úI· I·yŘ Ŧ2NŜŎI·ăúŜŘ ăŜŎűλ2y´t /L ØI·fdzŜă¢ Ch5 ØI·fdzŜă ōè ăŜŎűλ2y´I·yŘ ōNJI·yŐK I·NŜ I·fă2 LJNŴŜăŜyűŜŘ¢ CλƎdzNŜ .н5 λy´!LJLJŜyŘλÈ . ăK2ǿă úKŜ f2ŎI·ű̇λ2yã 2Ŧ űKŜ LJK2ű2ă úKI·ú ǿŜNŴŜ ű̇I·ʅŜy´ŘdzNλyƎ űKŜ ădzNØŜè¢ tK2ű2ă I·NŜ λyŐfdzŘŜŘ λy´!LJLJŜyŘλÈ W¢

3.6. PCC Pavements

!ă ăű̇I·ű̇ŜŘ ŜI·NŧλŜNΣ ű̇KŜ LJNŴ2ŝŜŐú ăŎ2LJŜ ŘλŘ y2ú λyŐfdzŘŜ I· ŘŜűI·λfŜŘ LJI·ØŜY´Ŝyű Ŏ2yŘλúλ2y´ădzNØŜè Ŧ2N I·yè t2NúfI·yŘ /ŜY´Ŝyű /2yŐNŴŜűŜ ót / /ú I·LJN2yãº C2N ű̇KŜăŜ LJI·ØŜY´ŜyűăΣ I· NJI·ű̇λyƎ 2Ŧ áD22ŘéΣ áCI·λNJéΣ 2N át22NJé ǿI·ă I·ăăλƎySŘ ōI·ăŜŘ 2y´ű̇KŜ 2ØŜNJI·ff LJI·ØŜY´Ŝyű Ŏ2yŘλúλ2y¢ CλƎdzNŜ oΦп ăK2ǿă ű̇KŜ Ŏ2yŘλúλ2y´NJI·ű̇λyƎ Ŧ2N ű̇KŜ t / / I·LJN2yã I·ű̇ a5v¢

CÏƎdzǋŜ oΦπY t / / !ǈǊƨyʃ / ƨyŘÏűÏƨyʃ wI-űÏyƎΦ

4 Pavement Capital Improvement Program

4.1. Introduction

t /L ŘI·ű I· ØŜ Ŏ2ffŜŎűŜŘ I·yŘ ŜyűŜŘŜŘ λyű2 űKŜ t !±9w ŘI·ű I·ōI·äŜ Ly I·ŘŘλűλ2yΣ űKŜ ŘI·ű I·ōI·äŜ ŎdzäűƨY ˆλÎ I·ûλ2y λyŎfdzŘŜŘ űKŜ ₮2ff2ØλyΞ Ŏ2YLJ2yŜyűäΣ ØKλŎK I·Ŝ ŘŜäÑλōŜŘ λy ŘŜűI·λf λy ˆűKλä ŎKI·LJűŜ

- M tŜ₮2Y I·yŎŜ a2ŘŜfλyΞ
- H a l·λyűŜyl·yŎŜ ϑ wŜLJI·λ ó a ϑwú ¢λΞΞŜä ó /λűλŎI·f t /Lú
- o a ϑw t2fλŎλŜä
- n ¦ yűú /2äűä

hyŎŜ űKŜ ŘI·ű I·ōI·äŜ ØI·ä Ŏdzäű2Y ˆλÎŜŘΣ λú ØI·ä dzäŜŘ ű2 dzY ōdzŘΞŜű I·yl·fèäλä äŎŜyl·λ2ä I·yŘ ŘŜØŜf2LJ I· τπèŜI·
t /Lt

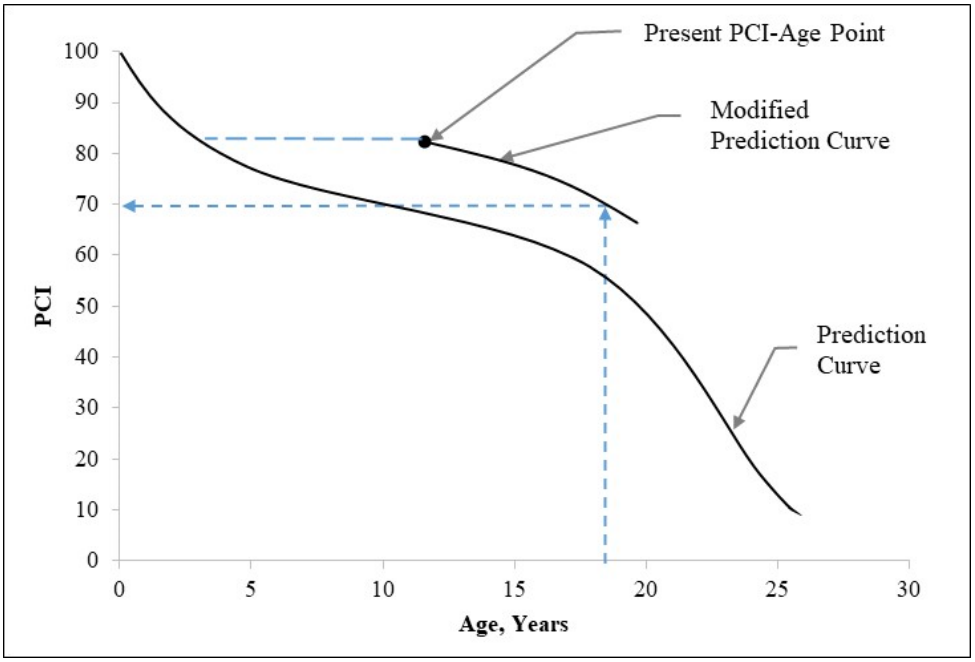
4.2. Performance Modeling

¢2 ŘŜűŜY λyŜ f2yΞπűŜY a ϑw yŜŜŘäΣ I· ! t a t Y dzäű ōŜ I·ōfŜ ű2 LJŜŘλŎű ₮dzűdzŜ LJI·ØŜY Ŝyű Ŏ2yŘλűλ2y
CdzűdzŜ LJI·ØŜY Ŝyű Ŏ2yŘλűλ2y ˆλä LJŜŘλŎűŜŘ dzäλyΞ ŜIjdzI·ûλ2y Y2ŘŜfä űKI·ű I·Ŝ ΞŜyŜI·űŜŘ ₮2Y ŎdzŜŜyű I·yŘ Kλäű2λŎI·f t /L ŘI·ű I· 9IjdzI·ûλ2y Y2ŘŜfä I·Ŝ ŘŜØŜf2LJŜŘ ōè Ξ2dzLJλyΞ LJI·ØŜY Ŝyűä ōI·äŜŘ 2y äλY ˆλfI·
LJŜ₮2Y I·yŎŜ ŎKI·I·ŎűŜλäűλŎä ädzŎK I·ä ŜΞλ2yΣ Ŏ2yäúdzŎűλ2y Kλäű2ΞèΣ ädz₮I·ŎŜ úèLJŜΣ úI·₮₮λŎΣ LJλ2λúè I·yŘ dzäŜ
a l·ûKŜY I·ûλŎI·f ûŜŎKyλIjdzŜä ädzŎK I·ä äúI·λΞKűπfλyŜ ŜÈűI·LJ2fI·ûλ2y I·yŘ ŜΞŜääλ2y ûKI·ű λyŎfdzŘŜ ō2dzyŘI·è I·yŘ
2dzúfλŜ ₮λfűŜ I·Ŝ dzäŜŘ ű2 ŘŜØŜf2LJ Y2ŘŜfä ûKI·ű LJ2Ø λŘŜ ûKŜ ōŜäű ₮λú ŜIjdzI·ûλ2y ₮2 ûKŜ LJI·ØŜY Ŝyű Ŏ2yŘλűλ2y
ŘI·ű I· ! t ±9wΩä t ŜŘλŎűλ2y a2ŘŜfλyΞ Y2ŘdzfŜ ØI·ä dzäŜŘ ű2 ŘŜØŜf2LJ LJI·ØŜY Ŝyű LJŜ₮2Y I·yŎŜ Y2ŘŜfä ûKI·ű
I·Ŝ Ŏ2YY2yfè ŜŜ₮ŜŜŜŘ ű2 I·ä ΨCI·Y ˆλfè /dzØŜäΩ

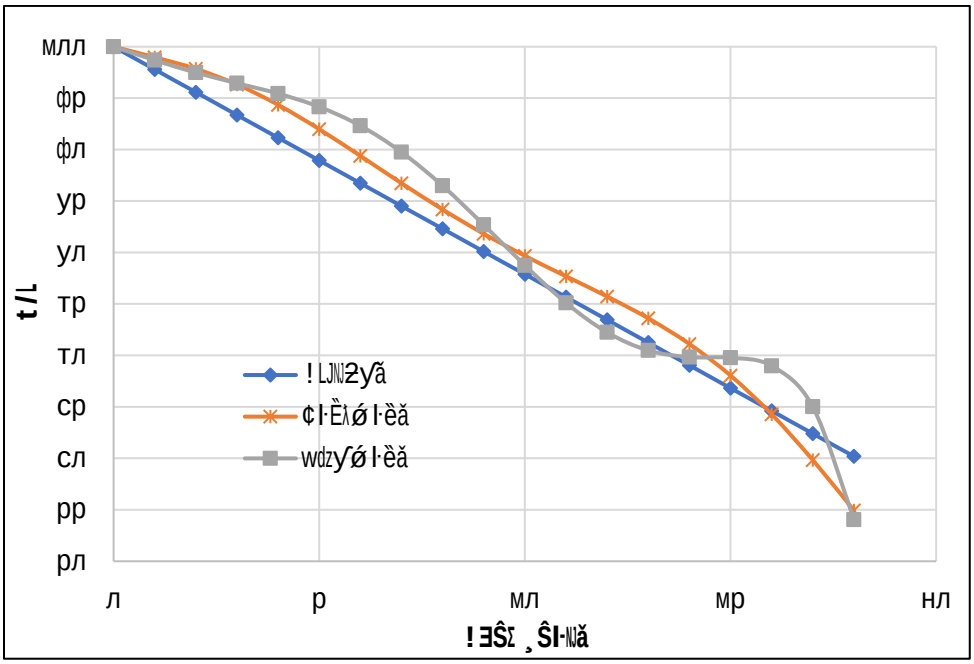
t ŜŘλŎűλ2y Y2ŘŜfä I·Ŝ dzäŜŘ I·ú ûKŜ äŜŎűλ2y fŜØŜf ű2 Ŏ2YLJdzűŜ ₮dzűdzŜ Ŏ2yŘλűλ2yã ōI·äŜŘ 2y ûKŜ ûèLJλŎI·f
LJŜ₮2Y I·yŎŜ 2₮ ûKŜ LJI·ØŜY Ŝyű äŜŎűλ2yã ûKI·ű I·Ŝ λyŎfdzŘŜŘ λy ŜI·ŎK Y2ŘŜf CdzűdzŜ Ŏ2yŘλűλ2y ˆλä Ŏ2YLJdzűŜŘ
ōè ŘŜ₮λyλyΞ λűä LJ2äλűλ2y Ŝf I·ûλØŜ ű2 ûKŜ LJŜŘλŎűλ2y Y2ŘŜf ¢KŜ äŜŎűλ2y LJŜŘλŎűλ2y Ŏdz ØŜΣ 2 ŜIjdzI·ûλ2yΣ ˆλä
ŘI·ØY ûK2dzΞK ûKŜ ŎdzŜŜyű t /Lπ I·ΞŜ LJ2λyű ₮2 ŜI·ŎK äLJŜŎλ₮λŎ äŜŎűλ2y {λyŎŜ ûKŜ äKλ₮ûŜŘ ŎdzØŜ ØλfI dzY
LJI·I·ff Sf ű2 ûKŜ Ŏ2YLJdzűŜŘ LJŜŘλŎűλ2y Y2ŘŜf ûKŜ LJŜŘλŎűŜŘ Ŏ2yŘλűλ2y Ol·y ōŜ Ŏ2YLJdzűŜŘ ₮2 I·yè ₮dzűdzŜ I·ΞŜ
CλΞdzŜ π λä I·y λfdzäűI·ûλ2y 2₮ ûKλä LJŜ2ŎŜääΩ

t ŜŘλŎűλ2y Y2ŘŜfä LJŜ2ØλŘŜ I·y Ŝ₮₮ŜŎűλØŜ ØI·è ű2 Ŏ2YLJdzűŜ ₮dzűdzŜ LJI·ØŜY Ŝyű LJŜ₮2Y I·yŎŜ ōI·äŜŘ 2y LJI·äű
I·yŘ ŎdzŜŜyű Ŏ2yŘλűλ2yãΣ I·yŘ LJI·ØŜY Ŝyű Y I·λyűŜyl·yŎŜ I·yŘ ŜŜKI·ōλ₮λûI·ûλ2y LJŜI·ŎűλŎŜäΩ ! ä yŜØ t /L λyãLJŜŎûλ2y
ädzØŜèä I·Ŝ Ŏ2yŘdzŎûŜŘΣ ûKŜäŜ Y2ŘŜfä äK2dzfŘ ōŜ dzLJŘI·ûŜŘ I·ŎŎ2ŜŘλyΞfè¢ LyűKŜ ŎI·äŜ 2₮ ûKŜ ! fI·ōI·Y I·
äűI·ûŜØλŘŜ I·λŜLJ2Ŝű LJI·ØŜY Ŝyű yŜűØ2Ŝ]Σ ûKŜ ōŜäű ₮λú ₮I·Y λfè ŎdzØŜä ØŜŜ ŘŜØŜf2LJŜŘ ₮2Ŝ ŜI·ŎK ŜŜΞλ2y ōè
ΞŜ2dzLJλyΞ LJI·ØŜY Ŝyűä I·ŎŎ2ŜŘλyΞ ű2 ōŜI·yŎK dzäŜ óΩΞΩ ØdzyØI·èΣ úI·ÈλØI·èú I·yŘ ädzØ₮I·ŎŜ úèLJŜ óΩΞΩ ! /Σ ! ! /Σ I·yŘ
! t /úΩ ¢KŜ ₮I·Y λfè ŎdzØŜä ₮2Ŝ ! [5h¢ ØŜŜ ŘŜØŜf2LJŜŘ ōI·äŜŘ 2y ōŜI·yŎK dzäŜ I·yŘ I·ŜŜ LJŜäŜyűŜŘ λy CλΞdzŜ
πΩHΩ

CλƎdzNŜ nΦMY t / L C₴NŜŎI·ăűλyƎΦ



CλƎdzNŜ nΦHY CI·Yˆλfè / dzNØŜăΦ



ПΠН

4.3. Critical PCI Values

¢KŜ /λűI·f t /L ØI·fdzŜ λă ŘŜŦλyŜŘ I·ă áűKŜ t /L ØI·fdzŜ I·ű øKλÖK űKŜ I·ûŜ 2Ŧ t /L f2ăă λyÖŜI·ăŜă øλűK ûλϒŜΣ 2 űKŜ Ö2ăű 2Ŧ I·LJLJfèλyΞ f2ÖI·fλÎŜŘ LJŜØŜŜyűλØŜ ϒI·λyűŜyI·yÖŜ λyÖŜI·ăŜă ăλΞyΛŦλÖI·yűfè¢é ¢Kλă ŘŜŦλyλûλ2yˊλă λyÖ2LJ2I·ûŜŘ λyű2 t !±9w λyˊŘŜŦλyλyΞ I·yŘ YˊŜI·ădzλyΞ űKŜ ÖλűλÖI·f t /L ØI·fdzŜă¢ ¢KŜăŜ ØI·fdzŜăΣ 2 a ɔw ûλΞΞŜλăΣ I·ŜI·ăăλΞySŘ Ŧ2 ŜI·ÖK LJŜŘλÖûλ2yˊY2ŘŜf¢ ! ă ădzÖKΣ ûKŜ ÖλűλÖI·f t /L ØI·fdzŜă I·Ŝ ŘλŜÖûfè ŜfI·ûŜŘ û2 ûKŜ ōI·yÖK dzăŜ¢

¢KŜăŜ ÖλűλÖI·f t /L fŜØŜfă I·Ŝ ăŜfŜÖűŜŘ ōI·ăŜŘ 2yˊăŜØŜI·f ŦI·ÖûŁ2ăă λyÖfdzŘλyΞ I· ŜØλŜø 2Ŧ LJŜŦŁ2YˊI·yÖŜ YˊŘŘŜfăT ŜÈLJŜλŜyÖŜT 2ûKŜ I·λLJ2ű ûλΞΞŜăT I·yŘ I·Ö]y2øfŜŘƎŜ ûKI·ű ûλYˊŜ λă ŜIjdzλŜŘ Ŧ2 ŦdzyŘλyΞ I·LJLJ2Ø I·f I·yŘ ŘŜăλΞy¢ b2ûŜ ûKI·ű LJŜØŜyűλØŜ YˊI·λyűŜy1·yÖŜ λă ŜÖ2YˊYˊŜyŘŜŘΣ I·yŘ λű ăK2dzfŘ ΞŜySŜI·ffè ōŜ LJŜŦŁ2YˊŜŘ I·ō2ØŜ ûKŜ ÖλűλÖI·f t /L óűλΞΞŜű Ø I·fdzŜă I·yŘ a I·2 a ɔw λă ΞŜySŜI·ffè LJŜŦŁ2YˊŜŘ ōŜf2ø ûKŜYˊ¢ ¢KŜ ÖλűλÖI·f t /L ó/ tú Ø I·fdzŜă øŜŜ ăŜű I·ű тл Ŧ2 λdzyø I·èă I·yŘ ûI·Èλø I·èăΣ I·yŘ cp Ŧ2 2ûKŜ LJI·ØŜYˊŜyűă¢

4.4. M&R Policies and Unit Costs

a ɔw LJ2fλÖλŜă ŜŦŜ û2 ûKŜ I·ÖűλØλûλŜă ûKI·ű I·Ŝ I·LJLJfλŜŘ I·ú ŘλŦŦŜŜyű Ö2yŘλûλ2yˊfŜØŜfă û2 YˊI·λyűI·λyˊI·yŘ ŜLJI·λ I·LJI·ØŜYˊŜyű ăŜÖûλ2y¢

a I·λyűŜy1·yÖŜ I·ÖűλØλûλŜă I·Ŝ f2ÖI·fλÎŜŘ I·ÖűλØλûλŜă øKλÖK I·Ŝ ûèLJλÖI·ffè I·ăăλΞySŘ λyˊûKŜ ŦλăŭŜI·Ŝ 2Ŧ ûKŜ a ɔw LJfI·yˊōI·ăŜŘ 2yˊûKŜ 2ōăŜŜØŜŘ ŘλăúŜăăŜă¢ {I·ŦŜûè óăű2LJƎI·LJú YˊI·λyűŜy1·yÖŜ I·ŘŘŜăăŜă ŘλăúŜăăŜă ûKI·ű ø2dzfŘ I·ŦŦŜÖű 2LJŜŜI·ûλ2y1·f ăI·ŦŜûè λŦ ŦŜŦű dzyŜLJI·λŜŘ I·yŘ λă I·LJLJfλŜŘ û2 LJI·ØŜYˊŜyűă ōŜf2ø ûKŜ ÖλűλÖI·f t /L¢ tŜØŜyűλØŜ YˊI·λyűŜy1·yÖŜ I·ÖűλØλûλŜă I·Ŝ I·λYˊŜŘ I·ú ăf2øλyΞ ûKŜ I·ûŜ 2Ŧ ŘŜűŜλ2I·ûλ2yˊûKŜ2dzƎK Ö2yăλăűŜyű YˊI·λyűŜy1·yÖŜ 2Ŧ ŜÈλăűλyΞ LJI·ØŜYˊŜyűă I·yŘ I·Ŝ ƎŜySŜI·ffè I·LJLJfλŜŘ û2 LJI·ØŜYˊŜyűă I·ō2ØŜ ûKŜ ÖλűλÖI·f t /L¢ !LJLJŜyŘλÈ D LJŜăŜyűă ûKŜ LJ2fλÖλŜă Ŧ2 LJŜØŜyűλØŜ I·yŘ ăI·ŦŜûè YˊI·λyűŜy1·yÖŜ¢

wŜLJI·λ I·ÖűλØλûλŜă I·Ŝ Ö2yŘdzÖűŜŘ Ŧ2 fI·Ǝ Ŝ I·Ŝ I·ăΣ ûèLJλÖI·ffè I·ű ûKŜ ăŜÖûλ2yˊfŜØŜf I·yŘ I·Ŝ I·ăăλΞySŘ ōI·ăŜŘ 2yˊ ûKŜ ÖλűλÖI·f t /L¢ wŜLJI·λ I·ÖűλØλûλŜă ōλ2I·Řfè Ö2yăλăű 2Ŧ ûKλŜŜ ÖI·ûŜƎ2λŜăY LJλŜăŜλØI·ûλ2yΣ λŜK I·ōλfλúI·ûλ2yΣ I·yŘ λŜÖ2yăűλdzÖűλ2y¢ tI·ØŜYˊŜyű LJλŜăŜλØI·ûλ2yˊλyØ2fØŜă I·ÖűλØλûλŜă fλ]Ŝ ădzλŦI·ÖŜ ûλŜI·ûYˊŜyűă ûKI·ű I·Ŝ dzăŜŘ û2 ŜÈúŜyŘ LJI·ØŜYˊŜyű ăŜλØλÖŜ fλŦŜ I·yŘ û2 ŘŜfI·è YˊŘŜ ŜÈLJŜyăλØŜ λŜK I·ōλfλúI·ûλ2yˊø2λ]¢ ¢KŜăŜ I·Ŝ I·LJLJfλŜŘ øKŜyˊ ûKŜ LJI·ØŜYˊŜyű λă λyˊλŜfI·ûλØŜfè Ǝ22Ř Ö2yŘλûλ2yˊI·yŘ Ř2Ŝă y2ű ŜÈKλōλú I·yè ăúλdzÖűdzλI·f ŘλăúλŜăă¢ wŜKI·ōλfλúI·ûλ2yˊ I·ÖűλØλûλŜă I·Ŝ dzăŜŘ û2 λŜLJI·λ LJI·ØŜYˊŜyűă ōŜf2ø 2 I·2dzyŘ ûKŜ ÖλűλÖI·f t /L I·yŘ ûèLJλÖI·ffè λyÖfdzŘŜ YˊλffI·yŘ 2ØŜλfI·è¢ wŜÖ2yăúλdzÖűλ2yˊλă λŜÖ2YˊYˊŜyŘŜŘ øKŜyˊûKŜ LJI·ØŜYˊŜyű KI·ă ŘŜűŜλ2I·ûŜŘ û2 I· fŜØŜf øKŜλŜ λŜKI·ōλfλúI·ûλ2yˊλă y2 f2yƎŜ Ö2ăű ŜŦŦŜÖűλØŜ¢

¢I·ōfŜ п¢м fλăűă ûKŜ LJI·ØŜYˊŜyű I·ÖűλØλúûè ûèLJŜăΣ ûKŜ λyŘλØλŘdzI·f I·ÖűλØλúûλŜă øλúKλyˊŜI·ÖK ûèLJŜΣ I·yŘ ûKŜλI I·ăă2ÖλI·ûŜŘ нлнл dzyλű Ö2ăűă¢ ! Yˊ2λŜ ŘŜűI·λfŜŘ ŘŜăÖλLJûλ2yˊ2Ŧ ûKŜ a ɔw I·ÖűλØλúûλŜă I·yŘ ûKŜ ŘŜØŜf2LJYˊŜyű 2Ŧ ûKŜ a ɔw dzyλű Ö2ăűă λă LJλŜăŜyűŜŘ λyˊ !LJLJŜyŘλÈ I¢

LyˊI·ÖÖ2λŘI·yÖŜ øλúK ![5h¢Ωă Ŧ2Ödză 2yˊLJλŜăŜλØI·ûλ2yΣ ădzλŦI·ÖŜ ûλŜI·ûYˊŜyű λă I·LJLJfλŜŘ û2 I·ff λŜădzλŦI·ÖŜŘ I·yŘ λŜÖ2yăúλdzÖűŜŘ λdzyø I·èăΣ ûI·Èλø I·èăΣ I·yŘ I·LJλ2yă ûKλŜŜ èŜI·λă I·ŦűŜλ Ö2yăúλdzÖűλ2yˊø2λ]ă Ö2YˊLJfŜűŜ¢ ¢I·ÈλfI·ySă I·yŘ ¢π I I·yƎI·λ LJI·ØŜYˊŜyűă I·λŜ ŜÈÖfdzŘŜŘ FλŸ ûKλă λŜIjdzλŜYˊŜyű¢ ¢Kλă LJ2fλÖè ăă I·LJLJfλÖI·ōfŜ Ŧ2 LJλ2ŜÖűă λyˊ ûKŜ t /L tōŜűøŜŜyˊнлнм I·yŘ нлнп¢ C2 Ö2ăű ŜăűλYˊI·ûλyΞΣ ûKλă ădzλŦI·ÖŜ ûλŜI·ûYˊŜyű ăă I·ăădzYˊŜŘ û2 KI·ØŜ ûKŜ ăI·YˊŜ Ö2ăű I·ă ûKŜ λdzyø I·è ădzλŦI·ÖŜ ûλŜI·ûYˊŜyű¢

¢ŀōfŜ п΅мΥ a ϧw !ŎűʎØʎűʎŜă ŀyŘ ¦yʎű /ƻăűă΅

!ŎűʎØʎűè ¢èLJŜ	t /L	!ŎűʎØʎűè	/ƻăűкăŦ
a ŀʎyűŜyƞŀyŎŜ	bƻűŜ м	{Ŝŀf /NJŀŎʅă ς ! / óÞкfŦú	Þo΅фp
		! / Cdzffπ5ŜLJűK tŀűŎKʎyƎ	Þнp΅лp
		! / tŀNJűʎŀfπ5ŜLJűK tŀűŎKʎyƎ	Þмc΅нy
tNJŜăŜNJØŀűʎƻyʃ	тpπфл	wdzyʃǿŀè {dzNJŦŀŎŜ ¢NJŜŀűϒŜyʃű	Þл΅pт
		¢ŀȄʎǿŀè ŀyŘ !LJNJƻyʃ{dzNJŦŀŎŜ ¢NJŜŀűϒŜyʃű	Þл΅yp
wŜKŀōʎfʎűŀűʎƻyʃ	ῦ / t	нђ ! / h[ᴴ	Þп΅мф
	pp π / t	aʎff нђ ϧ нђ ! / h[	Þп΅pc
	пp π pp	aʎff нђ ϧ oђ ! / h[	Þp΅тф
wŜŎƻyʃăűNJdzŎűʎƻyʃ	л π пp	! / wŜŎƻyʃăűNJdzŎűʎƻyʃ	Þмл΅фм

ᴹ tNJŜØŜyʃűʎØŜ ῦ / tΤ {ŀŦŜűè ó{űƻLJƎŀLJú ғ / t

ᴴ CƻNJ ăŜŎűʎƻyʃă ǿʎűK ăűNJdzŎűdzNJŀf Řʎă űNJŜăă ŀyŘ t /L ῦ / t

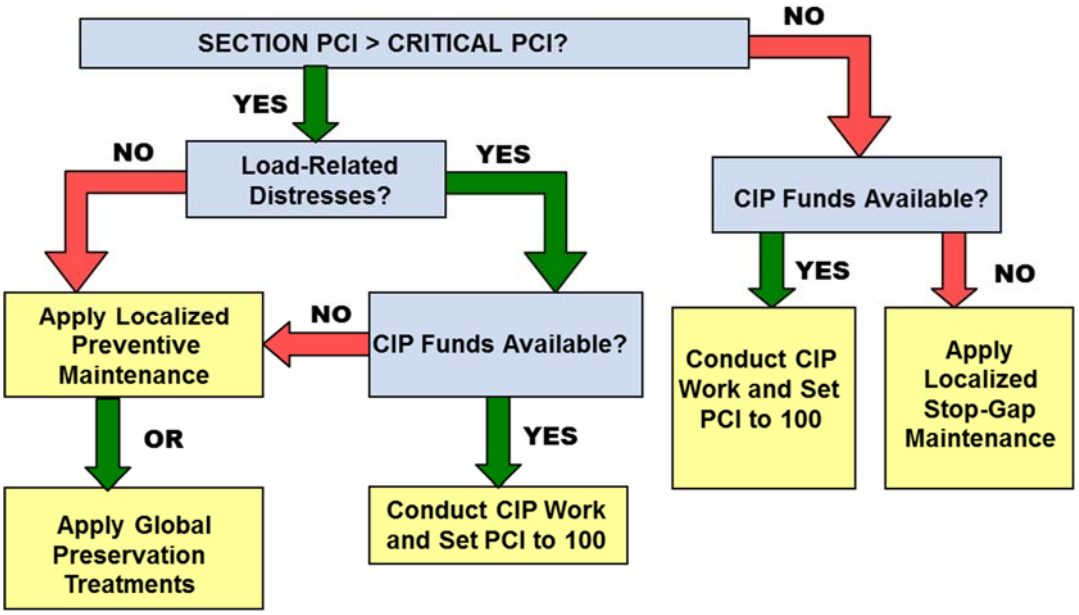
4.5. Pavement CIP Development

¢KŜ t !±9w Řŀűŀōŀ ăŜΣ dzLJŘŀűŜŘ ǿʎűK ŎƻyŘʎűʎƻyʃŘŀűŀ ŀyŘ Ŏdzăűƻϒʎ΅ŜŘ ǿʎűK ŎƻyŘʎűʎƻyʃLJŜNJŦƻNJϒŀyŎŜ LJNJʎƻNJʎűʎŜăΣ LJƻfʎŎʎŜăΣ ŀyŘ ŎƻăűăΤ ǿŀă dzăŜŘ űƻ ŜØŀfdzŀűŜ űKŜ ŜŦŦŜŎű ƻŦ ϒdzfűʎLJfŜ ŦdzyʃŘʎyƎ fŜØŜfă ƻyʃ űKŜ ƻØŜNJŀff Ŧdzűdz NJŜ LJŀØŜϒŜyʃű ŎƻyʃŘʎűʎƻy΅ ¢Kʎă ƻdzűLJdzű ǿŀă ŦdzNJűKŜNJ dzăŜŘ űƻ ŘŜØŜfƻLJ űKŜ t /L t΅ CʎƎdzNJŜ п΅o ʎffdzăűNJŀűŜă űKŜ LJNJƻŎŜăă űKŀű t !±9w dzăŜă ʎyʃűKŜ ŦdzyʃŘʎyƎ ŀyŀfèăʎă΅

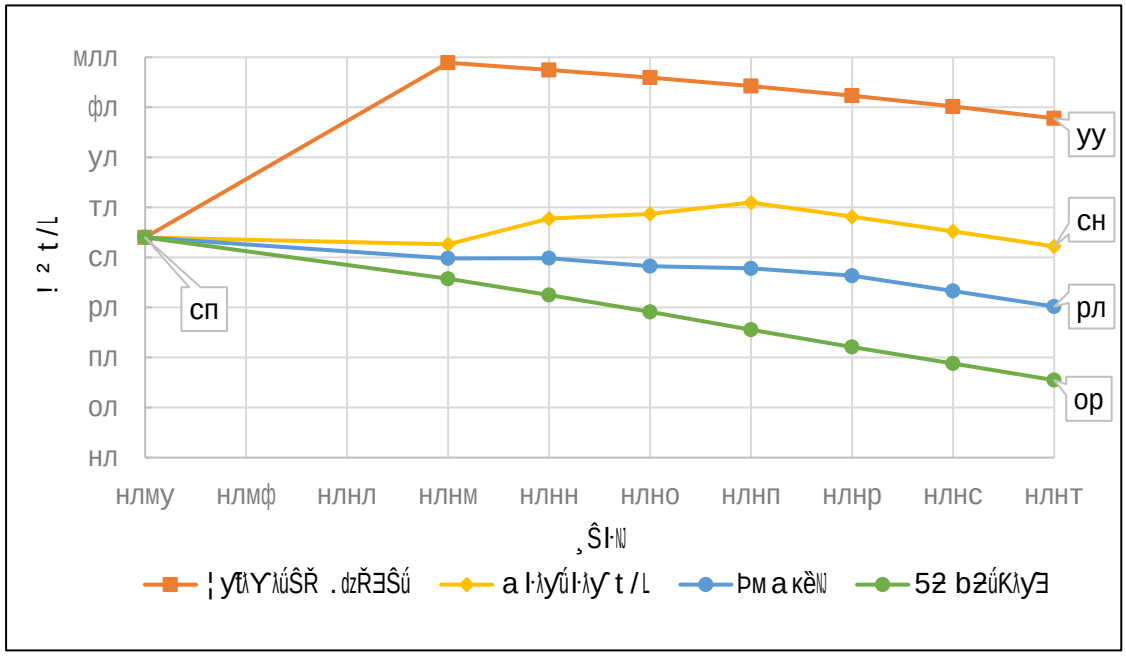
¢KŜ Ŧƻffƻǿʎyʃ a ϧw ŦdzyʃŘʎyƎ fŜØŜfă ǿŜNJŜ dzăŜŘ ŦƻNJ űKŜ a 5 v LJŀØŜϒŜyʃű yʃŜűǿƻNJʅ űƻ KŜfLJ Ŝăűŀōfʎăh űKŜ тπ ¸ŜŀNJ t /L t΅ CʎƎdzNJŜ п΅п LJNJŜăŜyʃűă űKŜ yʃŜűǿƻNJʅ ŀNJŜŀπǿŜʎƎKűŜŘ ŀØŜNJŀƎŜ t /L ŦƻNJ ŜŀŎK ƻŦ űKŜ Ŧƻffƻǿʎyʃ ŦdzyʃŘʎyƎ ăŎŜyʃŀNJʎƻă ŀű űKŜ ŜyʃŘ ƻŦ űKŜ ŀyʃŀfèăʎă LJŜNJʎƻŘϒ

- ¦yfʎϒʎűŜŘ CdzyʃŘʎyƎϒ ¦yfʎϒʎűŜŘ ŦdzyʃŘʎyƎ ʎă ŀØŀʎfŀōfŜ ŦƻNJ ŀff LJŀØŜϒŜyʃű yʃŜŜŘă΅ ¢KŜ t /L ʎyʃŎNJŜŀăŜă űƻ yy ōè нлнт΅
- a ŀʎyʃűŀʎyʃ t /Lϒ a ŀʎyʃűŀʎyʃŜȄʎăűʎyƎ t /L ƻŦ cп΅
- /ƻyʃăűNJŀʎyʃŜŘ CdzyʃŘʎyƎϒ ¢Kʎă ăŎŜyʃŀNJʎƻ ŎƻyʃăűNJŀʎyʃă űKŜ ŦdzyʃŘʎyƎ űƻ Þм ϒʎffʎƻyʃŜŀŎK èŜŀNJ óűƻűŀf ƻŦ Þт ϒʎffʎƻyʃú΅ ¢KŜ t /L ŘŜŎNJŜŀăŜă űƻ pл ōʎyʃнлнт΅
- 5ƻ bƻűKʎyƎϒ tŜNJŦƻNJϒʎyƎ yʃƻ a ϧw ǿƻdzfŘ NJŜŘdzŎŜ űKŜ yʃŜűǿƻNJʅ t /L ŦNJƻϒ cп űƻ op ōè нлнт΅

CλƎdz№Ŝ nΦoY .dzŘƎŜŰ !yI·fèăλă t№2ŐŜăăΦ



CλƎdz№Ŝ nΦnY a ƨw CdzyŘλyƎ [ŜØŜfăΦ



¢I·ōfŜ nΦн ădzYY´I·№λÎŜă úKŜ I·yyűzI·f ŦdzyŘλyƎ №ŜIjdzλ№ŜŘ Ŧ2№ úKŜ I·ō2ØŜ I·yI·fèăŜăΦ C2№ úKŜ dzyfλY´λűŜŘ I·yI·fèăλăΣ I·ff LJI·ØŜY´Ŝyű yŜŜŘă I·№Ŝ ŦdzyŘŜŘ λy´úKŜ èŜI·№ úKŜè I·№Ŝ №ŜIjdzλ№ŜŘΦ ¢KŜ№ŜŦ2№ŜΣ úKŜ dzyŦdzyŘŜŘ Ő2ăűă I·№Ŝ ÎŜ№2Φ ¢KŜ ú2űI·f ŦdzyŘŜŘ I·Y´2dzyű 2ØŜ№ úKŜ τπèŜI·№ LJŜ№λ2Ř λă I·LJLJ№2ÈλY´I·ûŜfè Þммфм Y´λffλ2yΦ C2№ úKŜ I·yyűzI·f ŦdzyŘλyƎ fŜØŜf 2Ŧ Þм Y´λffλ2y´LJŜ№ èŜI·№Σ ŦdzyŘλyƎ λă LJ№λ2№ăúλÎŜŘ ōI·ăŜŘ 2y´úKŜ LJ№λ2№λúλÎI·úλ2y´YI·ú№λÈΦ ² KŜy´úKŜ yŜŜŘă ŜĚŐŜŜŘ úKŜ ŦdzyŘλyƎ Ŧ2№ I·yê èŜI·№Σ úKŜ №ŜY´I·λyλyƎ ăŜŐúλ2yã I·№Ŝ ú№I·yãŦŜ№№ŜŘ ű2 úKŜ ădzŐŐŜŜŘλyƎ èŜI·№ I·yŘ úKŜ I·Y´2dzyű

ŦƧℕ ΰЌŜăŜ Ⅰ·ŎΰλØλΰλŜă Ⅰ·ℕŜ ℕŜLJℕŜăŜyΰŜŘ Ⅰ·ă άdzyŦdzyŘŜŘέΦ ¢ЌŜ άdzyŦdzyŘŜŘέ ℕŜLJⅠ·λℕă λy˜нлнт ŦƧℕ ΰЌλă ŦdzyŘλyƎ fŜØŜf λă Ⅰ·LJLJℕƧÈλY˜Ⅰ·ΰŜfè Þмпфp Y˜λffλƧyΦ

¢Ⅰ·ōfŜ пФнY {dzYY˜Ⅰ·ℕè ƧŦ a ƻw CdzyŘλyƎ [ŜØŜf ! yⅠ·fèăŜăΦ

¸ŜⅠ·ℕ	¦ yfλY˜λΰŜŘ	a Ⅰ·λyΰⅠ·λy˜t /L	/Ƨyãΰℕ Ⅰ·λySŘ Þм a кèŜⅠ·ℕ	5Ƨ bƧΰЌλyƎ
нлнм	ÞммΣлпмΣллл	ÞмΣттсΣллл	ÞфуоΣллл	Þл
нлнн	ÞpΣллл	ÞнΣллпΣллл	ÞфтмΣллл	Þл
нлно	ÞуΣллл	ÞмΣмслΣллл	ÞpcpΣллл	Þл
нлнп	ÞмнΣллл	ÞнΣлрмΣллл	ÞунфΣллл	Þл
нлнр	ÞмтΣллл	ÞмтоΣллл	ÞтслΣллл	Þл
нлнс	ÞннΣллл	ÞнлтΣллл	ÞнпнΣллл	Þл
нлнт	ÞнуΣллл	ÞнолΣллл	ÞнтуΣллл	Þл
¢Ƨűl·f	**ÞммΣмопΣллл**	**ÞтΣслмΣллл**	**ÞпΣснуΣллл**	**Þл**
нлнт .Ⅰ·Ŏ⌊f2Ǝ	**π**	**ÞфΣтнтΣллл**	**ÞмпΣрнуΣллл**	**ÞнлΣфпфΣллл**

aⅠ·LJ .o! λy˜! LJLJŜyŘλÈ . LJℕŜăŜyΰă ΰЌŜ нлнт ŦƧℕŜŎⅠ·ăΰΰŜŘ t /L ōè ăŜŎΰλƧy˜ǿЌŜy˜ΰЌŜ a ƻw Ⅰ·ŎΰλØλΰλŜă ℕŜŎƧYY˜ŜyŘŜŘ λy˜ΰЌŜ /Lt Ⅰ·ℕŜ yƧΰ ŎƧyŘdzŎΰŜŘΦ

4.6. Pavement Capital Improvement Program

¢ЌŜ dzyfλY˜λΰŜŘ ŦdzyŘλyƎ Ⅰ·yⅠ·fèăλă ŎƧyΰⅠ·λyã ℕŜKⅠ·ōλfλΰⅠ·ΰλƧy˜Ⅰ·ŎΰλØλΰλŜă ŦƧℕ ăŜŎΰλƧyã ŦℕƧY˜ ΰЌŜ ăⅠ·YˆŜ ōℕⅠ·yŎK ăLJℕŜⅠ·Ř 2dzΰ 2ØŜℕ ΰЌŜ ăŜØŜyñèŜⅠ·ℕ LJŜℕλƧŘΣ ǿЌλŎK λă yƧΰ Ⅰ·fǿⅠ·èă 2LJŜℕⅠ·ΰλ2yⅠ·ffè ŦŜⅠ·ăλōfŜ ΰƧ ŎƧyãΰℕdzŎΰΦ ¢ЌŜ Ⅰ·yⅠ·fèăλă 2dzΰLJdzΰ ǿⅠ·ă ΰℕŜⅠ·ΰŜŘ Ⅰ·ă Ⅰ· ăΰⅠ·ℕΰλyƎ LJƧλyΰ λy˜ŘŜØŜf2LJλyƎ ΰЌŜ /Lt {ŜŎΰλ2yã ǿŜℕŜ 2ŦΰŜy˜λyΰŜƎℕⅠ·ΰŜŘ ΰƧƎŜΰЌŜℕ ΰƧ Ⅰ·ŎŎ2dzyΰ ŦƧℕ ŎƧyãΰℕdzŎΰλ2y˜ŦŜⅠ·ăλōfλΰè Ⅰ·yŘ 2ΰЌŜℕ ŦⅠ·ŎΰƧℕăΣ ℕŜădzfΰλyƎ λy˜fⅠ·ℕƎŜℕ LJℕƧ2ŜŎΰă ǿЌλŎK ǿŜℕŜ Y˜ƧℕŜ ℕŜⅠ·fλăΰλŎΦ Ly˜Ⅰ·ŘŘλΰλ2yΣ ŜⅠ·ŎK LJℕƧ2ŜŎΰ ŎƧdzfŘ ŎƨyΰⅠ·λy˜ăŜŎΰλ2yã ǿЌ2ăŜ Ŏ2yŘλΰλ2y˜ŘλŘ yƧΰ ΰℕλƎƎŜℕ ℕŜKⅠ·ōλfλΰⅠ·ΰλ2y˜ōdzΰ ǿŜℕŜ λyŎfdzŘŜŘ ΰƧ LJℕƧØλŘŜ Ⅰ· fƧƎλŎⅠ·f LJfⅠ·y˜ǿЌλŎK ǿƧdzfŘ Ⅰ·Ø2λŘ ŎℕŜⅠ·ΰλyƎ άλăfⅠ·yŘăέ 2Ŧ ySǿŜℕ LJⅠ·ØŜY˜Ŝyΰ ǿλΰЌλy˜Ⅰ· LJⅠ·ℕΰλŎdzfⅠ·ℕ ŦŜⅠ·ΰdzℕŜΦ C2ℕ ŜÈⅠ·Y˜LJfŜΣ λŦ ΰЌŜ t !±9w Ⅰ·yⅠ·fèăλă ăЌ2ǿŜŘ ℕŜKⅠ·ōλfλΰⅠ·ΰλ2y˜ǿⅠ·ă ℕŜIjdzλℕŜŘ Ŧ2ℕ ŜλƎЌΰ 2dzΰ 2Ŧ мл ăŜŎΰλ2yã 2y˜Ⅰ· ℕdzyǿⅠ·èΣ ΰЌŜ ŜyΰλℕŜ ℕdzyǿⅠ·è ǿƧdzfŘ ōŜ ℕŜŎ2YYˆŜyŘŜŘ Ŧ2ℕ ℕŜKⅠ·ōλfλΰⅠ·ΰλ2y˜ΰ2 LJℕƧØλŘŜ Ⅰ· Ŏ2yΰλyƨz2dză yŜǿ LJⅠ·ØŜY˜ŜyΰădzℕŦⅠ·ŎŜΦ

¢Ⅰ·ōfŜ пФo ăЌ2ǿă ΰЌŜ LJℕƧ2ŜŎΰă Ⅰ·yŘ ΰЌŜ Ⅰ·ăă2ŎλⅠ·ΰŜŘ Ŏ2ăΰă Ŧ2ℕ ΰЌŜ ℕŜŎ2YYˆŜyŘŜŘ тπèŜⅠ·ℕ t /Lt¢ ¢Ⅰ·ōfŜ пФп λă Ⅰ·Y˜2ℕŜ ŘŜΰⅠ·λfŜŘ ØλŜǿ 2Ŧ ΰЌŜ t /Lt¢ ¢ЌλăΰⅠ·ōfŜ fλăΰă ΰЌŜ λyŘλØλŘdzⅠ·f LJⅠ·ØŜY˜ŜyΰăŜŎΰλ2yΣ ăŜŎΰλ2y˜fŜØŜf a ƻw ǿƧℕ˺Σ ăŜŎΰλ2y˜ℕŜLJⅠ·λℕ ŎƧăΰΣ ădzℕŦⅠ·ŎŜ Ⅰ·ℕŜⅠ· Ⅰ·yŘ ΰЌŜ t /L ōŜŦƧℕŜ ΰЌŜ a ƻw λă Ⅰ·LJLJfλŜŘΦ ¢ЌŜ Ŏ2ăΰă ΰЌKⅠ·ΰ Ⅰ·ℕŜ LJℕŜăŜyΰŜŘ ℕŜLJℕŜăŜyΰ Ⅰ·y˜Ⅰ·yyΰzⅠ·f ŜăŎⅠ·fⅠ·ΰλ2y˜ℕⅠ·ΰŜ ƧŦ ęˆ₂ ŦƧℕ ΰЌŜ dzyΰ Ŏ2ăΰăΦ ¢ЌŜ ΰ2ΰⅠ·f тπèŜⅠ·ℕ t /Lt Ŏ2ăΰ λă Ⅰ·LJLJℕƧÈλY˜Ⅰ·ΰŜfè Þмпфм Y˜λffλƧyΦ aⅠ·LJ .o. ăЌ2ǿă ΰЌŜ ℕŜŎ2YYˆŜyŘŜŘ ℕŜLJⅠ·λℕ ΰèLJŜăΣ ǿЌλfŜ aⅠ·LJ .o/ LJℕŜăŜyΰă ΰЌŜ ℕŜŎ2YYˆŜyŘŜŘ LJℕƧ2ŜŎΰă Ⅰ·yŘ Ⅰ·ŎΰλØλΰλŜă λy˜ΰЌŜ t /Lt¢ !LJLJŜyŘλÈ Lм LJℕŜăŜyΰă Ⅰ· ădzYˆY˜Ⅰ·ℕè 2Ŧ ΰЌŜ ℕŜŎ2YYˆŜyŘŜŘ Ⅰ·ŎΰλØλΰλŜă Ⅰ·yŘ Ŏ2ăΰ ōè èŜⅠ·ℕ Ŧ2ℕ ŜⅠ·ŎK ăŜŎΰλ2y˜Ⅰ·ΰ a 5vΦ

¢I·ōfŜ nΦoY {dzY´YI·Nè 2Ŧ ττ¸ŜI·N t/Lt ōè tN2ΣŜŐűΦ

tN2ΣŜŐű ¸ŜI·N	/Lt tN2ΣŜŐű		¢2űI·f tN2ΣŜŐű /2ăű	¢2űI·f tN2ΣŜŐű !NŜI· óăŦú	! ² t/L .ŜŦ2NŜ	! ² t/L !ŦúŜN
нлнм	a5vψнмπлмψwdzy´ǿI·è мупос tNŜăŜNØI·úλ2y´		ÞмсрΣрну	нофΣмтл	ус	фн
	a5vψнмπлнψwdzy´ǿI·è мупос wŜKI·ōλfλúI·úλ2y´		ÞпΣмноΣлрм	снтΣрол	пс	млл
	a5vψнмπлоψ I I·yƎI·N ¢I·ÈλøI·è ло tNŜăŜNØI·úλ2y´		ÞмрΣлтм	мтΣмфо	уу	фс
нлнн	a5vψннπлмψ¢I·ÈλøI·è !м wŜKI·ōλfλúI·úλ2y´		ÞфооΣуфм	мррΣпур	рн	млл
нлно	a5vψноπлмψ¢I·ÈλøI·è ! wŜŐ2yãúNdzŐúλ2y´		ÞнΣфлрΣсмт	нпоΣсум	пл	млл
	a5vψноπлнψ I I·yƎI·N ¢I·ÈλøI·è ло wŜKI·ōλfλúI·úλ2y´		ÞсмтΣлтм	рмΣтрм	оф	млл
нлнп	a5vψнππлмψ I I·yƎI·N ¢I·ÈλøI·èă лмэлн wŜŐ2yãúNdzŐúλ2y´		ÞнΣтлоΣном	нсуΣмно	пп	млл
	a5vψнππлнψwdzy´ǿI·è мупос {dzN⁻I·ŐŜ ¢NŜI·úY´Ŝyű		ÞоффΣоул	снтΣрол	фс	фф
нлнр	a5vψнрπлмψ !LJN2y´wŜKI·ōλfλúI·úλ2y´		ÞнΣллуΣофт	нффΣнмс	рм	млл
	a5vψнрπлнψ¢I·ÈλøI·è !м {dzN⁻I·ŐŜ ¢NŜI·úY´Ŝyű		ÞмлмΣфнп	мррΣпур	фс	фф
нлнс	a5vψнсπлмψ¢I·ÈλøI·è ! {dzN⁻I·ŐŜ ¢NŜI·úY´Ŝyű		ÞмспΣром	нпоΣсум	фс	фф
		¢2űI·f	**ÞмпΣмотΣсфо**			

¢I·ōfŜ nΦnY {dzY´YI·Nè 2Ŧ ττ¸ŜI·N t/Lt ōè tN2ΣŜŐű I·yŘ {ŜŐűλ2yΦ

.NI·yŐK	{ŜŐűλ2y´	!NŜI·Σ ăŦ	t/L .ŜŦ2NŜ wŜKI·ō	! ŐűλØλúûè	! ŐűλØλúûè ¢èLJŜ	/2ăű
a5vψнмπлмψwdzy´ǿI·è мупос tNŜăŜNØI·úλ2y´						**ÞмсрΣрну**
wмуос	лн	мрлΣллл	уф	wdzy´ǿI·è {dzN⁻I·ŐŜ ¢NŜI·úY´Ŝyű	tNŜăŜNØI·úλ2y´	ÞутΣосп
¢!	лн	уфΣмтл	ум	¢I·ÈλøI·è э !LJN2y´{dzN⁻I·ŐŜ ¢NŜI·úY´Ŝyű	tNŜăŜNØI·úλ2y´	ÞтуΣмср
a5vψнмπлнψwdzy´ǿI·è мупос wŜKI·ōλfλúI·úλ2y´						**ÞпΣмноΣлрм**
wмуос	лм	рлоΣллл	пт	aλff нђ э oђ ! / h[	wŜKI·ōλfλúI·úλ2y´	ÞнΣффффΣтпм
¢.	лм	пнΣсрс	по	! / wŜŐ2yãúNdzŐúλ2y´	wŜŐ2yãúNdzŐúλ2y´	ÞптфΣпнт
¢/	лм	нфΣпфс	пр	! / wŜŐ2yãúNdzŐúλ2y´	wŜŐ2yãúNdzŐúλ2y´	ÞоомΣрмт
¢5	лм	нсΣснн	пс	aλff нђ э oђ ! / h[	wŜKI·ōλfλúI·úλ2y´	ÞмруΣтсс
¢9	лм	нрΣтрс	пс	aλff нђ э oђ ! / h[	wŜKI·ōλfλúI·úλ2y´	ÞмроΣслм
a5vψнмπлоψ I I·yƎI·N ¢I·ÈλøI·è ло tNŜăŜNØI·úλ2y´						**ÞмрΣлтм**
¢I !bDло	лн	мтΣмфо	уу	¢I·ÈλøI·è э !LJN2y´{dzN⁻I·ŐŜ ¢NŜI·úY´Ŝyű	tNŜăŜNØI·úλ2y´	ÞмрΣлтм
a5vψннπлмψ¢I·ÈλøI·è !м wŜKI·ōλfλúI·úλ2y´						**ÞфооΣуфм**
¢!м	лм	мфΣлсо	рм	aλff нђ э oђ ! / h[	wŜKI·ōλfλúI·úλ2y´	ÞммтΣлфт
¢!м	лн	тлΣсст	пт	aλff нђ э oђ ! / h[	wŜKI·ōλfλúI·úλ2y´	ÞпопΣлул
¢!м	ло	нмΣллн	сл	aλff нђ э нђ ! / h[	wŜKI·ōλfλúI·úλ2y´	ÞмлмΣсрп
¢!м	лп	пΣуфт	по	! / wŜŐ2yãúNdzŐúλ2y´	wŜŐ2yãúNdzŐúλ2y´	ÞрсΣсфл
¢!м	лр	пΣстл	оп	! / wŜŐ2yãúNdzŐúλ2y´	wŜŐ2yãúNdzŐúλ2y´	ÞрпΣлсо

.№l·yÕK	{ŜÕúλ2y	!№Ŝl·Σ ăŦ	t /L .ŜŦƵ№Ŝ wŜKl·ō	! ÕúλØλúè	! ÕúλØλúè ¢èLJŜ	/2ăú
¢!м	лс	орΣмус	сн	aλff нђ ɜ нђ ! / h[	wŜKl·ōλfℓúǐ·úλ2y	РмтлΣолу
a5vψноπлмψ¢l·ÈλøI·è ! wŜŎ2yãúNdzÕúλ2y						**РнΣфлрΣсмт**
¢!	лм	нпоΣсум	пл	! / wŜŎ2yãúNdzÕúλ2y	wŜŎ2yãúNdzŎúλ2y	РнΣфлрΣсмт
a5vψноπлнψ l l·yƎl·№ ¢l·Èλøl·è ло wŜKl·ōλfℓúǐ·úλ2y						**РсмтΣлтм**
¢l ! bDло	лм	рΣфлл	ол	! / wŜŎ2yãúNdzÕúλ2y	wŜŎ2yãúNdzŎúλ2y	РтлΣорм
¢l ! bDло	ло	прΣурм	пл	! / wŜŎ2yãúNdzÕúλ2y	wŜŎ2yãúNdzŎúλ2y	РрпсΣтнм
a5vψнππлмψ l l·yƎl·№ ¢l·Èλøl·èă лмɜлн wŜŎ2yãúNdzÕúλ2y						**РнΣтлоΣном**
¢l ! bDлм	лм	млнΣнфф	пф	aλff нђ ɜ oђ ! / h[	wŜKl·ōλfℓúǐ·úλ2y	Рссс Σсрм
¢l ! bDлн	лм	мсрΣунп	пл	! / wŜŎ2yãúNdzÕúλ2y	wŜŎ2yãúNdzŎúλ2y	РнΣлосΣртф
a5vψнππлнψwdzYøl·è муπос {dzNŦl·ÕŜ ¢№ŜI·úYŜyú						**Рофф Σоул**
wмуос	лм	рлоΣллл	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РонлΣмнр
¢.	лм	пнΣсрс	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РнтΣмпу
¢/	лм	нфΣпфс	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РмуΣттн
¢5	лм	нсΣснн	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РмсΣфпо
¢9	лм	нрΣтрс	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РмсΣофн
a5vψнрπлмψ ! LJN2y wŜKl·ōλfℓúǐ·úλ2y						**РнΣллуΣофт**
!лм	лм	нффΣнмс	рм	aλff нђ ɜ oђ ! / h[	wŜKl·ōλfℓúǐ·úλ2y	РнΣллуΣофт
a5vψнрπлнψ¢l·ÈλøI·è ! м {dzNŦl·ÕŜ ¢№ŜI·úYŜyú						**Рмлм Σфнп**
¢!м	лм	мфΣлсо	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РмнΣпфс
¢!м	лн	тлΣсст	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РпсΣонп
¢!м	ло	нмΣллн	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РмоΣтст
¢!м	лп	пΣуфт	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РоΣнмл
¢!м	лр	пΣстл	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РоΣлсм
¢!м	лс	орΣмус	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РноΣлср
a5vψнсπлмψ¢l·ÈλøI·è ! {dzNŦl·ÕŜ ¢№ŜI·úYŜyú						**РмспΣром**
¢!	лм	нпоΣсум	π	{dzNŦl·ÕŜ ¢№ŜI·úYŜyú	tNŜăŜNØl·úλ2y	РмспΣром
					¢2ǔl·f	**РмпΣмотΣсфо**

¢KŜ C ! !Σ dzyŘŜ№ úKŜ ! λNLJ2Nǔ LYLJN2ØŜYŜyú tN2ƎNl·Y ó ! Ltú LJN2ØλŘŜă l·LJLJN2ÈλYl·úŜfè фл LJŜNÕŜyú 2Ŧ ŜfλƎλōfŜ Õ2ăúă Ŧ2N LJfl·yYλyƎ l·yŘ ŘŜØŜf2LJYŜyú 2Ŧ LJdzōfλÕπdzăŜ l·λNLJ2Núă λyÕfdzŘŜŘ λY úKŜ btL ! { l·ă ƎNl·yúă¢ ¢KŜ NŜYl·λyλyƎ мл LJŜNÕŜyú 2Ŧ Õ2ăúă l·N Ŝ ăKl·NŜŘ ōŜúØŜŜY ! [5h¢ l·yŘ úKŜ l·λNLJ2Nǔ ăLJ2yã2N¢ ¢KŜ Ŧ2ff2ØλyƎ λă úKŜ Řλă ÚNλōdzÚλ2Y2Ŧ úKŜ тπèN t /Lt Õ2ăú 2Ŧ Рмп¢м Yλffλ2YŦ2N a5vY

- ü C ! ! óф£ƒ̂ ̃ úY — Рмн¢т Yλffλ2y
- ü ![5h¢ óƥ̂ ̃ úY — Рл¢т Yλffλ2y
- ü !λNLJ2Nǔ {LJ2yã2N óƥ̂ ̃ úY — Рл¢т Yλffλ2y

¢KŜ ℕŜŎ2YˆYˆŜyŘI·űλ2yã øλűKλyˆűKŜ t/Lt I·ℕŜ ōI·ăŜŘ 2yˆI· ySűø2ℕ]πfŜØŜf ăűdzŘè I·yŘ ăK2dzfŘ ōŜ dzăŜŘ ₮2ℕ LJfI·yYλyƎ LJdzℕLJ2ăŜă 2yfè℗ ! ŘŜűI·λfŜŘ LJℕ2?ŜŎűπfŜØŜf I·ăăŜăăYˆŜyű ăK2dzfŘ ōŜ Ŏ2yŘdzŎűŜŘ ₮2ℕ ŜI·ŎK LJℕ2?ŜŎű ú2 ŘŜűŜℕYˆλyŜ úKŜ I·LJLJℕ2LJℕλI·úŜ ℕŜLJI·λℕ I·ŎűλØλűλŜă I·yŘ ŘŜØŜf2LJ Yˆ2ℕŜ I·ŎŎdzℕI·ûŜ Ŏ2ăű ŜăűλYˆI·ûŜă℗
¢I·ōfŜ π℗p ădzYˆYˆI·ℕλÎŜă úKŜ YˆI·λyűŜyI·yŎŜ I·ŎűλØλűλŜă űKI·ú I·ℕŜ ℕŜŎ2YˆYˆŜyŘŜŘ ₮2ℕ ¸ŜI·ℕ м óнлнмú℗ ¢KŜ ŜăűλYˆI·ûŜŘ Ŏ2ăű λă I·LJLJℕ2ÈλYˆI·ûŜfè Рмπ∑унс℗ ! Ŏ2YˆLJfŜűŜ fλăűλyƎ 2₮ űKŜ YˆI·λyűŜyI·yŎŜ I·ŎűλØλűλŜă ōè ăŜŎűλ2yˆλă LJℕŜăŜyűŜŘ λyˆ ! LJLJŜyŘλÈ Lн℗ ¢Kλă YˆI·è ōŜ dzăŜŘ I·ă I· ōI·ăλă ₮2ℕ Ŝăű I·ōfλăKλyƎ I·yˆI·yYűzI·f YˆI·λyűŜyI·yŎŜ ōdzŘƎŜű ₮2ℕ úKŜ a5v LJI·ØŜYˆŜyűă℗

¢I·ōfŜ π℗pY {dzYˆYˆI·ℕè 2₮ ¸ŜI·ℕπм aI·λyűŜyI·yŎŜ tfI·y℗

tƵfλŎè	² Ƶℕʅˆ 5ŜăŎℕλLJűλƵyˆ	² Ƶℕʅˆ vdzI·yűλűûè	² Ƶℕʅˆ ¦yʃű	² Ƶℕʅˆ /2ăű
tℕŜØŜyűλØŜ	/ℕI·Ŏʅˆ {ŜI·fλyƎ π ! /	oΣoнн	Cű	РмoΣмнн
{I·₮Ŝűè	/ℕI·Ŏʅˆ {ŜI·fλyƎ π ! /	мoт	Cű	Рpпм
	tI·ûŎKλyƎ π ! / Cdzftπ5ŜLJűK	пс	{ljCű	РмΣмco
			¢Ƶűl·f	**Рмп∑унс**

APPENDIX A

INVENTORY

Appendix A

Pavement Inventory Report

Huntsville Executive Airport Tom Sharp Jr Field (MDQ)

Branch ID	Name	Branch Use	Section ID	Rank[1]	Length (ft)	Width (ft)	Area (sf)	LCD[2]	Surface[3]
A01	Apron 01 Madison	APRON	01	S	700	400	299,216	12/25/2002	AC
R1836	Runway 18-36 Madison	RUNWAY	01	P	5,030	100	503,000	1/1/2001	AC
R1836	Runway 18-36 Madison	RUNWAY	02	P	1,500	100	150,000	1/3/2013	AC
TA	Taxiway A Madison	TAXIWAY	01	P	6,000	40	243,681	10/27/2000	AC
TA	Taxiway A Madison	TAXIWAY	02	P	1,775	40	89,170	1/3/2013	AC
TA1	Taxiway A1 Madison	TAXIWAY	01	S	370	40	19,063	3/29/2003	AC
TA1	Taxiway A1 Madison	TAXIWAY	02	S	1,700	40	70,667	1/21/2002	AC
TA1	Taxiway A1 Madison	TAXIWAY	03	S	230	100	21,002	2/21/2005	AC
TA1	Taxiway A1 Madison	TAXIWAY	04	S	87	43	4,897	8/14/2000	AC
TA1	Taxiway A1 Madison	TAXIWAY	05	S	87	43	4,670	12/10/1997	AC
TA1	Taxiway A1 Madison	TAXIWAY	06	S	300	100	35,186	7/18/2005	AC
TA1	Taxiway A1 Madison	TAXIWAY	07	S	88	35	4,819	6/1/2010	PCC
TB	Taxiway B Madison	TAXIWAY	01	S	337	100	42,656	7/20/1999	AC
TC	Taxiway C Madison	TAXIWAY	01	S	337	60	29,496	1/1/2001	AC
TD	Taxiway D Madison	TAXIWAY	01	S	337	60	26,622	1/8/2001	AC
TE	Taxiway E Madison	TAXIWAY	01	S	337	62	25,756	1/8/2001	AC
THANG01	Taxiway Hangar 01 Madison	TAXIWAY	01	T	1,500	60	102,299	10/7/2004	AC
THANG02	Taxiway Hangar 02 Madison	TAXIWAY	01	T	2,000	55	165,824	11/4/2001	AC
THANG03	Taxiway Hangar 03 Madison	TAXIWAY	01	T	75	85	5,900	12/10/1997	AC
THANG03	Taxiway Hangar 03 Madison	TAXIWAY	02	T	330	60	17,193	3/2/2014	AC
THANG03	Taxiway Hangar 03 Madison	TAXIWAY	03	T	2,000	30	45,851	10/27/2000	AC

[1] P = Primary pavement, S = Secondary pavement, T = Tertiary pavement

[2] LCD = Last construction date. The date of the last major pavement rehabilitation (e.g. AC overlay)

[3] AC = Asphalt Cement Concrete, AAC = Aphalt Overlay AC, PCC = Portland cement Concrete, APC = Asphalt Overlay PCC

APPENDIX B

PMP Maps

B1: Inventory Maps
- B1A: Branch Identification
- B1B: Section Identification
- B1C: Sample Unit Layout
- B1D: Pavement Type
- B1E: Branch Use
- B1F: Pavement Age

B2: Surface Condition Maps
- B2A: 7-Color PCI
- B2B: 3-Color PCI
- B2C: FOD Rating
- B2D: Survey Photo Locations

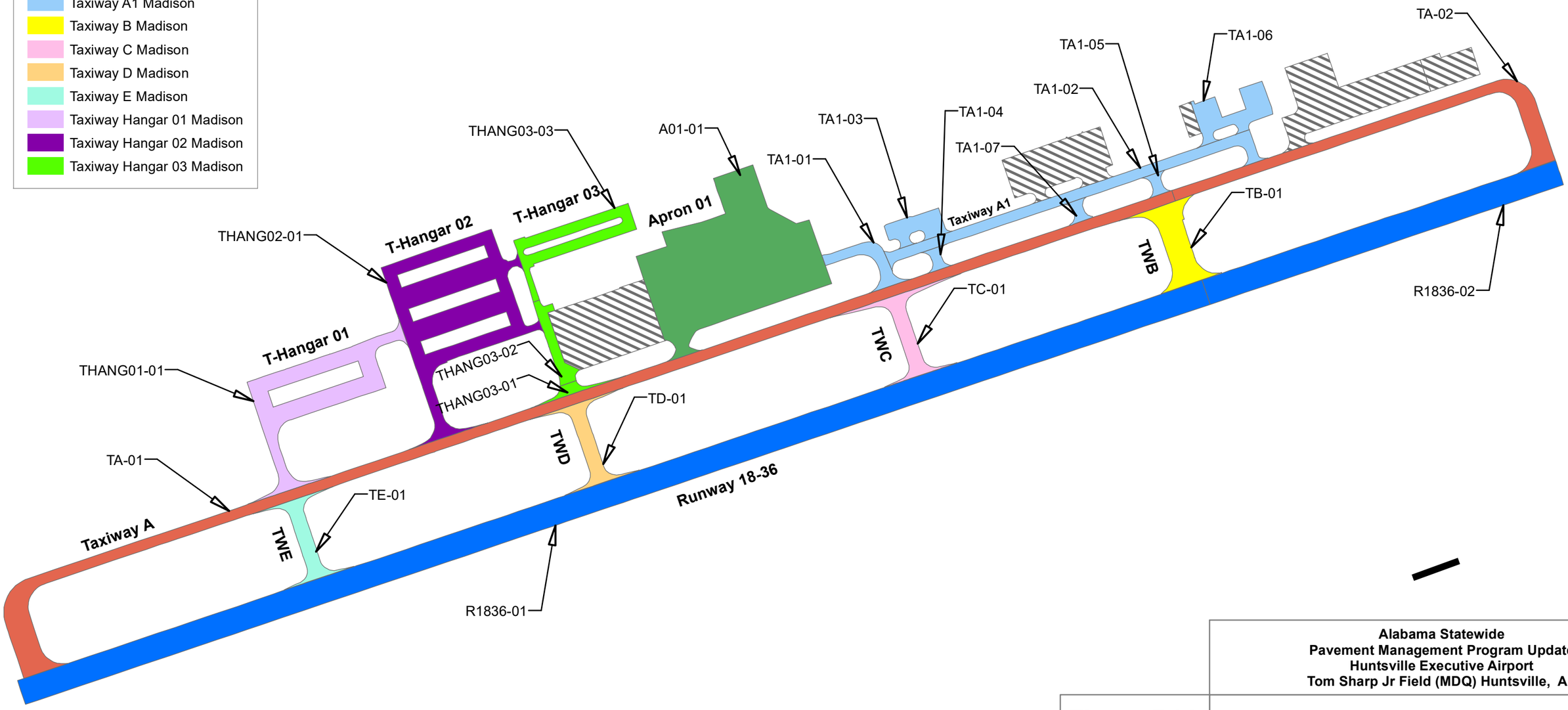
B3: Pavement Capital Improvement Plan (PCIP) Maps
- B3A: 2027 Forecasted PCI without PCIP
- B3B: M&R Needs
- B3C: PCIP Recommendations

Legend

- Section Boundary
- PCC Aprons

Branch Identification

- Apron 01 Madison
- Runway 18-36 Madison
- Taxiway A Madison
- Taxiway A1 Madison
- Taxiway B Madison
- Taxiway C Madison
- Taxiway D Madison
- Taxiway E Madison
- Taxiway Hangar 01 Madison
- Taxiway Hangar 02 Madison
- Taxiway Hangar 03 Madison



Alabama Statewide
Pavement Management Program Update
Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B1A

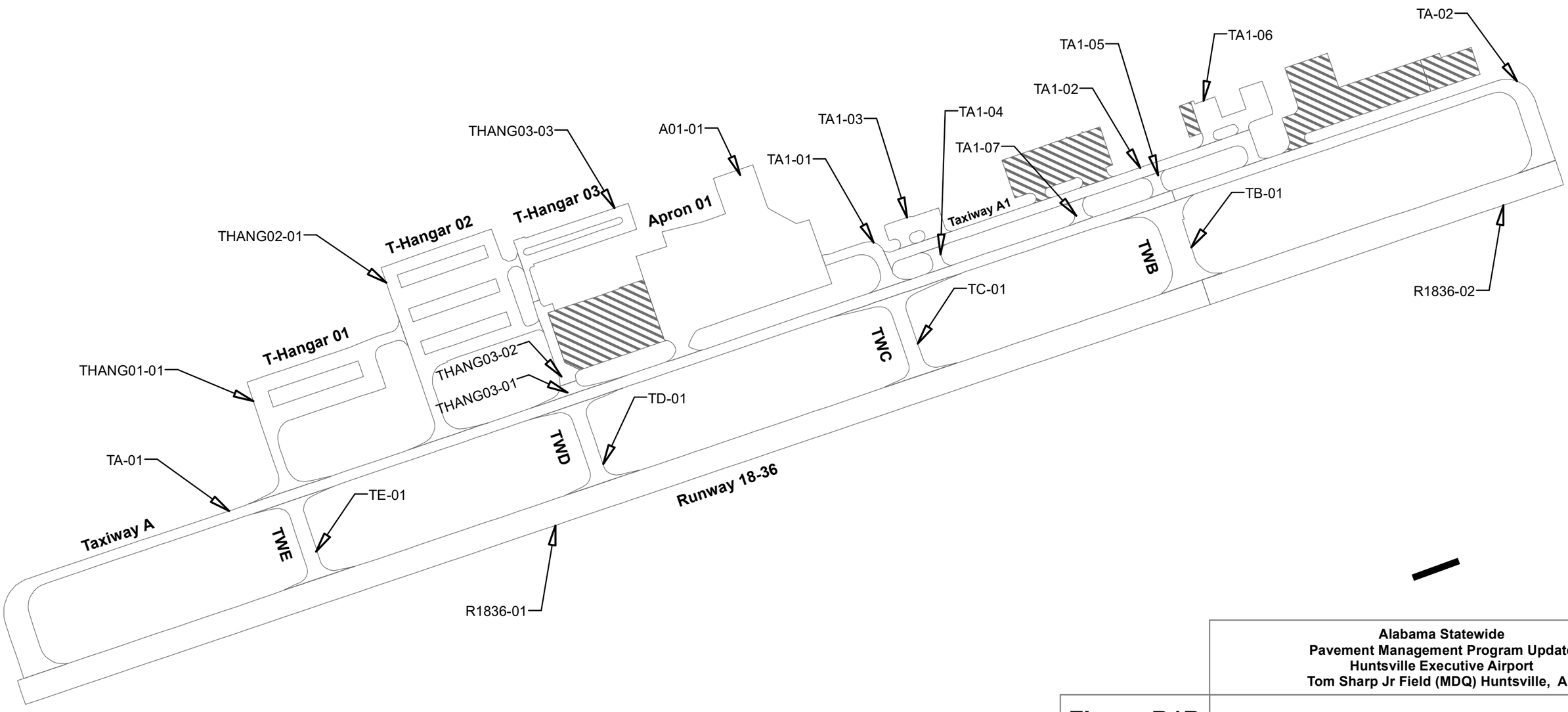
Branch Identification

All About Pavements, Inc. (API)
www.allaboutpavements.com
Telephone: 217-586-2765 FAX: 217 586-1967

ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 1
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**

Legend

- Section Boundary
- PCC Aprons



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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B1B

Section Identification

All About
Pavements, Inc. (API)
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Telephone: 217-586-2765 FAX: 217 586-1967

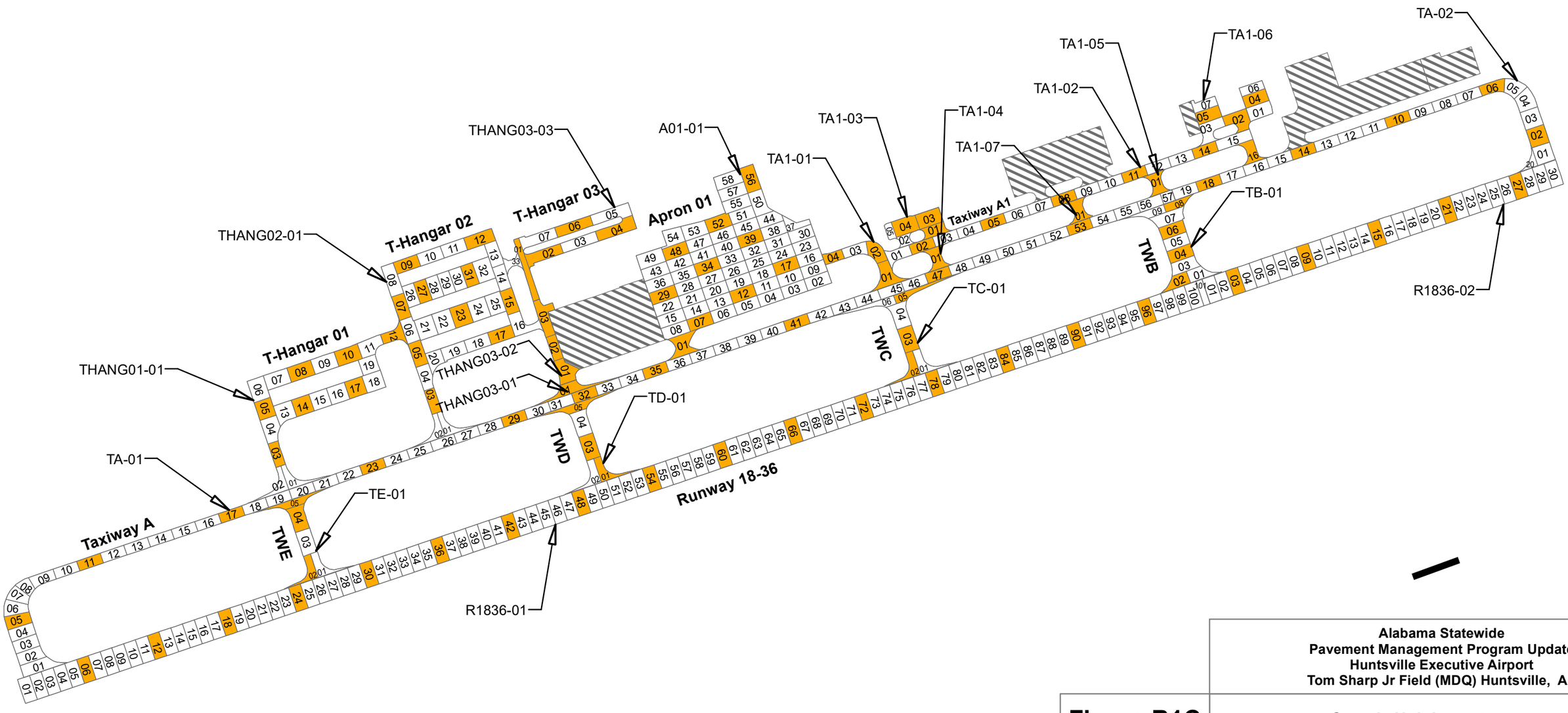
ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 2
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**

Legend

- Section Boundary
- PCC Aprons

Sample Unit Layout

- SU Boundary
- Inspected



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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B1C

Sample Unit Layout

All About Pavements, Inc. (API)
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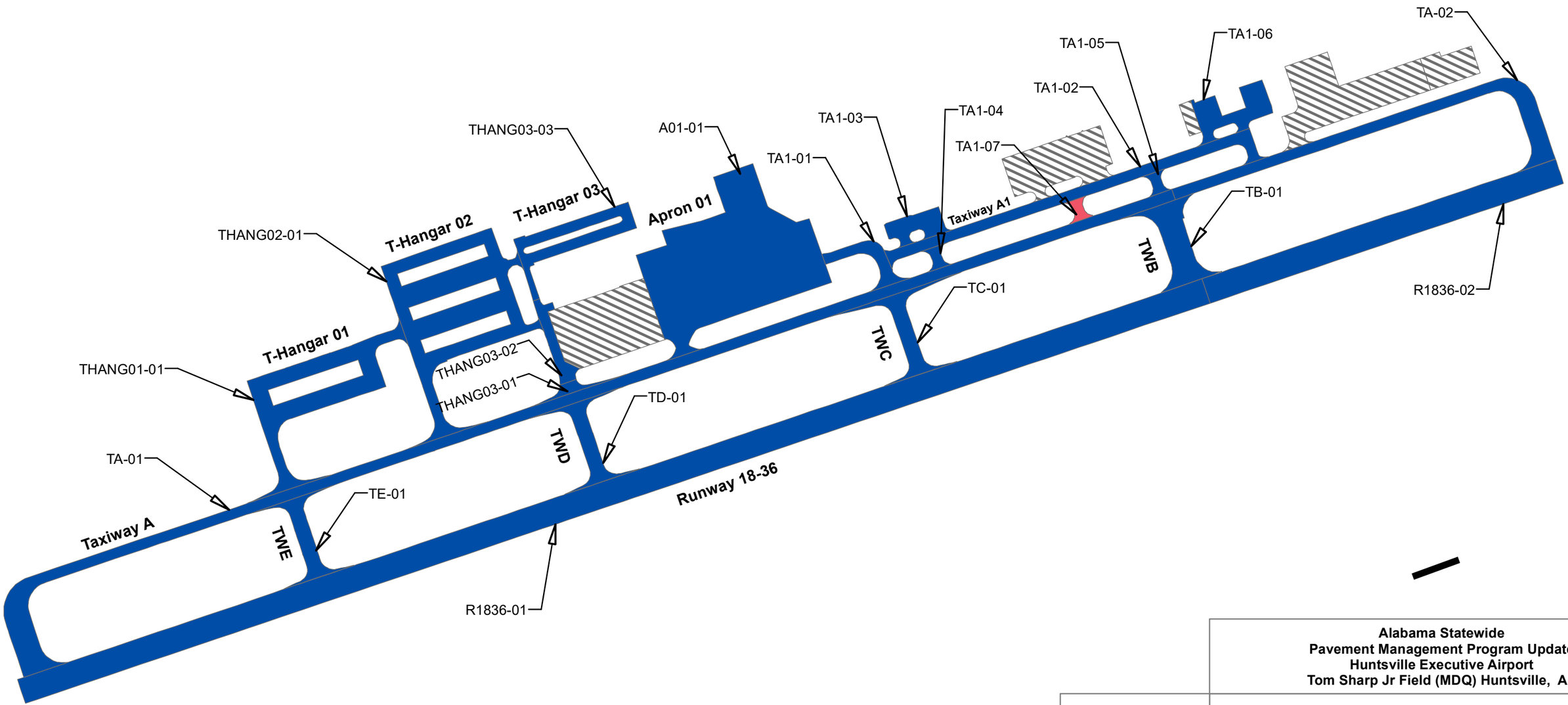
ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 3
REVISED	SCALE	
JMA	1 in = 400 ft	FINAL

Legend

- Section Boundary
- PCC Aprons

Pavement Type

- Asphalt Concrete (AC)
- Portland Cement Concrete (PCC)



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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B1D

Pavement Type

All About Pavements, Inc. (API)
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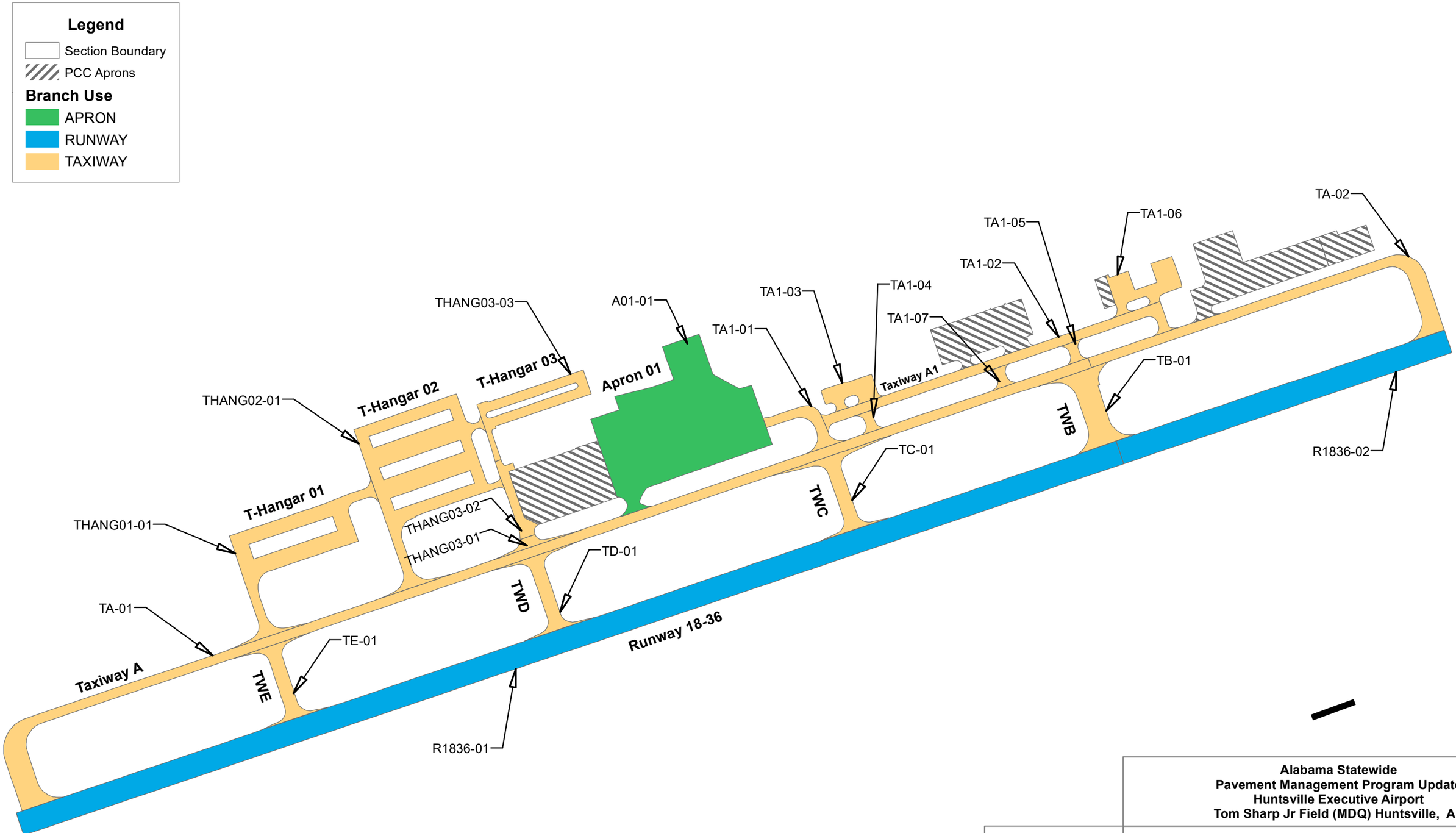
ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 4
REVISED	SCALE	
JMA	1 in = 400 ft	FINAL



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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B1E

Branch Use

All About
Pavements, Inc. (API)
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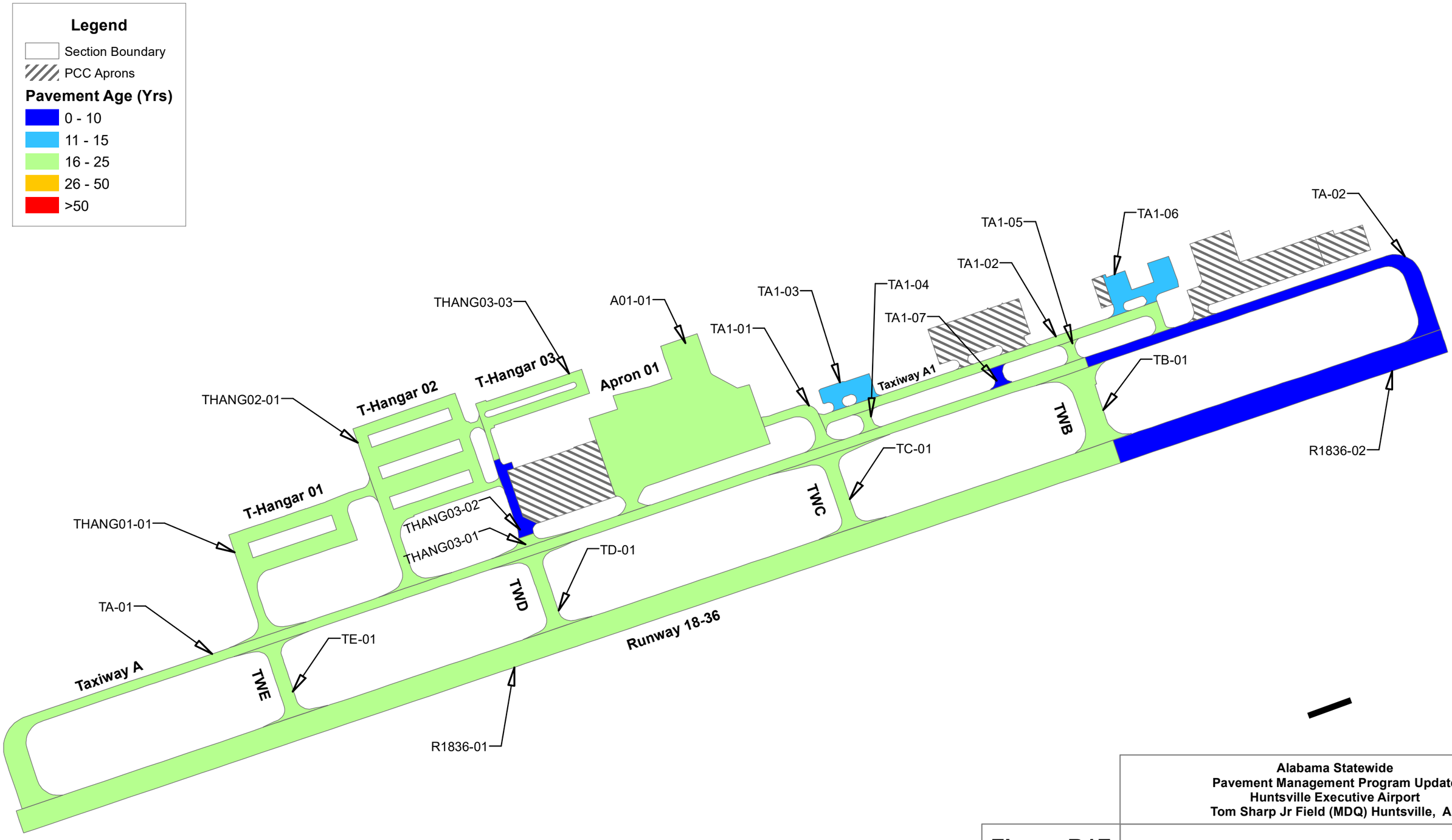
Telephone: 217-586-2765 FAX: 217 586-1967

ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 5
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**



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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B1F

Pavement Age

All About
Pavements, Inc. (API)
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Telephone: 217-586-2765 FAX: 217 586-1967

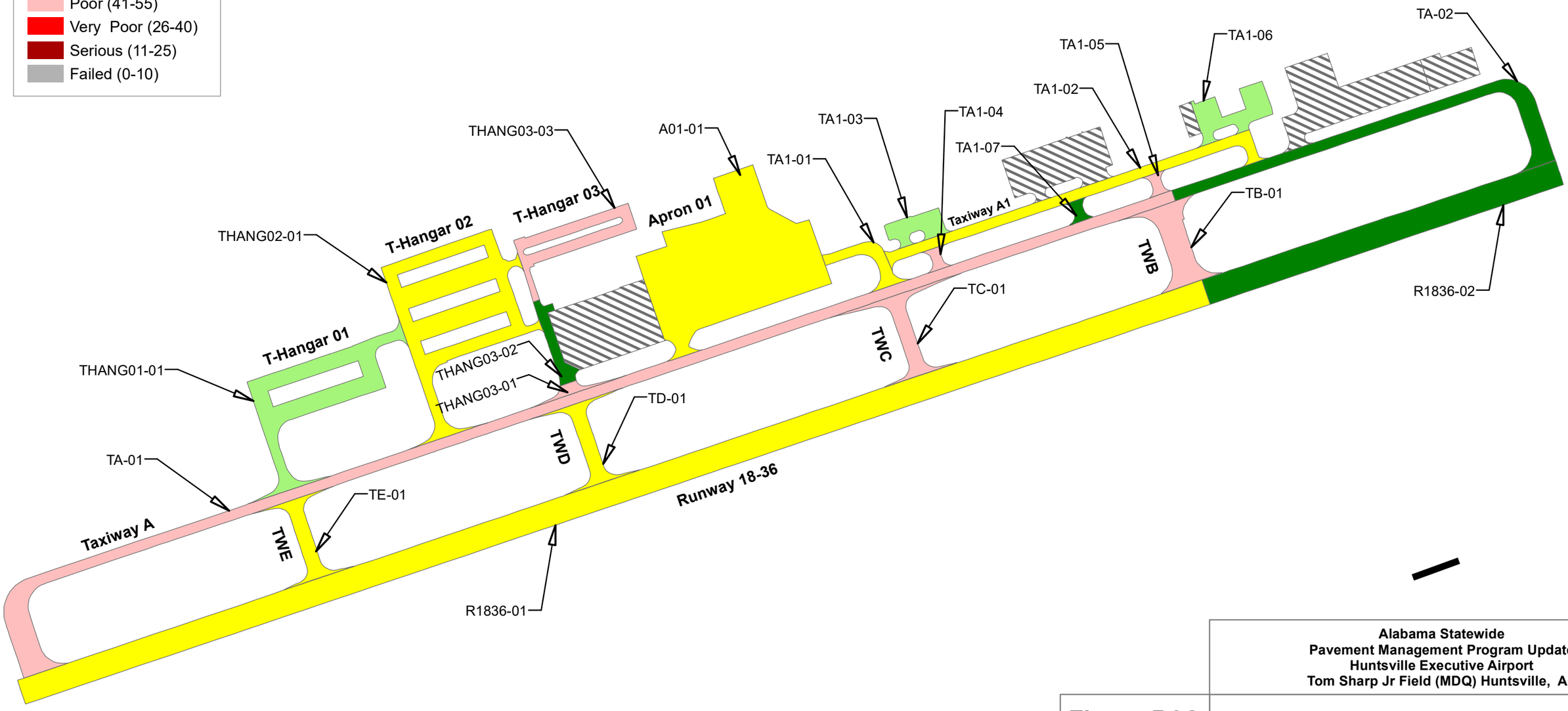
ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 6
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**

Legend

- Section Boundary
- PCC Aprons

PCI (7 Color)

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failed (0-10)



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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B2A

7-Color PCI

All About Pavements, Inc. (API)
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Telephone: 217-586-2765 FAX: 217 586-1967

ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 7
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**

Legend

- Section Boundary
- PCC Aprons

PCI (3 Color)

- Good (71-100)
- Fair (56-70)
- Poor (0-55)

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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B2B

3-Color PCI

All About Pavements, Inc. (API)
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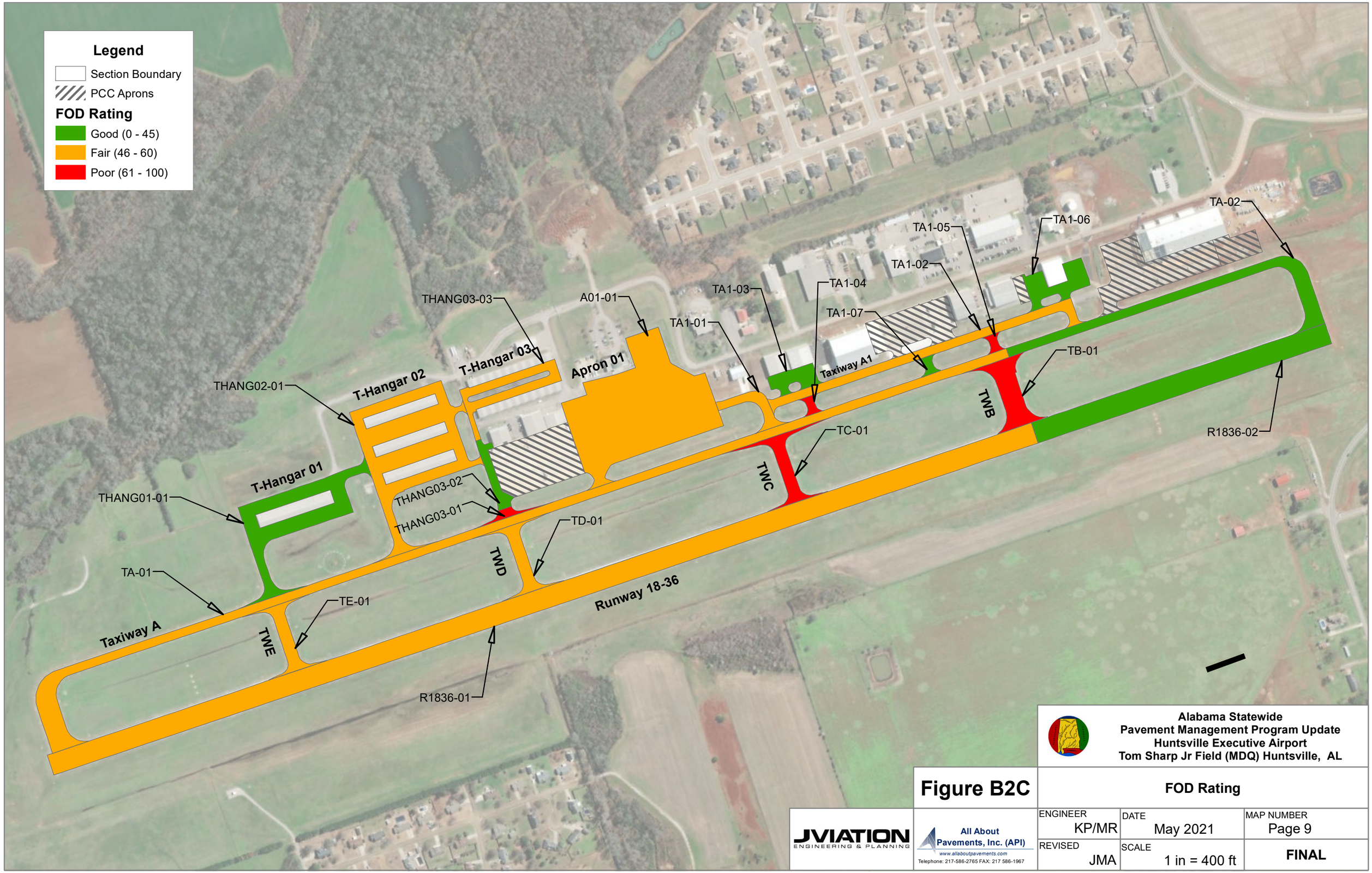
Telephone: 217-586-2765 FAX: 217 586-1967

ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 8
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**



Alabama Statewide
Pavement Management Program Update
Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B2C

FOD Rating

JVIATION ENGINEERING & PLANNING

All About Pavements, Inc. (API)
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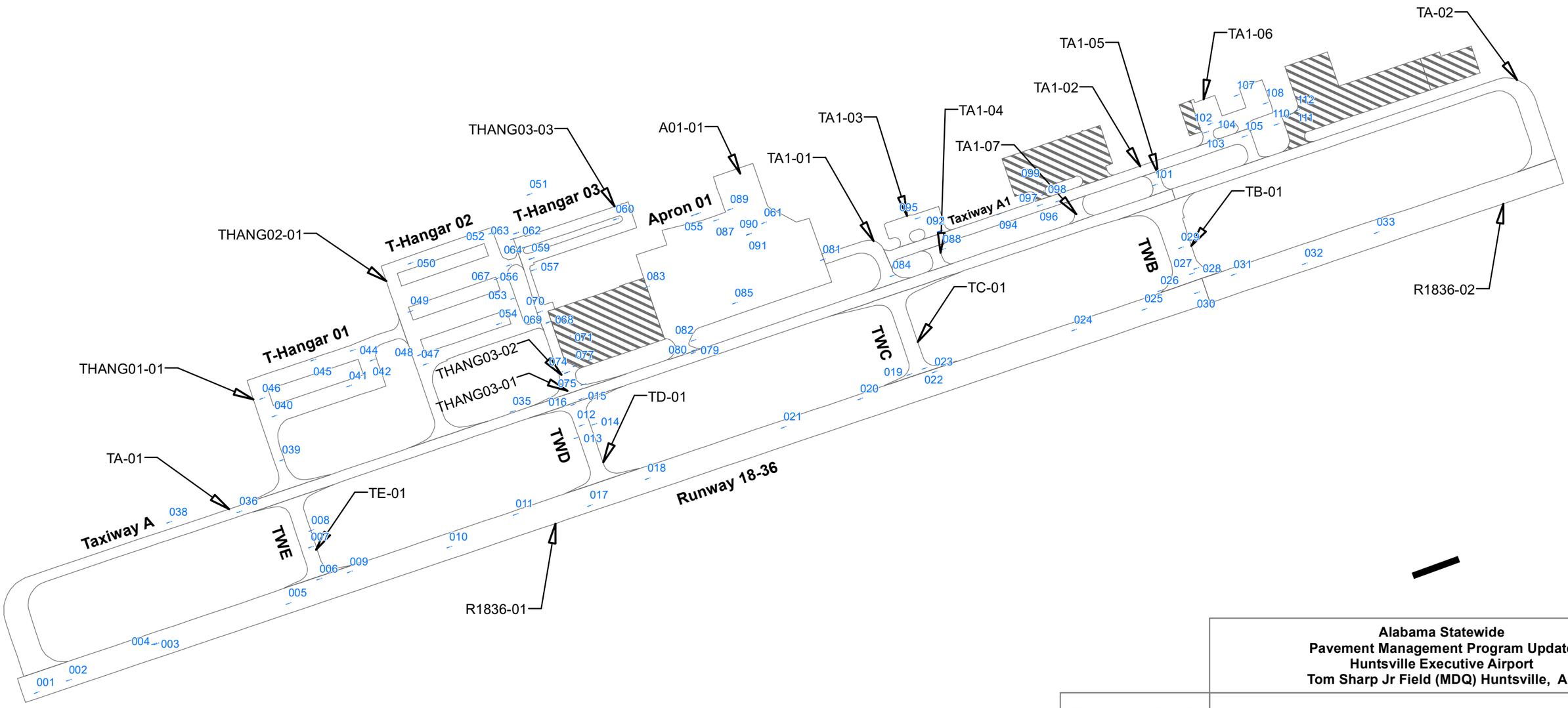
ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 9
REVISED	SCALE	
JMA	1 in = 400 ft	FINAL

Legend

- Section Boundary
- PCC Aprons
- Survey Photo Locations



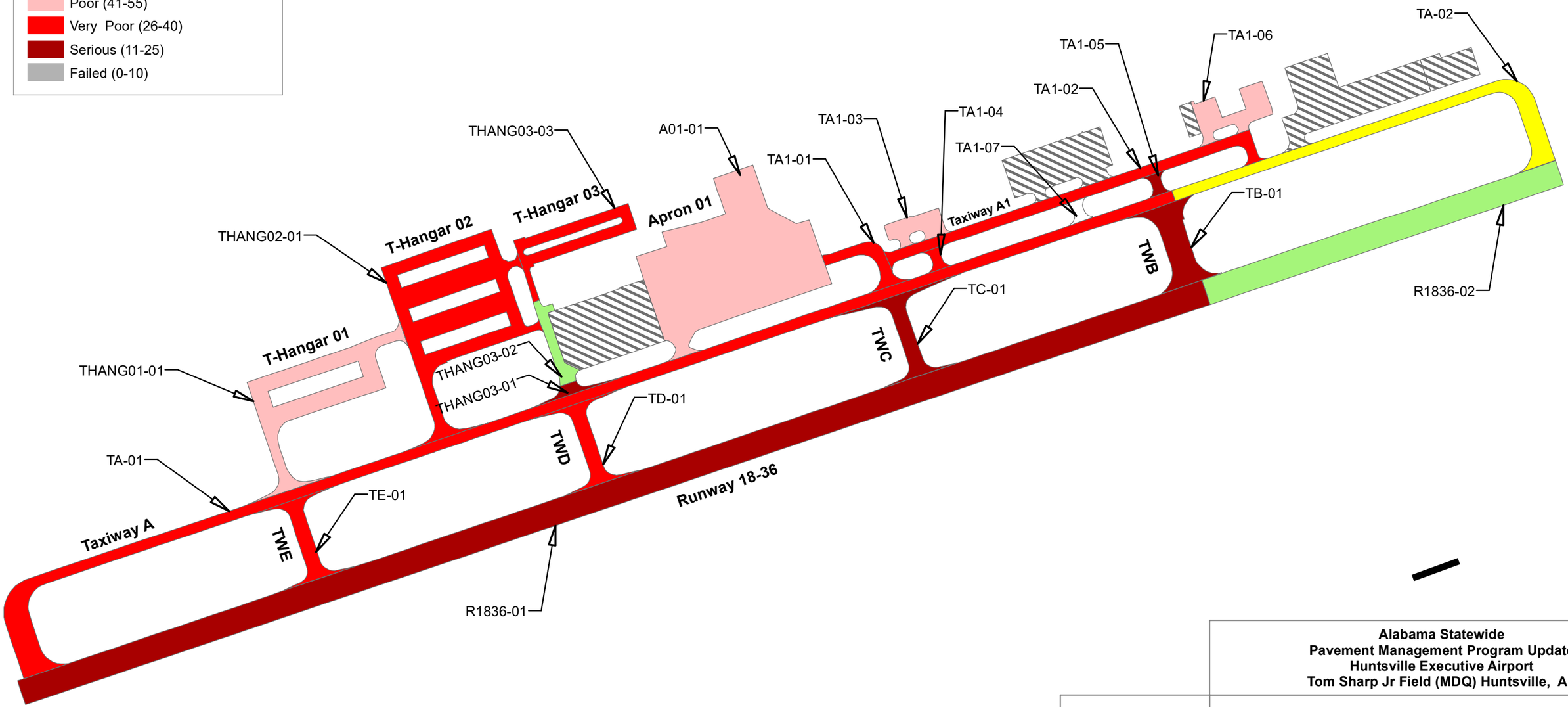
	Alabama Statewide Pavement Management Program Update Huntsville Executive Airport Tom Sharp Jr Field (MDQ) Huntsville, AL			
	Figure B2D	**Survey Photo Locations**		
	All About Pavements, Inc. (API) *www.allaboutpavements.com* Telephone: 217-586-2765 FAX: 217 586-1967	ENGINEER KP/MR	DATE May 2021	MAP NUMBER Page 10
		REVISED JMA	SCALE 1 in = 400 ft	**FINAL**

Legend

- Section Boundary
- PCC Aprons

Forecasted PCI without PCIP

- Good (86-100)
- Satisfactory (71-85)
- Fair (56-70)
- Poor (41-55)
- Very Poor (26-40)
- Serious (11-25)
- Failed (0-10)



Alabama Statewide
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Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B3A

2027 Forecasted PCI without PCIP

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ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 11
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**

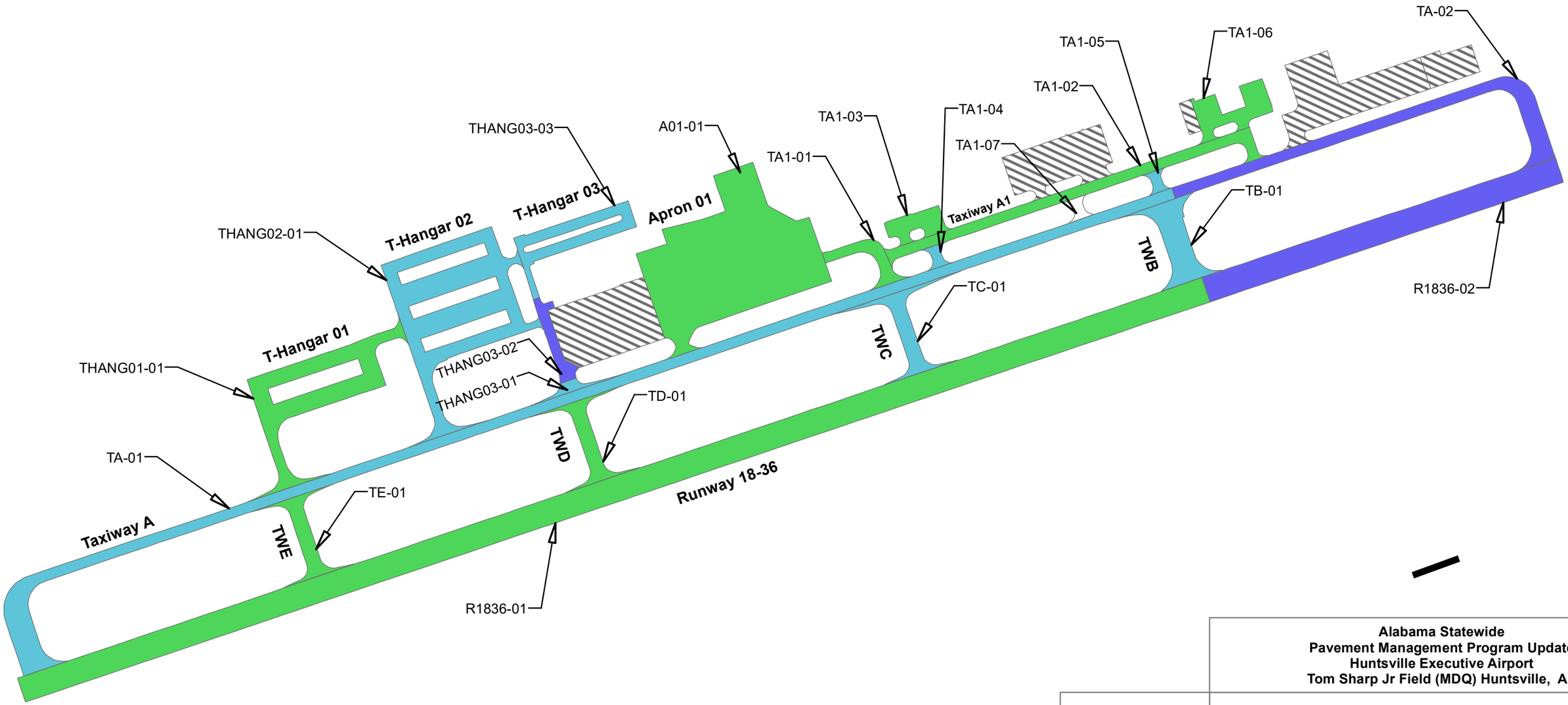
All sections recommended for Rehabilitation or Reconstruction between 2021 and 2024 also receive Surface Treatment in the 3rd year of paving.

Legend

- Section Boundary
- PCC Aprons

Repair Type

- Preservation
- Reconstruction
- Rehabilitation



Alabama Statewide
Pavement Management Program Update
Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B3B

Repair Type

All About Pavements, Inc. (API)
www.allaboutpavements.com
Telephone: 217-586-2765 FAX: 217 586-1967

ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 12
REVISED	SCALE	
JMA	1 in = 400 ft	FINAL

All sections recommended for Mill & AC Overlay or AC Reconstruction between 2021 and 2024 also receive Surface Treatment in the 3rd year of paving

Legend

Project Name

- MDQ_21-01_Runway 18-36 Preservation
- MDQ_21-02_Runway 18-36 Rehabilitation
- MDQ_21-03_Hangar Taxiway 03 Preservation
- MDQ_22-01_Taxiway A1 Rehabilitation
- MDQ_23-01_Taxiway A Reconstruction
- MDQ_23-02_Hangar Taxiway 03 Rehabilitation
- MDQ_24-01_Hangar Taxiways 01&02 Reconstruction
- MDQ_25-01_Apron Rehabilitation
- No Project

M&R Activity

- AC Reconstruction
- Mill 2" & 2" AC OL
- Mill 2" & 2" AC OLP
- Runway Surface Treatment
- Taxiway & Apron Surface Treatment
- No Activity

THANG03-03
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TA1-03
TA1-04
TA1-05
TA1-06
TA-02
TA1-01
TA1-07
TA1-02
THANG02-01
T-Hangar 02
T-Hangar 03
Apron 01
Taxiway A1
TB-01
TWB
TC-01
R1836-02
T-Hangar 01
THANG01-01
THANG03-02
THANG03-01
TWC
TD-01
TWD
TA-01
TE-01
Runway 18-36
Taxiway A
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R1836-01

Alabama Statewide
Pavement Management Program Update
Huntsville Executive Airport
Tom Sharp Jr Field (MDQ) Huntsville, AL

Figure B3C

PCIP Recommendations

All About Pavements, Inc. (API)
www.allaboutpavements.com
Telephone: 217-586-2765 FAX: 217 586-1967

ENGINEER	DATE	MAP NUMBER
KP/MR	May 2021	Page 13
REVISED	SCALE	
JMA	1 in = 400 ft	**FINAL**

APPENDIX C

OVERVIEW OF PAVEMENT DISTRESSES

1. Alligator Cracking (AC)

2. Bleeding (AC)

3. Block Cracking (AC)

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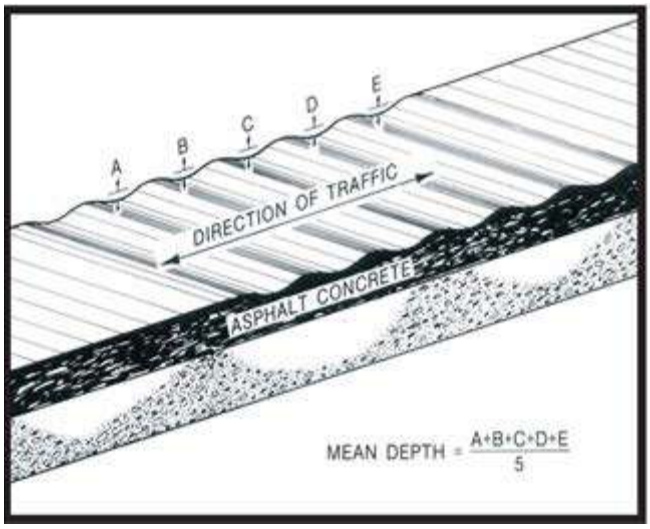
4. Corrugation (AC)

Description

Corrugation is a series of closely spaced ridges and valleys (ripples) occurring at fairly regular intervals, usually less than 5 feet (1.5 meters) along the pavement. The ridges are perpendicular to the traffic direction. Traffic action combined with an unstable pavement surface or base usually causes this type of distress.

Severity Levels



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CAP

7. Joint Reflection Cracking (AC)

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48 M

9. Oil Spillage (AC)

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10. Patching

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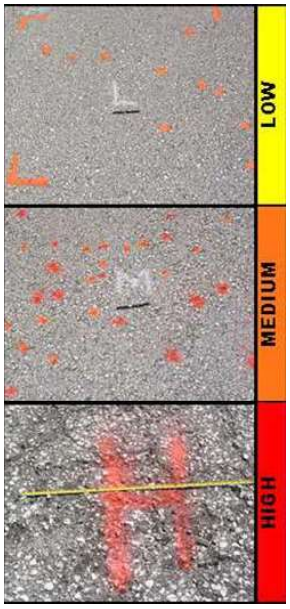
11. Polished Aggregate (AC)

12. Raveling (AC)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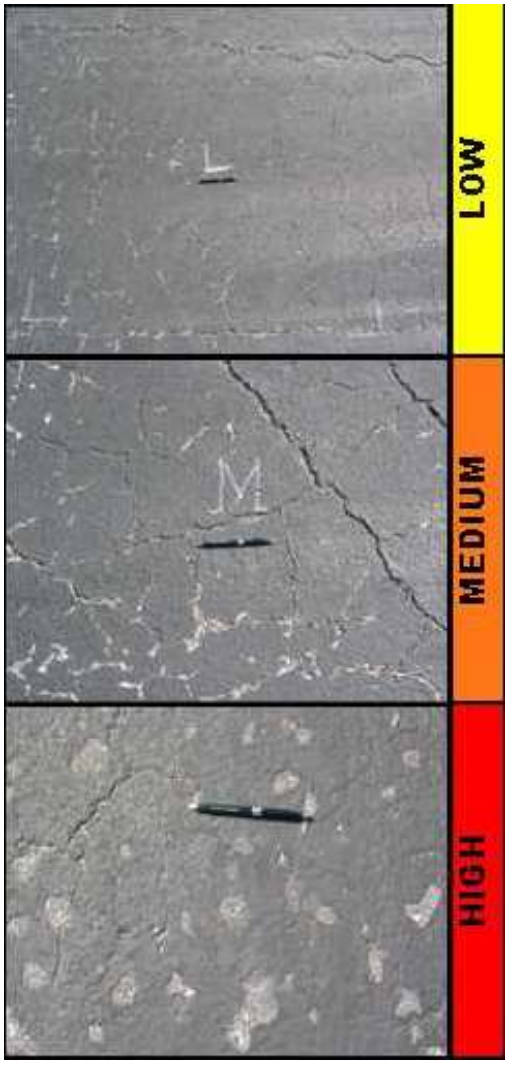
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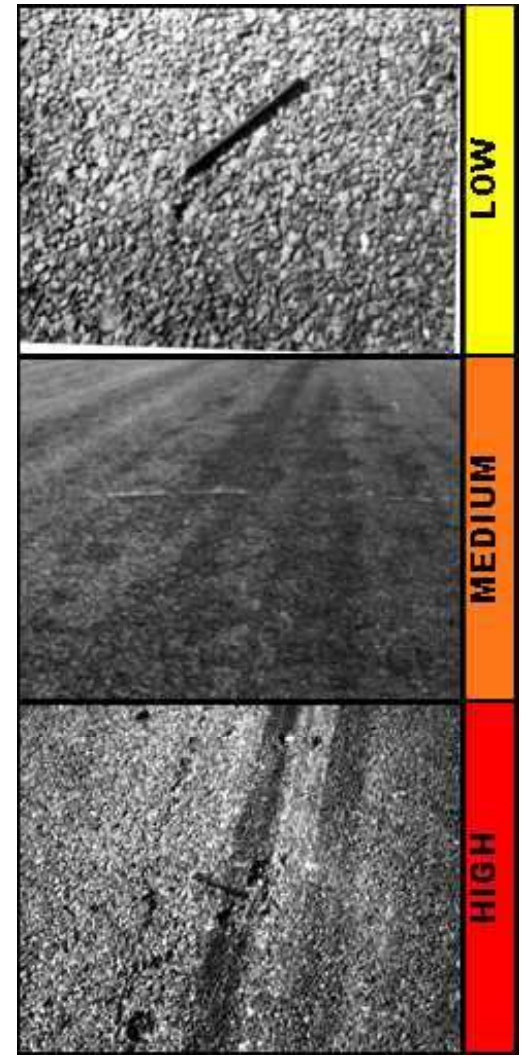
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13. Rutting (AC)

14. Slippage Cracking (AC)

from the direction of traffic. They are produced when braking or turning wheels cause the

_____ No degrees of severity are defined. It is sufficient to indicate that a slippage

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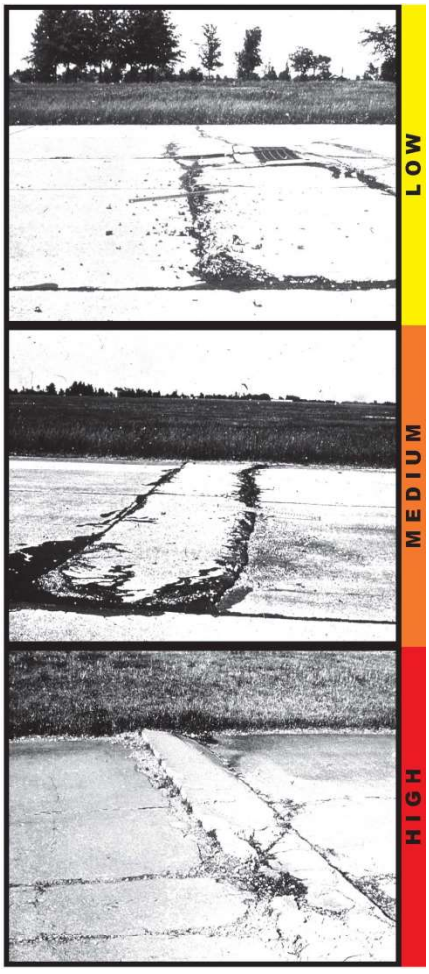
- ♦

15. Swelling (AC)

16. Weathering (AC)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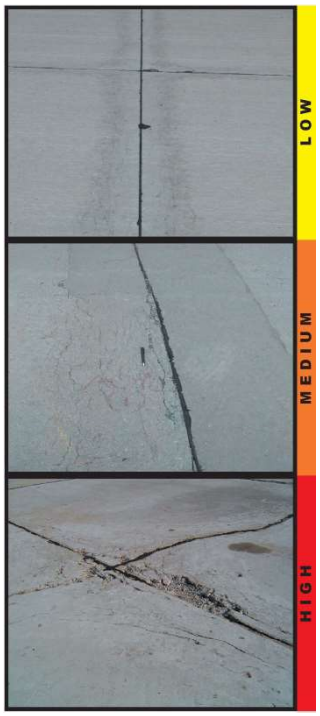
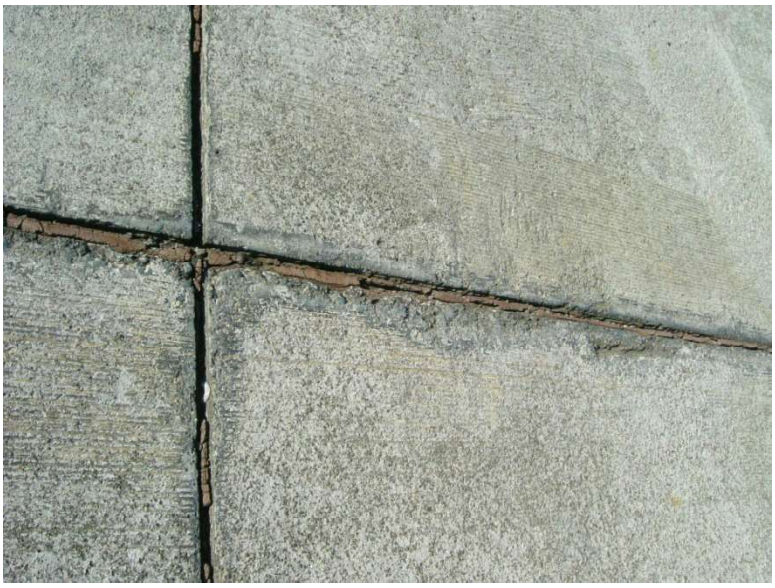
- filled, it has a mean width less than approximately 1 inch (3 millimeters); a filled crack can be of any width, but the filler material

- One of the following conditions exists: (1) filled or non filled c filled crack has a mean width between 1/8 inch (3 millimeters) and 1 inch (25 millimeters); (3) a filled crack is not spalled or only lightly spalled, but the filler is in unsatisfactory

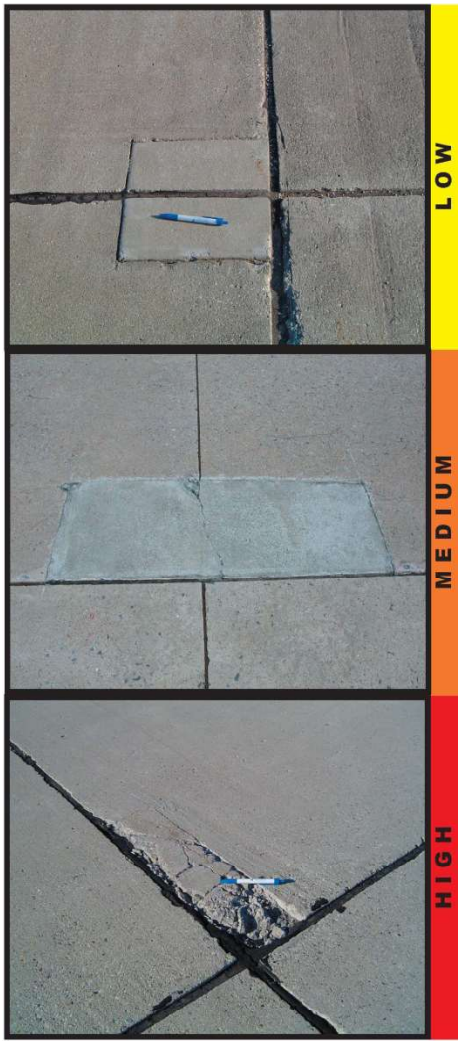
- One of the following conditions exists: (1) filled or non filled crack is severely spalled, causing definite FOD potential; (2) a non filled crack ha

parallel to a joint or linear crack. A dark coloring can usually be seen around the fine





has been removed and replaced by a filler



Patching is the same as defined

No degrees of severity are defined for popouts.

of approximately 1⁄4 to 1⁄2 in

Severity levels are defined by the difference in elevation across the fault and the

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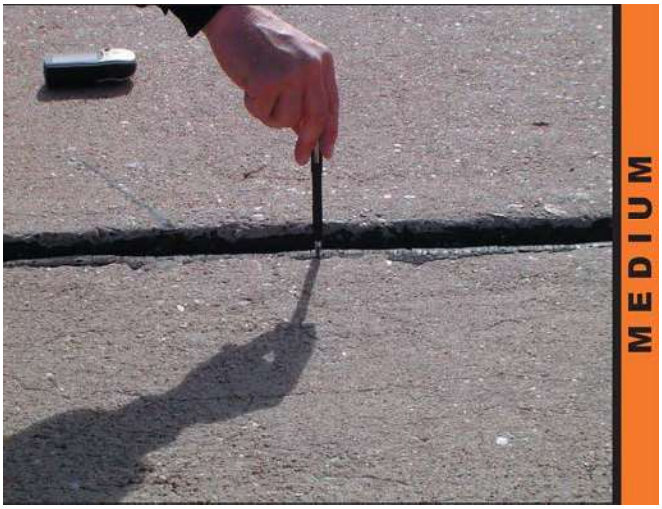

severity level of this distress type, as defined below,

- Slab is broken into four or five pieces with the vast majority of the cracks
- (1) Slab is broken into four or five pieces with over 15 percent of the
- four or five pieces with some or all of the cracks of high severity; (2) slab is

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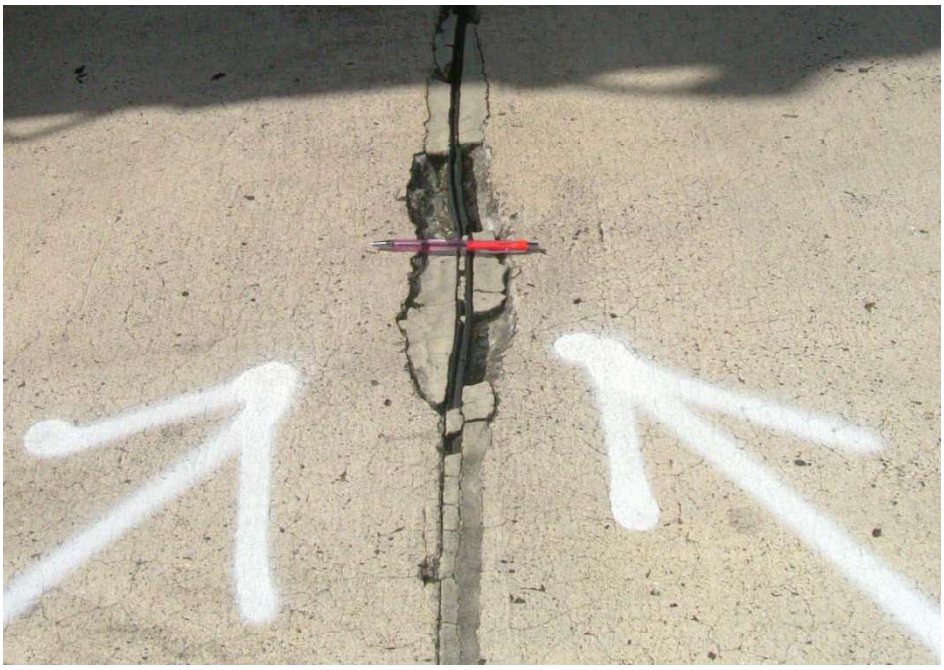
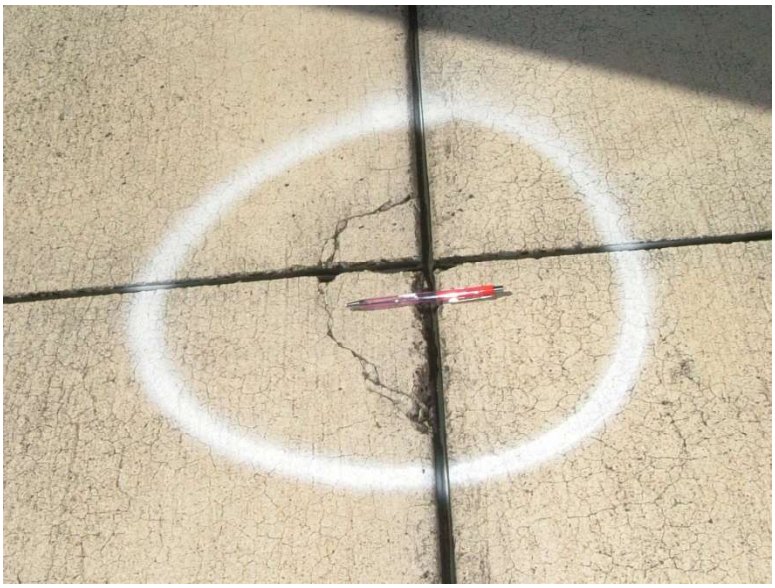
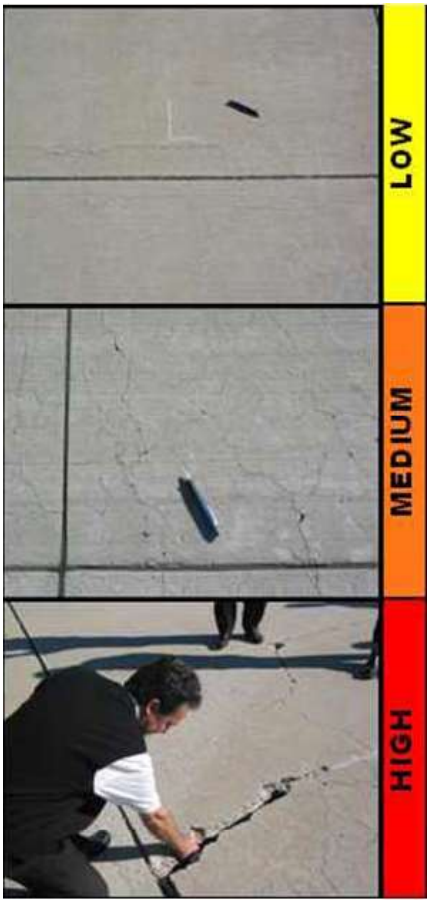
No degrees of severity are defined. It is sufficient to indicate that shrinkage cracks exist.



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APPENDIX D

DETAILED PAVEMENT CONDITION DATA

APPENDIX E

DISTRESS SUMMARY REPORT

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APPENDIX F

PAVEMENT CONDITION REPORTS

F1: Section Forecasted Pavement Condition Rating
F2: Branch PCI Rating
F3: Branch FOD Rating

Appendix F1

Forecasted Section PCI

Huntsville Executive Airport Tom Sharp Jr Field (MDQ)

Branch ID	Section ID	Forecasted PCI						
		2021	2022	2023	2024	2025	2026	2027
A01	01	60	58	56	54	51	49	47
R1836	01	47	42	38	34	30	25	21
R1836	02	89	85	82	78	74	72	70
TA	01	46	44	40	37	33	30	26
TA	02	81	79	77	75	72	70	66
TA1	01	56	51	47	45	42	38	35
TA1	02	50	47	45	41	38	34	31
TA1	03	65	60	56	51	47	45	41
TA1	04	45	43	40	36	33	29	25
TA1	05	37	34	30	27	23	19	16
TA1	06	66	62	58	53	48	45	43
TA1	07	100	100	100	99	99	99	98
TB	01	43	39	36	32	29	25	22
TC	01	45	42	39	35	32	28	25
TD	01	46	45	41	38	34	30	27
TE	01	46	45	41	38	34	30	27
THANG01	01	63	59	54	49	46	44	40
THANG02	01	49	46	44	40	37	33	30
THANG03	01	37	34	30	27	23	19	16
THANG03	02	88	86	83	81	79	77	75
THANG03	03	46	44	40	37	33	30	26

Branch Condition Report

Pavement Database: ALDOT_210811

Branch ID	Number of Sections	Sum Section Length (Ft)	Avg Section Width (Ft)	True Area (SqFt)	Use	Average FOD Potential	Standard Deviation FOD Pote	Weighted Average FOD Poten
A01	1	700.00	400.00	299,216.00	APRON	48.00	0.00	48.00
R1836	2	6,530.00	100.00	653,000.00	RUNWAY	37.00	22.00	48.89
TA	2	7,775.00	40.00	332,851.00	TAXIWAY	42.50	17.50	50.62
TA1	7	2,862.00	57.29	160,304.00	TAXIWAY	44.57	20.75	47.01
TB	1	337.00	100.00	42,656.00	TAXIWAY	66.00	0.00	66.00
TC	1	337.00	60.00	29,496.00	TAXIWAY	62.00	0.00	62.00
TD	1	337.00	60.00	26,622.00	TAXIWAY	59.00	0.00	59.00
TE	1	337.00	62.00	25,756.00	TAXIWAY	59.00	0.00	59.00
THANG01	1	1,500.00	60.00	102,299.00	TAXIWAY	42.00	0.00	42.00
THANG02	1	2,000.00	55.00	165,824.00	TAXIWAY	50.00	0.00	50.00
THANG03	3	2,405.00	58.33	68,944.00	TAXIWAY	47.33	23.47	47.64

Pavement Database: ALDOT_210811

Use Category	Number of Sections	Total Area (SqFt)	Arithmetic Average FOD	Average STD FOD Potential	Weighted Average FOD P
APRON	1	299,216.00	48.00	0.00	48.00
RUNWAY	2	653,000.00	37.00	22.00	48.89
TAXIWAY	18	954,752.00	48.72	18.58	50.27
ALL	21	1,906,968.00	47.57	18.81	49.44

APPENDIX G

SAFETY AND PREVENTIVE MAINTENANCE POLICIES

Appendix G1
Localized Safety (Stopgap) Repair Policy

Distress	Distress Severity	Description	Code	Work Type	Work Unit
41	High	ALLIGATOR CR	PA-FD	Patching - AC Full-Depth	SqFt
43	High	BLOCK CR	CS-AC	Crack Sealing - AC	Ft
45	High	DEPRESSION	PA-FD	Patching - AC Full-Depth	SqFt
47	High	JT REF. CR	CS-AC	Crack Sealing - AC	Ft
48	High	L & T CR	CS-AC	Crack Sealing - AC	Ft
50	High	PATCHING	PA-FD	Patching - AC Full-Depth	SqFt
53	High	RUTTING	PA-FD	Patching - AC Full-Depth	SqFt
54	High	SHOVING	PA-PD	Patching - AC Partial-Depth	SqFt
55	NA	SLIPPAGE CR	PA-PD	Patching - AC Partial-Depth	SqFt
56	High	SWELLING	PA-FD	Patching - AC Full-Depth	SqFt
61	High	BLOW-UP	SL-PC	Slab Replacement - PCC	SqFt
61	Medium	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
62	High	CORNER BREAK	PA-PF	Patching - PCC Full Depth	SqFt
63	High	LINEAR CR	PA-PF	Patching - PCC Full Depth	SqFt
63	Medium	LINEAR CR	CS-PC	Crack Sealing - PCC	Ft
64	High	DURABIL. CR	SL-PC	Slab Replacement - PCC	SqFt
64	Medium	DURABIL. CR	PA-PF	Patching - PCC Full Depth	SqFt
66	High	SMALL PATCH	PA-PP	Patching - PCC Partial Depth	SqFt
67	High	LARGE PATCH	PA-PF	Patching - PCC Full Depth	SqFt
70	High	SCALING	SL-PC	Slab Replacement - PCC	SqFt
71	High	FAULTING	GR-PP	Grinding (Localized)	Ft
72	High	SHAT. SLAB	SL-PC	Slab Replacement - PCC	SqFt
74	High	JOINT SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
75	High	CORNER SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
76	High	ASR	SL-PC	Slab Replacement - PCC	SqFt

Appendix G2
Localized Preventive Repair Policy

Distress	Distress Severity	Description	Code	Work Type	Work Unit
41	Medium	ALLIGATOR CR	PA-AD	Patching - AC Full-Depth	SqFt
41	High	ALLIGATOR CR	PA-AD	Patching - AC Full-Depth	SqFt
42	N/A	BLEEDING	PA-AS	Patching - AC Partial-Depth	SqFt
43	High	BLOCK CR	PA-AD	Patching - AC Full-Depth	SqFt
43	Medium	BLOCK CR	CS-AC	Crack Sealing - AC	Ft
44	Low	CORRUGATION	PA-AS	Patching - AC Partial-Depth	SqFt
44	High	CORRUGATION	PA-AS	Patching - AC Partial-Depth	SqFt
44	Medium	CORRUGATION	PA-AS	Patching - AC Partial-Depth	SqFt
45	Medium	DEPRESSION	PA-AD	Patching - AC Full-Depth	SqFt
45	Low	DEPRESSION	PA-AD	Patching - AC Full-Depth	SqFt
45	High	DEPRESSION	PA-AD	Patching - AC Full-Depth	SqFt
47	High	JT REF. CR	CS-AC	Crack Sealing - AC	Ft
47	Medium	JT REF. CR	CS-AC	Crack Sealing - AC	Ft
48	High	L & T CR	CS-AC	Crack Sealing - AC	Ft
48	Medium	L & T CR	CS-AC	Crack Sealing - AC	Ft
49	N/A	OIL SPILLAGE	PA-AD	Patching - AC Full-Depth	SqFt
50	High	PATCHING	PA-AD	Patching - AC Full-Depth	SqFt
50	Medium	PATCHING	PA-AD	Patching - AC Full-Depth	SqFt
52	High	RAVELING	PA-AS	Patching - AC Partial-Depth	SqFt
53	High	RUTTING	PA-AD	Patching - AC Full-Depth	SqFt
53	Low	RUTTING	PA-AD	Patching - AC Full-Depth	SqFt
53	Medium	RUTTING	PA-AD	Patching - AC Full-Depth	SqFt
55	N/A	SLIPPAGE CR	PA-AD	Patching - AC Full-Depth	SqFt
56	Low	SWELLING	PA-AD	Patching - AC Full-Depth	SqFt
56	Medium	SWELLING	PA-AD	Patching - AC Full-Depth	SqFt
61	Low	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
61	Medium	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
61	High	BLOW-UP	PA-PF	Patching - PCC Full Depth	SqFt
62	Medium	CORNER BREAK	PA-PF	Patching - PCC Full Depth	SqFt
62	High	CORNER BREAK	PA-PF	Patching - PCC Full Depth	SqFt
62	Low	CORNER BREAK	CS-PC	Crack Sealing - PCC	Ft
63	Medium	LINEAR CR	CS-PC	Crack Sealing - PCC	Ft
63	High	LINEAR CR	PA-PP	Patching - PCC Partial Depth	SqFt
64	Medium	DURABIL. CR	PA-PF	Patching - PCC Full Depth	SqFt
64	High	DURABIL. CR	SL-PC	Slab Replacement - PCC	SqFt
65	High	JT SEAL DMG	JS-LC	Joint Seal (Localized)	Ft
65	Medium	JT SEAL DMG	JS-LC	Joint Seal (Localized)	Ft
66	High	SMALL PATCH	PA-PP	Patching - PCC Partial Depth	SqFt
66	Medium	SMALL PATCH	PA-PP	Patching - PCC Partial Depth	SqFt
67	Medium	LARGE PATCH	PA-PF	Patching - PCC Full Depth	SqFt

Appendix G2
Localized Preventive Repair Policy

Distress	Distress Severity	Description	Code	Work Type	Work Unit
67	High	LARGE PATCH	PA-PF	Patching - PCC Full Depth	SqFt
69	N/A	PUMPING	JS-LC	Joint Seal (Localized)	Ft
70	Medium	SCALING	PA-PP	Patching - PCC Partial Depth	SqFt
70	High	SCALING	SL-PC	Slab Replacement - PCC	SqFt
71	High	FAULTING	GR-PP	Grinding (Localized)	Ft
71	Medium	FAULTING	GR-PP	Grinding (Localized)	Ft
72	Medium	SHAT. SLAB	SL-PC	Slab Replacement - PCC	SqFt
72	High	SHAT. SLAB	SL-PC	Slab Replacement - PCC	SqFt
74	High	JOINT SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
74	Medium	JOINT SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
75	Medium	CORNER SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
75	High	CORNER SPALL	PA-PP	Patching - PCC Partial Depth	SqFt
76	Medium	ASR	SL-PC	Slab Replacement - PCC	SqFt
76	High	ASR	SL-PC	Slab Replacement - PCC	SqFt

APPENDIX H

M&R UNIT COSTS

H1: M&R Unit Costs
H2: Component Costs for Repair
H3: Airport Category

Maintenance and Repair (M&R) Unit Costs

The M&R costs developed for the ALDOT PMP include costs for maintenance, preservation, and repair activities and are described below.

Unit Costs Source Data

The source for the M&R costs data is RSMeans, which has data for 14 locations throughout Alabama, as identified by the yellow highlighted boxes in Figure 1. The cost data is presented in terms of individual line items like asphalt wearing course, aggregate base etc., which were consolidated to develop the activity costs described below.

The cost data show a distinct difference in costs between locations north and south of Birmingham, especially for the higher value items like the asphalt layers. Therefore, the unit costs were developed accordingly for the airports north and south of Birmingham, as identified in Figure 1. Appendix H2 presents the component costs used in developing the M&R costs.

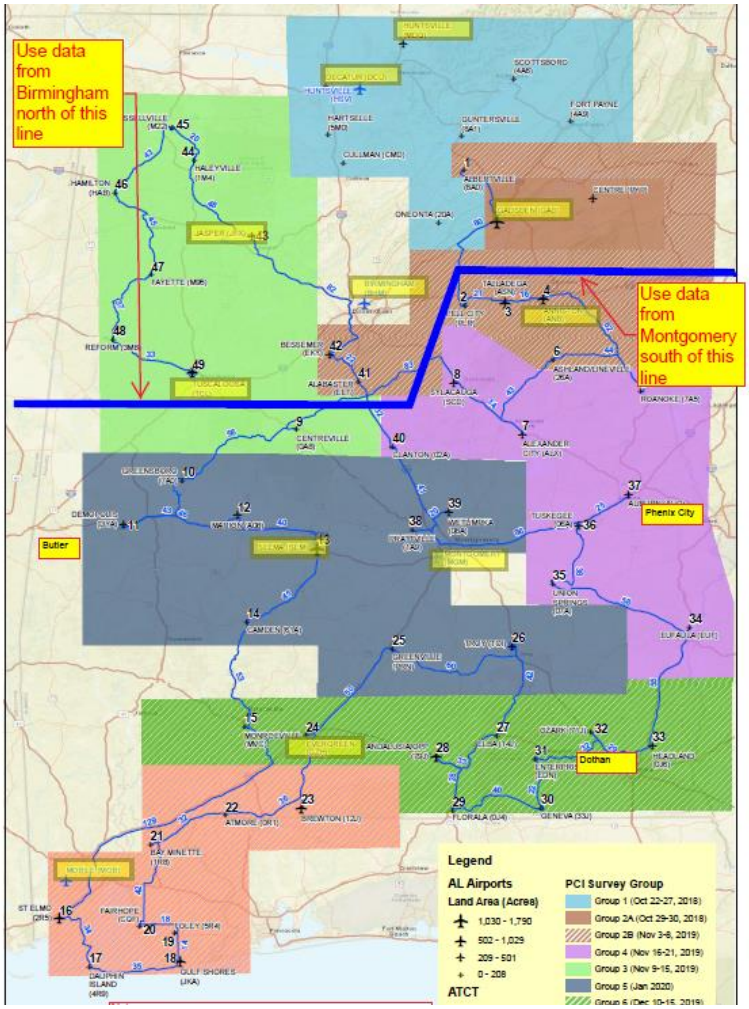

Figure 1: RSMeans Unit Costs Locations.

Maintenance & Repair (M&R) Activities

Maintenance activities are localized activities which are typically assigned in the first year of the M&R plan based on the observed distresses.

Repair activities are further subdivided into preservation, rehabilitation, and reconstruction. Repair activities are conducted for larger areas, typically at the section level and are assigned based on the Critical Pavement Condition Index, denoted as CP in Table 1. The CP is based on the section's rank or importance within the overall network and typically ranges from 55 to 70. The CP was set at 70 for the ALDOT runway pavements and 65 for the other pavements.

Table 1: Repair Activities.

Activity Type	PCI	Activity
Preservation	> CP	Runway Surface Treatment
		Taxiway and Apron Surface Treatment
Rehabilitation	> CP	2" AC OL[1]
	55 - CP	Mill 2" & 2" AC OL
	45 - 55	Mill 2" & 3" AC OL
Reconstruction	0 - 45	Reconstruct with AC

[1]For Sections with Structural Distress and PCI greater than Critical PCI

The depths for the milling and overlay (AC OL) in Table 1 were established by creating a balance between removal of surficial distress and providing additional pavement structural capacity. All overlay options include full-depth patching to repair localized distresses.

From the FAA 5010 records, the Alabama airport network includes a wide range of allowable aircraft loads. The airports were divided into three categories of allowable aircraft loads based on requirements for minimum pavement thickness and the use of a P-401 surface layer. The categories are based on the aircraft maximum gross takeoff weight (MGTOW) and include: less than 12,500 lbs, 12,500 to 30,000 lbs, and 30,000 to 100,000 lbs. Appendix H3 presents the category for each airport.

For any sections requiring reconstruction, the pavement sections were established primarily in accordance with the requirements in Table 3 of the FAA's Advisory Circular 150/5320-6F. The pavement sections used for developing the cost estimates are:

- ≤ 12,500 lbs 4" P-403 (State HMA Mix) + 6" P-209 Base
- 12,500 – 30,000 lbs 4" P-403 (State HMA Mix) + 8" P-209 Base
- 30,000 – 100,000 lbs 5" P-401 + 10" P-209 Base

It is important to note that while the FAA requires a stabilized base for those pavements that support aircraft operations with MGTOWs that are greater than 100,000 lbs, the number of such operations is minimal for those airports shown in Appendix H3. As a result, the cost of a stabilized base is excluded in the development of the unit costs for ALDOT's PMP update. However, based on the Engineer's future design and aircraft fleet mix development, project-level construction work could include the use of a stabilized base at that time.

M&R Unit Costs

Paving projects typically include additional project costs like mobilization, design, construction administration and inspections, and drainage improvements. A summary of non-direct pavement construction line items has been included in the unit costs in Tables 5 and 6 as described below. These non-direct items are expressed as a percentage of the total component costs for each activity.

These non-direct pavement construction items were developed from API's extensive experience with APMP project cost estimation. These percentages may vary for Alabama airport construction projects; however, since the direct pavement scope of work is estimated in a network-level evaluation, these conservative estimates serve as a good starting point for the development of realistic total project costs and annual APMP budgets for ALDOT. For repair activities such as Mill & Overlay, which typically do not include significant drainage work, the corresponding multiplier was reduced by 50 percent. The non-direct cost factors are presented in Table 2.

Table 2: Cost Factors.

Factor	Function of	Estimate		
		Preservation	Rehabilitation	Reconstruction
Mobilization	All costs, less design	10%	10%	10%
Drainage Improvements	Paving costs	-	4%	8%
Contingency	All costs, less mobilization and design	10%	20%	20%
Design & CM	All costs, less mobilization and design	15%	20%	20%

The M&R unit costs for maintenance, preservation, and repair activities were developed from the RSMeans cost data and are presented in the following section.

Maintenance

The maintenance activities include crack seal, and full and partial-depth patching. The unit costs are presented in Table 3.

Table 3: Unit Costs for Maintenance.

Activity	Unit Cost	Unit
Seal Cracks - AC	$3.95	lf
AC Full-Depth Patching	$25.05	sf
AC Partial-Dept Patching	$16.28	sf
Seal Cracks – PCC	$6.00	lf
PCC Full-Depth Patching	$35.00	sf
PCC Partial-Depth Patching	$175.00	sf
Jt. Seal	$8.00	lf
Slab Replacement	$20.00	sf

Preservation

The unit costs for the surface treatments are presented in Table 4. They include sealing of cracks and application of pavement markings.

Table 4: Unit Costs for Preservation Activities.

Activity	Unit Cost	Unit
Runway Surface Treatment	$0.57	sf
Taxiway and Apron Surface Treatment	$0.88	sf

Rehabilitation and Reconstruction

As discussed previously, repair activities are also divided into rehabilitation and reconstruction. The unit costs for airport repair for the Northern Region (Birmingham Area) and Southern Region (Montgomery Area) are shown in Tables 5 and 6, respectively.

Table 5: Unit Costs for Repair Activities, Northern Region.

Activity Type	Activity	MGTOW, thousand lbs		
		≤ 12.5	12.5-30	30-100
Rehabilitation	2" AC OL	$3.78		$4.19
	Mill 2" & 2" AC OL	$4.15		$4.56
	Mill 2" & 3" AC OL	$5.18		$5.79
Reconstruction	AC Reconstruction	$8.40	$9.10	$10.91

Table 6: Unit Costs for Repair Activities, Southern Region.

Activity Type	Activity	MGTOW, thousand lbs		
		≤ 12.5	12.5-30	30-100
Rehabilitation	2" AC OL	$3.54		$3.91
	Mill 2" & 2" AC OL	$3.90		$4.27
	Mill 2" & 3" AC OL	$4.82		$5.37
Reconstruction	AC Reconstruction	$7.63	$8.25	$9.87

Activity Type	Unit	Birmingham (Northern)	Montgomery (Southern)	Comments
Milling 1" to 3"	SY	$2.08	$2.01	
Pavement Demolition	SY	$6.34	$6.12	
Haulage - For Demolition & AC	CY	$6.08	$5.87	
Haulage for 12" Thick Demolition	SY	$2.03	$1.96	
Haulage for 2" Thick AC Paving	SY	$0.34	$0.33	
Haulage for 3" Thick AC Paving	SY	$0.51	$0.49	
Haulage for 4" Thick AC Paving	SY	$0.68	$0.65	
AC Wearing Course	Ton	$97.42	$86.90	
AC Binder Course	Ton	$87.80	$78.17	
P401 - For airports with >60 kip aircraft	Ton	$116.90	$104.28	Assumed P401 cost to be 20% greater than AC Wearing Course
6" Aggregate Base (P208)	SY	$10.17	$9.12	
8" Aggregate Base (P208)	SY	$13.29	$11.89	
6" P209 Aggregate Base	SY	$12.20	$10.94	Assumed P209 cost to be 20% greater than P208
8" P209 Aggregate Base	SY	$15.95	$14.27	Assumed P209 cost to be 20% greater than P208
10" P209 Aggregate Base	SY	$19.94	$17.84	Direct multiplier for 10" from 8"
4" P154 Aggregate Base	SY	$5.42	$4.86	Assumed P154 cost to be 20% lower than P208
6" P154 Aggregate Base	SY	$8.14	$7.30	Assumed P154 cost to be 20% lower than P208
Pavement Markings	sf	$1.48	$1.39	