Town of Carefree

Pavement
Preventative Maintenance Plan
2012 - 2022

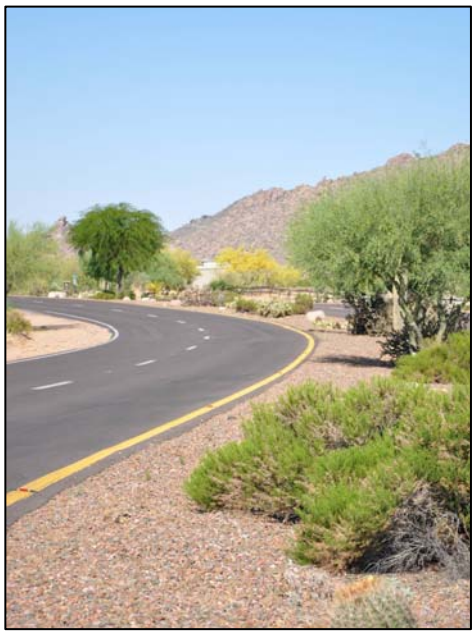


Photo: Rachel Hill, Mirror Creation Photography

January 2012

Prepared By:

Town of Carefree
Streets & Right-of-way Department

For:

Carefree Town Council
January 10, 2012

(This page is intentionally left blank.)

TABLE OF CONTENTS

Tabs

1 Town of Carefree Preventative Maintenance Program..... 2
The Science of Asphalt 2
Preventative Maintenance Program 2
Variety of Treatments and Maintenance 3
Evaluating the Appropriate Treatment..... 5
Town Funding for Street Maintenance Projects 6
Town Public Street Networks 7
2 Pavement Preventative Maintenance Plan 2012 – 2022 8
Overview 8
Recommendations 8
Cost and Timing 9
3 Pavement Preventative Maintenance Plan Summary 11
Summary for Years 1-3..... 12
Summary for Years 4-6..... 13
Summary for Years 7-10..... 14

APPENDICES

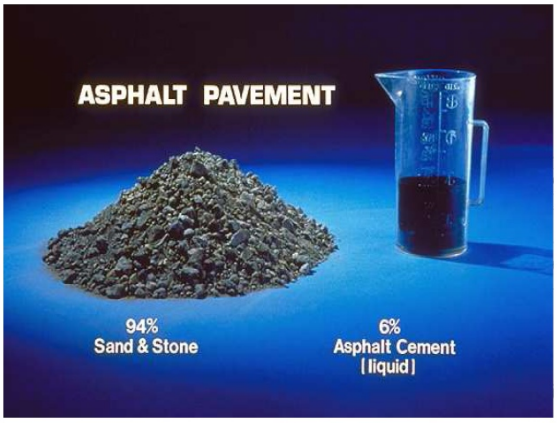
Tabs		
4	Appendix I-1	Asphalt Pavement Rating Form
	Appendix I-2	Pavement Defects
5	Appendix II-1	Pavement Rating Summary
	Appendix II-2	Pavement Evaluation Summary
6	Appendix III	10-Year Pavement Maintenance Plan:
		Total Cost Estimate Recap
		Cost Estimate Recap, Years 1-6
		Cost Estimate Recap, Years 7-10
7	Appendix IV	Cost Estimates by Subdivision
8	Appendix V-1	Map of Streets and Subdivisions
	Appendix V-2	Map of Previous Pavement Maintenance
	Appendix V-3	Map of Pavement Ratings
	Appendix V-4	Map: Preventative Maintenance Plan, 2012-2022
	Appendix V-5	Map of Preventative Maintenance Plan Timeline

(This page is intentionally left blank.)

TOWN OF CAREFREE PREVENTATIVE MAINTENANCE PROGRAM

The Science of Asphalt

Asphalt contains remarkable waterproofing and binding properties, which is why it can be found in roofing materials, a variety of coatings and adhesive products. However, its most recognized application is in our streets and highways. Within the United States, it has been estimated that on an annual basis, more than 70 billion pounds of asphalt are used in its many forms.



Within our streets, asphalt typically takes on a composition of approximately 94% stone (also known as aggregate) and sand while the remaining 6% contains a petroleum based product. This petroleum based substance is essentially the last product in the refinery process after naphtha, gasoline, kerosene and other fractions have been removed from crude oil. This sticky sludge like material helps to bind the aggregate together when heated and mixed. Once the resulting material is rolled and cooled over a decomposed granite substrate, it forms a smooth hardened surface we recognize as our street surface.

From the time the asphalt is placed on a street, the product's longevity is subject to its environment. The combination of seasonal temperature fluctuations results in the expansion and contraction of the asphalt, while the sun's ultraviolet light results in oxidation and an increase in the asphalt's rigidity. These two natural factors result in the eventual cracking of the asphalt. Additionally, the absorption of the weight of the passing vehicles and pressure from turning movements contribute to the continued distress of the asphalt. In order to minimize this natural and physical pounding and extend the life of the asphalt, a preventative maintenance program is recommended.

Preventative Maintenance Program

It was once universally thought that the average service life of asphalt was 20 to 25 years. However, as the networks of streets expanded, communities began to struggle with the appropriate use of limited funds to address their aging streets. Subsequently, the Asphalt Institute of America created a universal program which allows one to evaluate the condition of the street based upon approximately a dozen indicators of pavement distress. This rating system results in a menu of treatments to extend the life of the respective pavement in the most economically efficient manner. Today, based upon these universal

preventative maintenance practices, the life of the asphalt can be extended indefinitely.

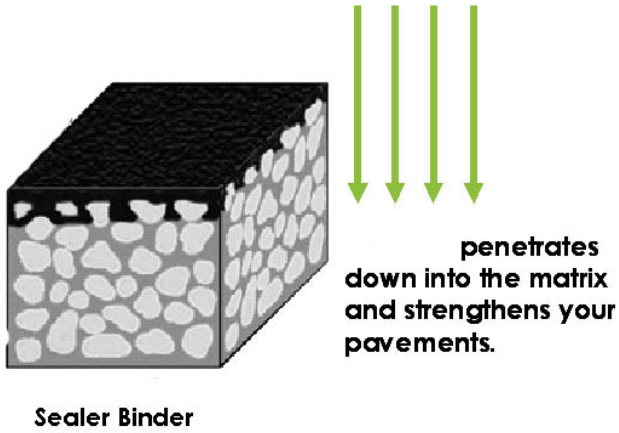
Historically, the Town of Carefree has maintained a street Preventative Maintenance Program. This program was last updated in 2004 and updated every seven years. The program contains a ten year planning horizon which allows the Town to project the cost and address the prescribed maintenance requirements.

Typically, at a minimum, the Town seals the cracks within the street surface and then applies a fog seal to rejuvenate the oils on the surface. These treatments help to reduce oxidation and subsequent drying of the surface. This approach minimizes the expansion of cracks to ensure the road surface is not compromised. In some instances, the Town has replaced portions of streets where there are a high number of cracks in close proximity – alligatoring. In some instances, the substrate may also need to be replaced, compacted and new asphalt installed.

Variety of Treatments and Maintenance

There is a great variety of treatments used for pavement maintenance. As the preventative maintenance techniques have matured, additional applications and techniques have become available. The Town has evaluated the various options over many years and selected those that offer the greatest quality and treatment relative to cost. This approach has contributed to the Town's ability to maintain its current level of service and the longevity of the Town's streets.

Some of the pavement applications may provide a better wearing surface and temporarily mask the sealed cracks. However, the products which contain a wearing surface (with aggregate) may appear uneven and are typically more costly than a fog seal. Below is a description of some of the treatments.



Fog Seal

There are a variety of fog seals which are applied in commercial sprayers. The goal of the fog seal is to rejuvenate the oils within the top layer of the asphalt and reduce the oxidation and eventual cracking of the asphalt.

MTR, MTR Plus, TRMSS

MTR, or Modified Tire Rubberized Sealcoat, is one of the best products available in terms of its ability to seal, beautify and prolong the life of pavement at a relatively low cost. It is a fog seal with clay material, tire rubber, and chemicals that penetrate into the asphalt, fill small gaps between the aggregate, and restore the adhesion and resistance to aging. MTR Plus contains additional fine sand and is reinforced with special polymers which are an additional benefit in extending the service life of streets. MTR Plus is only an incrementally higher price than MTR. TRMSS (Tire Rubber Modified Surface Seal) is a relative to MTR that serves as a lighter, less expensive solution. It is better quality than dozens of other fog seals available in the market and is very commonly used in the Valley, but is generally not preferred over MTR for the Town's streets.

Slurry Seal

This surface treatment is a mixture of fine aggregate, water and specified additives which are proportioned mixed and spread over the street. This is a wearing surface as a result of the aggregate added to this treatment. In addition, this wearing surface can cause a rougher ride or vibration in vehicle tires as the result of the exposed aggregate; however, over time, this aggregate is pushed into the asphalt, becomes displaced or wears, making the surface appear smoother.

Chip Seal

This surface treatment is a compacted aggregate layer a little thicker than slurry, with emulsified asphalt, water and specified additives spread over the layer and rolled. This is also a wearing surface as a result of the aggregate material and is a little more expensive than slurry. This wearing surface can cause a rougher ride or vibration in vehicle tires as the result of the exposed aggregate. By nature, rocks may become dislodged from the chip seal. However, this dislodging of aggregate has been partially reduced as a result of recent technologies and rubber additives.

Micro-Surfacing

Essentially, the difference between this treatment and slurry seal is it is a polymer modified asphalt emulsion which resists compaction. This type of surface may be applied in multiple layers and contains multiple stone thicknesses, while slurry contains one course of stone thickness. Micro-surfacing contains a stronger wearing course but is more costly than a slurry seal or chip seal.

Remove & Replace (R&R)
Some pavement defects reach the point where it is necessary to remove and replace the defective asphalt (or "R&R"). It is a method for repairing alligatoring, potholes, edge damage, trench patches in poor condition, and other major defects. R&R work involves saw-cutting the asphalt layer, usually 2-4 inches, inserting new asphalt material, and rolling and compacting it flush with the existing pavement.

R&R work is often completed in a sequence of preventative maintenance and is usually followed by crack sealing and a fog seal. When done properly, pavement patches can last many years. R&R work is labor intensive and costly, but in most cases only a minute percentage of streets require this treatment. When the percentage of major defects reaches a certain threshold, other measures with a lower cost-per-unit are considered, such as mill and overlay.

Other Maintenance

There are additional maintenance procedures associated with preparing a street for one of the preservative seals mentioned above, and procedures required after the treatment is applied. Such procedures and related materials are taken into consideration when estimating the costs for a street maintenance program.

Before a treatment is applied, cracks are sealed with an asphalt concrete sealant, and major defects, such as alligatoring or edge breaks, are removed and replaced. A tack coat is applied to prepare the pavement for certain seal coats, and occasionally blotter or a lime chemical is used after the seal coat is applied as part of the curing process. Additionally, drainage structures or other structures may need to be adjusted or repaired, such as culverts, reflectors, water valves, survey monuments, and manholes. After a preservative seal is applied, any striping, stop bars, and other pavement markings have to be re-painted.

Drainage problems and shoulder work, though typically handled outside the scope of pavement maintenance, are occasionally required as part of a project when necessary. These include repairing or installing cut-off walls, ribbon curbs, drainage channels, adjusting drainage grates, and grading work. Generally, these issues are resolved on a case by case basis by the Public Works Department.

Evaluating the Appropriate Preventative Maintenance Treatment

There are approximately one dozen indicators which help define the appropriate level of maintenance for a street. These indicators are rated based upon the physical observation of each and every public street segment within the community. Within the appendix of this report is a sample of the Town's evaluation form listing the defects rated and images of the various defects listed on the form (Appendix I-1 and I-2).

The cumulative scoring on each rating form is compared with previous scores and previous preventative maintenance applications to determine the appropriate techniques to address any pavement distress. Scores between 0 and 30 typically imply the need to reconstruct the street. Scores between 31 and 80 indicate replacing sections and applying a seal coat, leveling course or overlay. Finally, scores between 81 and 100 indicate the need for routine maintenance, such as crack and fog sealing.

It is typical to find the streets within Carefree falling between this later stage (81 to 100). In fact, the average of all the ratings is 85.5, with a weighted average of 85.8 (See Appendix II-1 – Pavement Rating Summary). One of the contributing factors for these relatively high ratings relative to the age of the streets could be the lighter volumes of traffic typically experienced on the Town streets. However, one of the leading factors is the natural decomposed granite base under the streets, which provides for a very stable substrate and helps to minimize the movement and subsequent structural failure of the streets.

Within the past several months, the Town Staff has evaluated approximately 165 street segments, which encompass all 120 lane miles of streets within the Town, to develop a ten year maintenance plan. For more information, Appendix II-1 presents the average pavement ratings by subdivision. Appendix II-2 contains a summary table with additional details, such as the total linear feet, square yards, and lane miles of streets in each subdivision. A map portraying the Pavement Evaluation summary is found in Appendix V-3.

The maintenance plan resulting from the evaluation is divided into 1 to 3 year projects, 4 to 6 year projects and 7 to 10 year projects. Depending upon Town funding, the projects are anticipated to fall within the time increments.

Town Funding for Street Maintenance Projects

The Town of Carefree does not assess a property tax to fund street improvement projects. Many of the neighboring communities have approved municipal bonds which are supported through a secondary property tax to create revenue to support their street improvement projects. However, in Carefree, the community has historically desired to minimize the size of government and the associated services. In doing so, street maintenance projects have been funded through Highway User Revenue Funds (HURF) and the Town's General Fund.

In recent years, as a result of the decline in the economy, local HURF funds have been reduced by the State to help support state-wide services. In addition, sales tax revenues have contracted. This contraction in funding sources reduces the ability for the Town to quickly address street maintenance projects. However, the Town continues to operate under the philosophy, pay as you go and minimize any potential debt or need for a property tax.

It is important to note that many of the nearby communities have funded pavement management programs through municipal bonds. This approach has ensured these communities address their pavement management program at more regular increments in addition to funding the replacement of asphalt on some of their thoroughfares. These municipal bonds are serviced through a secondary property tax. In Carefree, there has historically been the desire to eliminate the need for any Town property tax assessment. As a result, the Final financial model supporting the street maintenance program will only bear the existing level of service and can not be compared with the level of service of nearby communities, which is support through a property tax. Indeed, ultimately, if the citizens of Carefree would like to modify the pavement management level of service and perhaps mill each public street, apply new asphalt and adopt a regular pavement preventative maintenance plan, such plan would require the support of the Carefree electorate.

Town Public Street Networks

The Town of Carefree contains a total of approximately 55 linear miles of streets. The average width of a public street based upon 13 foot wide lanes is 26 feet. Most streets have two-lanes, with only arterial streets having an average of 4 lanes. The overall lane miles of street the Town maintains, including both 2-lane and 4-lane streets, is approximately 120 lane miles. This equates to approximately 950,000 square yards of material. Based upon an estimate using today's (December 2011) dollars, the following are rounded costs for the following treatments on all public streets in Carefree.

▪ Mill and Overlay	$12 to 13 million
▪ Crack Seal & Chip Seal	$8 to 9 million
▪ Crack Seal & Chip Slurry	$3.5 to 4.5 million
▪ Crack Seal & Fog Seal	$1 to 1.5 million
▪ Remove & Replace Defects	$40 per square yard $600,000 to 1 million

Obviously, these are daunting numbers given the Town's modest funding sources. Therefore, the following pavement management plan helps to establish a prioritization of the public streets network to ensure the limited funds are appropriately earmarked. This approach divides the respective street preventative maintenance projects in near term 1 to 3 years, mid term 4 to 6 years and long term 7 to 10 years. Based upon the availability of funding, the timing of these projects may need to be refined overtime.

As indicated earlier, if the citizens desire to increase the level of service in the future – to mill, overlay and perform regular incremental preventative maintenance – the existing financial model will not cover the significant costs. At such time, the community would need to discuss and vote upon a funding source.

PAVEMENT PREVENTATIVE MAINTENANCE PLAN 2012 – 2022

Overview

The Preventative Maintenance Plan outlines recommended pavement treatments for approximately 165 segments of streets and pavement within the Town limits. It also provides cost estimates and a maintenance schedule based on the Town's goals and desired level of service. Supplementary information is available in the appendices, as outlined below:

Pavement Evaluation Information

Appendix I-1	Asphalt Pavement Rating Form
Appendix I-2	Pavement Defects
Appendix II-1	Pavement Rating Summary
Appendix II-2	Pavement Evaluation Summary

10-Year Preventative Maintenance Plan and Cost Estimates

Appendix III	10-Year Pavement Preventative Maintenance Plan:
	Total Cost Estimate Recap
	Cost Estimate Recap, Years 1-6
	Cost Estimate Recap, Years 7-10
Appendix IV	Cost Estimates by Subdivision

Maps of Existing Conditions and the Preventative Maintenance Plan

Appendix V-1	Map of Streets and Subdivisions
Appendix V-2	Map of Previous Pavement Maintenance
Appendix V-3	Map of Pavement Ratings
Appendix V-4	Map: Preventative Maintenance Plan, 2012-2022
Appendix V-5	Map of Preventative Maintenance Timeline

Recommendations

The pavement maintenance recommendations are based on a number of factors, including pavement condition, timing and nature of the last maintenance, location within the Town's street network, traffic volume and dynamics, and other factors.

Standard Recommendation: R&R, Crack Seal and MTR Plus
The 10-year Cost Estimate Recap table, found in the Appendix III, summarizes the maintenance recommendations over the 10-year timeframe. According to this table, the most common recommendation is to remove pavement defects and replace asphalt where needed ("R&R"), apply crack seal to new and previously sealed cracks and apply an MTR Plus (Modified Tire Rubber) fog seal. Other miscellaneous work, such as striping and minor shoulder and/or drainage work, will also be determined on a case by case basis.

MTR, not MTR Plus, is recommended for the Town Center core area (or "Town Center Proper") in order to maintain its high quality condition. MTR is a product of comparable quality to MTR Plus with components that will prolong the life and appearance of the pavement. The Town Center is already in good condition, but it is also a very visible district that warrants a higher level of service.

Mill & Overlay
Given that this method has a higher cost, it is only used when the above-referenced standard recommendation becomes more costly due to extensive road defects. Tom Darlington southbound and three streets in Velvet Shadows are recommended for this treatment. These streets have such a great amount of alligatoring, it would be more costly to R&R, crack seal and fog seal than to mill and overlay. Some parts of Carefree Drive and Serene Street may need to have a mill and overlay treatment, since they are approaching the same threshold.

TRMSS
TRMSS, a lighter fog seal than MTR Plus, is recommended on streets that are already being treated this year by Crown Castle along microtrenches within their fiber network. These stretches include portions of north Pima Road, Cow Track Drive, Golden Spur Lane, Father Kino Trail, and Montezuma Road. TRMSS is a less expensive, but high quality fog seal that will seal and strengthen the pavement after the Town performs R&R and crack seal on the associated street segments.

Slurry Seal
Generally, slurry seal is not the preferred alternative for the Town's streets, but it is recommended for New River Road, because its straight alignment and unique aging condition qualify it for this slightly more intensive treatment.

Other Maintenance
Other options for preventative maintenance projects have been considered, but were not included in the 10-year Pavement Preventative Maintenance Plan, because such treatments are either beyond the scope of the Town's programmed level of service or are not the most cost-effective. Thickened edge treatments, rolled curbs, cut-off walls, new concrete at wash crossings, drainage repair work, and other projects are some examples of procedures that might benefit some of the streets if funding is available. If, in the course of preparing more detailed project scopes, these alternatives are found to provide a better alternative to current recommendations, and if they fit within budget parameters, they will be considered for implementation.

Cost and Timing

The 10-year Preventative Maintenance Plan packages recommended procedures for subdivisions into larger projects to achieve an economy of scale. The Town has historically prepared larger projects for cost efficiency, and this also allows time for HURF funding to accumulate.

Last year the Town received approximately $169,000 in HURF funds. Under the assumption that there would be no increase or decrease in future HURF funds, we will collect $1,690,000 over a ten year period. As of December 2011, there is approximately $502,000 in the Town's HURF fund. Therefore, collectively, there will be approximately $2,192,000 of HURF funds over the next ten years. The total cost estimate for the Pavement Management Plan is approximately $2,800,000 (See Appendix III), which is a difference of approximately $608,000. This gap may be closed by the possibility of additional HURF funding in the future, but it is unknown whether HURF funding will increase or decrease. Another option is the Town Council may chose to draw from the Town's Reserves which to date (December 2011) contain approximately $4,500,000. Otherwise, some of the scheduled pavement maintenance would have to be deferred to later fiscal years as additional HURF funding accrues.

(This page is intentionally left blank.)

Pavement Preventative Maintenance Plan Summary

In this summary, the Preventative Maintenance Plan is outlined for years 1 to 3, 4 to 6 and 7 to 10. The work to be performed is briefly listed, followed by the estimated cost by subdivision/stand alone street. More information is available in Appendices III, IV, and V. Recommended maintenance within each time period will be prioritized by areas with the lowest pavement ratings (based on the 2011 pavement evaluation) and the longest duration since last maintenance.

Total Estimated Cost for Years 1-10
$2,787,383

Summary for Years 1-3

Fiscal Years:

2011-12 (2nd Half)
2012-13
2013-14

Work:

Repair Defects
Crack Seal
Fog seal
Mill & Overlay:

- Tom Darlington Drive Southbound
- Milky Way Drive
- Lazywood Drive
- Placid Place
- Striping & Misc.

Subdivisions and Cost Estimate

Streets / Subdivisions	Cost for Maintenance
Carefree, AZ (Town Center and other areas in the subdivision)	$201,816
Carefree Fore/Fore More	$426,848
Stand Alones 1: ▪ Tom Darlington, NB & SB ▪ Cave Creek Road (Pima to Town limits) Westbound ▪ Cave Creek Rd. (West) Northbound ▪ Pima Road (South)	$485,997
Velvet Shadows	$381,267
TOTAL	**$1,495,929**

Pavement Maintenance Plan
Summary for Years 4-6

Fiscal Years:

2014-2015
2015-2016
2016-2017
2017-2018

Work:

Repair Defects
Crack Seal
Fog seal
Slurry Seal New River Rd.
Striping & Misc.

Streets / Subdivisions:

Streets / Subdivisions	Cost for Maintenance
Carefree 3A & 3B	$115,926
Carefree Foothills	$48,286
Carefree Rolling Hills	$97,661
Carefree Too	$124,252
Cow Track Estates	$223,376
Leigh Estates and Vicinity	$23,689
Ranchitos Del Rey	$36,819
Sentinel Rock Estates	$141,965
Stand Alones 2: ▪ Tranquil Trail ▪ 80th Street ▪ Mule Train Road ▪ Piedra Grande Rd. ▪ Horizon Drive ▪ Nevermind Trail ▪ Pima Road (North) ▪ New River Road	$138,550
The Crossings	$49,073
TOTAL	**$999,596**

Pavement Maintenance Plan
Summary for Years 7-10

Fiscal Years:

2018-2019
2019-2020
2020-2021
2021-2022

Work:

Repair Defects
Crack Seal
Fog seal
Striping & Misc.

Subdivisions and Cost Estimate

Streets / Subdivisions	Cost for Maintenance
Carefree, AZ: Town Center Proper Only	$107,686
Stand Alones 3: maintained in 2010-2011 ▪ Cave Creek Road (minus WB east of Pima Rd) ▪ Cave Creek Road (West) Southbound ▪ Rising Sun Road ▪ Stagecoach Pass (east of Tom Darlington)	$184,173
TOTAL	**$291,859**

(This page is intentionally left blank.)

APPENDICES

(This page is intentionally left blank.)

APPENDIX I-1

ASPHALT PAVEMENT RATING FORM
TOWN OF CAREFREE

DATE:	**RECORD NUMBER:**

TOWN: Carefree	**SUBDIVISION:**
STREET / ROUTE:	
FROM:	**WIDTH:**
TO:	**LINEAR FOOTAGE:**
PAVEMENT TYPE:	**AGE OF PAVEMENT:**

LAST MAINTENANCE:

DEFECT	**SCALE**	**RATING**
Transverse Cracks	0 -- 6	
Longitudinal Cracks	0 -- 6	
Alligator Cracks	0 -- 10	
Edge Damage	0 -- 5	
Trench Failure	0 – 10	
Aging (Oxidation)	0 -- 6	
Stripping	0 -- 9	
Raveling	0 -- 5	
Shoving or Pushing	0 -- 9	
Rutting	0 -- 10	
Corrugations	0 -- 6	
Ride Condition/Smoothness	0 -- 6	
Deficient Drainage	0 -- 8	
Bleeding	0 -- 4	
SUM OF DEFECTS	**0 -- 100**	

Condition Rating: 100 minus (Sum of Defects) =	

RATING TABLE	**Reconstruction**	**0 TO 30**	**Restore**
	Patching and Overlay	**31 TO 80**	**Corrective**
	Routine Maintenance	**81 TO 100**	**Preserve**

STRIPES:	**YES**	**NO**

COMMENTS:
PRELIMINARY RECOMMENDATION:

(This page is intentionally left blank.)

APPENDIX I-2
PAVEMENT DEFECTS

Transverse & Longitudinal Cracks

Alligatoring

APPENDIX I-2
PAVEMENT DEFECTS

Edge Damage

Trench Failure

APPENDIX I-2
PAVEMENT DEFECTS

Aging (Oxidation)

Stripping

APPENDIX I-2
PAVEMENT DEFECTS

Raveling

Shoving or Pushing

APPENDIX I-2
PAVEMENT DEFECTS

Rutting

Corrugations

APPENDIX I-2
PAVEMENT DEFECTS

Deficient Drainage

Bleeding

APPENDIX I-2
PAVEMENT DEFECTS

Other Maintenance

Repair Drainage Structures

Shoulder Work

Potholes

(This page is intentionally left blank.)

APPENDIX II-1
PAVEMENT RATING SUMMARY

Table 1.
Average Pavement Ratings

Subdivision	Subd. Average Rating
Velvet Shadows	76.7
Carefree Fore & Fore More	81.1
Cow Track Estates	83.3
Carefree Rolling Hills	84.8
Leigh Estates and Vicinity	85.9
The Crossings	86.2
Carefree Too	86.6
Sentinel Rock Estates	86.7
Carefree Foothills	87.1
Carefree 3A & 3B	87.3
Stand Alones	88.2
Ranchitos del Rey	88.4
Carefree*	88.5
TOWN AVERAGE	**85.5**

Table 2.
Average Pavement Ratings
Weighted by Size of Street

Subdivision	Average Rating Weighted by Size of Street
Velvet Shadows	75.7
Carefree Fore & Fore More	77.5
Cow Track Estates	82.6
Carefree Rolling Hills	82.9
The Crossings	84.6
Sentinel Rock Estates	85
Carefree Foothills	85.3
Carefree Too	86.1
Ranchitos del Rey	86.7
Leigh Estates and Vicinity	87.2
Carefree 3A & 3B	87.2
Carefree*	87.3
Stand Alones	89.8
TOWN AVERAGE	**85.8**

* The overall Carefree, AZ subdivision has two main components, the Town Center Proper, and all other neighborhood streets within the subdivision. The Town Center Proper received an average non-weighted rating of 92, whereas the average rating for the remaining areas in that subdivision is 85.7.

(This page is intentionally left blank.)

APPENDIX II-2
PAVEMENT EVALUATION SUMMARY

Record #	Subdivision	Subd. Average Rating	Subdiv. Weighted Rating by Size	Lin.Ft.	Subd. Ave. Width	Subd. Est. Area (SF)	Subd. Est. Area (SY)	Lane Length (Lin.Ft.)	Ave. Lane Width	Segment Miles	Lane Miles
C	Carefree	88.5	87.3	37,239	31	1,117,968	124,219	74,478	15	7.1	14.1
C 3A & 3B	Carefree 3A & 3B	87.3	87.2	19,345	28	542,310	60,257	38,690	14	3.7	7.3
CF	Carefree Foothills	87.1	85.3	7,763	28	217,364	24,152	15,526	14	1.5	2.9
FM	Carefree Fore & Carefree Fore More	81.1	77.5	17,710	28	495,880	55,098	35,420	14	3.4	6.7
RH	Carefree Rolling Hills	84.8	82.9	14,955	28	418,740	46,527	29,910	14	2.8	5.7
CFT	Carefree Too	86.6	86.1	21,422	28	596,416	66,268	42,844	14	4.1	8.1
CT	Cow Track Estates	83.3	82.6	37,225	24	893,400	99,267	74,450	12	7.1	14.1
L	Leigh Estates & Vicinity	85.9	87.2	5,825	22	132,880	14,764	11,650	11	1.1	2.2
RDR	Ranchitos del Rey & Vicinity	88.4	86.7	13,703	21	290,608	32,290	27,406	11	2.6	5.2
SR	Sentinel Rock Estates	86.7	84.6	14,135	28	395,780	43,976	28,270	14	2.7	5.4
SA	Stand Alone Streets	88.2	89.8	79,721	29	2,367,093	263,013	208,469	13	15.1	39.5
CRS	The Crossings	86.2	84.6	3,050	28	85,400	9,489	6,100	14	0.6	1.2
VS	Velvet Shadows	76.7	75.7	15,360	26	399,360	44,373	30,720	13	2.9	5.8
	TOTAL	**85.4**	**85.8**	**287,453**	**26.9**	**7,953,199**	**883,691**	**623,933**	**13.3**	**54.4**	**118.2**

(This page is intentionally left blank.)

APPENDIX III
10-YEAR PAVEMENT PREVENTATIVE MAINTENANCE PLAN
TOTAL COST ESTIMATE RECAP

		Cost Estimate		Maintenance									
Years	**Streets/Subdivisions**	**Cost Est.**	**Total Per Maintenance Plan Period**	**R&R**	**Crack Seal**	**MTR Plus**	**Misc.**	**Mill / Overlay**	**Slurry Seal**	**MTR**	**TRMSS**	**Drainage**	**Notes**
1 - 3	Carefree, AZ - All	$201,816		x	x	x	x			x		?	TC Proper - MTR
1 - 3	Carefree Fore & Fore More	$426,848		x	x	x	x	?				?	Possible Mill & Overlay Carefree Dr. and/or Serene St.
1 - 3	Stand Alones 1	$485,997		x	x	x	x	x				?	Mill & Overlay only Tom Darlington SB
1 - 3	Velvet Shadows	$381,267	**$1,495,929**	x	x	x	x	x				?	Mill & Overlay Milky Way, Lazywood Dr., Placid Pl.
4 - 6	Carefree 3A & 3B	$115,926		x	x	x	x						
4 - 6	Carefree Foothills	$48,286		x	x	x	x						
4 - 6	Carefree Rolling Hills	$97,661		x	x	x	x						
4 - 6	Carefree Too	$124,252		x	x	x	x						
4 - 6	Cow Track Estates	$223,376		x	x	x	x				x	?	TRMSS streets sealed by Crown Castle
4 - 6	Leigh Estates and Vicinity	$23,689		x	x	x	x						Opt. thickened edge.
4 - 6	Ranchitos del Rey	$36,819		x	x	x	x				x	?	TRMSS streets sealed by Crown Castle
4 - 6	Sentinel Rock Estates	$141,965		x	x	x	x						
4 - 6	Stand Alones 2	$138,550		x	x	x	x		x		x	?	Slurry Seal New River Rd., TRMSS part of N. Pima Rd.
4 - 6	The Crossings	$49,073	**$999,596**	x	x	x	x						
7 - 10	Carefree, AZ - TC Only	$107,686		x	x	x	x						
7 - 10	Stand Alones 3	$184,173	**$291,859**	x	x	x	x						
10 Yrs.	**TOTAL***	**$2,787,383**	**$2,787,383**	x	x	x	x	x	x	x	x	?	

* Not including cost estimates of possible additional work subject to Town priorities and available funds, indicated by "?".

(This page is intentionally left blank.)

APPENDIX III
COST ESTIMATE RECAP
YEARS 1-6
Town of Carefree

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2 (Tom Darlington SB and 3 Streets in VS)	Square Yard	26,770	$12.00	$537,336
Slurry Seal Type II (modified) (New River Road only)	Square Yard	1,790	$3.50	$6,265
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard	-	$5.00	$0
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	673,630	$0.85	$572,586
MTR / Rubberized Asphalt Concrete Preservative Seal (TC Proper only)	Square Yard	35,950	$0.65	$23,368
TRMSS / Tire Rubberized Modified Surface Seal (Pima Rd. N, Cow Track Estates Ranchitos del Rey)	Square Yard	26,430	$0.50	$29,996
Remove & Replace Asphalt	Square Yard	16,935	$40.00	$677,400
Crack Seal	Linear Foot	617,100	$0.40	$246,840
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$76,232
Subtotal				**$2,170,022**
Contingencies	Lump Sum		15% of cost	$325,503
TOTAL:				**$2,495,525**

Subdivisions included:

1. Carefree, AZ
2. Carefree 3A & 3B
3. Carefree Foothills
4. Carefree Fore & Fore More
5. Carefree Rolling Hills
6. Carefree Too
7. Cow Track Estates
8. Leigh Estates & Vicinity
9. Ranchitos del Rey & Vicinity
10. Sentinel Rock Estates
11. Most Stand Alones
12. The Crossings
13. Velvet Shadows

(This page is intentionally left blank.)

APPENDIX III
COST ESTIMATE RECAP
YEARS 7-10

Town of Carefree

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	229,400	$0.85	$194,990
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Areas seal coated by Crown Castle)	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	200	$40.00	$8,000
Crack Seal	Linear Foot	95,000	$0.40	$38,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$12,800
Subtotal				**$253,790**
Contingencies	Lump Sum		15% of cost	$38,069
TOTAL:				**$291,859**

Subdivisions included:

1. Carefree, AZ: Town Center Proper only
2. Stand Alone Streets:
    a. Cave Creek Road (minus WB east of Pima Rd)
    b. Cave Creek Road (West) Southbound
    c. Rising Sun Road
    d. Stagecoach Pass (east of Tom Darlington)

(This page is intentionally left blank.)

APPENDIX IV
COST ESTIMATE
by Subdivision
Carefree, AZ Subdivision, Years 1-6
Town of Carefree

SUBDIVISION: Carefree, AZ, Years 1-6	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	94,500	$0.85	$80,325
MTR / Rubberized Asphalt Concrete Preservative Seal (Town Center Proper area)	Square Yard	35,950	$0.65	$23,368
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	990	$40.00	$39,600
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	60,000	$0.40	$24,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$8,200
Subtotal				**$175,493**
Contingencies	Lump Sum		15% of cost	$26,324
TOTAL:				**$201,816**

APPENDIX IV
COST ESTIMATE
Carefree 3A and 3B
Town of Carefree

SUBDIVISION: Carefree 3A and 3B	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	63,300	$0.85	$53,805
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	475	$40.00	$19,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	60,000	$0.40	$24,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$4,000
Subtotal				**$100,805**
Contingencies	Lump Sum		15% of cost	$15,121
TOTAL:				**$115,926**

APPENDIX IV
COST ESTIMATE
Carefree Foothills
Town of Carefree

SUBDIVISION: Carefree Foothills	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	25,350	$0.85	$21,548
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	205	$40.00	$8,200
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	24,100	$0.40	$9,640
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$2,600
Subtotal				**$41,988**
Contingencies	Lump Sum		15% of cost	$6,298
TOTAL:				**$48,286**

APPENDIX IV
COST ESTIMATE

Carefree Fore & Carefree Fore More

Town of Carefree

SUBDIVISION: Carefree Fore / Fore More	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal and/or Chip Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	57,850	$0.85	$49,173
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	7,300	$40.00	$292,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	55,000	$0.40	$22,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$8,000
Subtotal				**$371,173**
Contingencies	Lump Sum		15% of cost	$55,676
TOTAL:				**$426,848**

APPENDIX IV
COST ESTIMATE
Carefree Rolling Hills
Town of Carefree

SUBDIVISION: Carefree Rolling Hills	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	48,850	$0.85	$41,523
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	550	$40.00	$22,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	46,000	$0.40	$18,400
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$3,000
Subtotal				**$84,923**
Contingencies	Lump Sum		15% of cost	$12,738
TOTAL:				**$97,661**

APPENDIX IV
COST ESTIMATE
Carefree Too
Town of Carefree

SUBDIVISION: Carefree Too	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	69,580	$0.85	$59,143
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	460	$40.00	$18,400
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	62,000	$0.40	$24,800
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$5,702
Subtotal				**$108,045**
Contingencies	Lump Sum		15% of cost	$16,207
TOTAL:				**$124,252**

APPENDIX IV
COST ESTIMATE
Cow Track Estates
Town of Carefree

SUBDIVISION: Cow Track Estates	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	81,270	$0.85	$69,080
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Golden Spur South, Spanish Boot and 900 ft. of Cow Track that were sealed in 2011)	Square Yard	22,960	$0.50	$22,961
Remove & Replace Asphalt	Square Yard	1,205	$40.00	$48,200
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	100,000	$0.40	$40,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$14,000
Subtotal				**$194,240**
Contingencies	Lump Sum		15% of cost	$29,136
TOTAL:				**$223,376**

APPENDIX IV
COST ESTIMATE
Leigh Estates & Vicinity
Town of Carefree

SUBDIVISION: Leigh Estates & Vicinity	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	14,764	$0.85	$12,549
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Golden Spur South, Spanish Boot and 900 ft. of Cow Track that were sealed in 2011)	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	70	$40.00	$2,800
Thickened Edge (Cut 0.5-1 ft, add 2 ft) "Maricopa Edge"	Linear Foot		$1.00	
Crack Seal	Linear Foot	10,000	$0.40	$4,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$1,250
Subtotal				**$20,599**
Contingencies	Lump Sum		15% of cost	$3,090
TOTAL:				**$23,689**

APPENDIX IV
COST ESTIMATE
Ranchitos del Rey
Town of Carefree

SUBDIVISION: Ranchitos del Rey	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	18,490	$0.85	$15,717
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Golden Spur South, Spanish Boot and 900 ft. of Cow Track that were sealed in 2011)	Square Yard	10,600	$0.50	$5,300
Remove & Replace Asphalt	Square Yard	90	$40.00	$3,600
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	9,000	$0.40	$3,600
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$3,800
Subtotal				**$32,017**
Contingencies	Lump Sum		15% of cost	$4,802
TOTAL:				**$36,819**

APPENDIX IV
COST ESTIMATE
Sentinel Rock
Town of Carefree

SUBDIVISION: Sentinel Rock	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal on Streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	46,174	$0.85	$39,248
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	1,600	$40.00	$64,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	44,000	$0.40	$17,600
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$2,600
Subtotal				**$123,448**
Contingencies	Lump Sum		15% of cost	$18,517
TOTAL:				**$141,965**

APPENDIX IV
COST ESTIMATE
Stand Alones, Years 1-6
Town of Carefree

SUBDIVISION: Stand Alones, Years 1-6	**STREET NAME:** Selected Streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, AC Preservative Seal on Streets, Wearing Course where needed	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2 - Tom Darlington Southbound only	Square Yard	26,775	$12.00	$321,300
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified) - New River Road only	Square Yard	1,790	$3.50	$6,265
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	114,452	$0.85	$97,284
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Pima Rd)	Square Yard	3,470	$0.50	$1,735
Remove & Replace Asphalt	Square Yard	1,350	$40.00	$54,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	110,000	$0.40	$44,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$18,500
Subtotal				**$543,084**
Contingencies	Lump Sum		15% of cost	$81,463
TOTAL:				**$624,547**

APPENDIX IV
COST ESTIMATE
Stand Alones, Years 1-3
Town of Carefree

SUBDIVISION: Stand Alones **TYPE OF IMPROVEMENT:** Repairs, Crack Fill, AC Preservative Seal on Streets, Wearing Course where needed	**STREET NAME:** Tom Darlington Dr., CC Rd. (Pima to east Town Limits WB), CC RD (West) NB, Pima Rd (South)

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2 - **Tom Darlington Southbound Only**	Square Yard	26,775	$12.00	$321,300
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	$0
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	63,565	$0.85	$54,030
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Pima Rd)	Square Yard		$0.50	$0
Remove & Replace Asphalt	Square Yard	260	$40.00	$10,400
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	69,690	$0.40	$27,876
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$9,000
Subtotal				**$422,606**
Contingencies	Lump Sum		15% of cost	$63,391
TOTAL:				**$485,997**

APPENDIX IV
COST ESTIMATE
Stand Alones, Years 4-6
Town of Carefree

SUBDIVISION: Stand Alones	**STREET NAME:**	Selected Streets
TYPE OF IMPROVEMENT: Repairs, Crack Fill, AC Preservative Seal on Streets, Wearing Course where needed		

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2 - **Tom Darlington Southbound Only**	Square Yard		$12.00	$0
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified) - **New River Road only**	Square Yard	1,790	$3.50	$6,265
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	50,887	$0.85	$43,254
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal (Pima Rd)	Square Yard	3,470	$0.50	$1,735
Remove & Replace Asphalt	Square Yard	1,090	$40.00	$43,600
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	40,310	$0.40	$16,124
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$9,500
Subtotal				**$120,478**
Contingencies	Lump Sum		15% of cost	$18,072
TOTAL:				**$138,550**

APPENDIX IV
COST ESTIMATE
The Crossings
Town of Carefree

SUBDIVISION: The Crossings	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	$0
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	10,461	$0.85	$8,892
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	740	$40.00	$29,600
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	9,000	$0.40	$3,600
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$580
Subtotal				**$42,672**
Contingencies	Lump Sum		15% of cost	$6,401
TOTAL:				**$49,073**

APPENDIX IV
COST ESTIMATE
Velvet Shadows
Town of Carefree

SUBDIVISION: Velvet Shadows	**STREET NAME:** All streets
TYPE OF IMPROVEMENT: Repairs, Crack Seal, AC Preservative Seal and/or Mill & Overlay on certain streets	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2 (VS 02 Placid Pl, 04-Milky Way Drive, 09-Lazywood Place)	Square Yard	18,003	$12.00	$216,036
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	28,589	$0.85	$24,301
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	1,900	$40.00	$76,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	28,000	$0.40	$11,200
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$4,000
Subtotal				**$331,537**
Contingencies	Lump Sum		15% of cost	$49,730
TOTAL:				**$381,267**

APPENDIX IV
COST ESTIMATE
Carefree, AZ Subdivision Years 7-10
Town of Carefree

SUBDIVISION: Carefree, AZ Years 7-10	**STREET NAME:** Town Center Proper only
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal	

Schedule of Items	Unit	Quantity	Unit Price	Total
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	$0
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	94,400	$0.85	$80,240
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	100	$40.00	$4,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	10,000	$0.30	$4,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$5,400
Subtotal				**$93,640**
Contingencies	Lump Sum		15% of cost	$14,046
TOTAL:				**$107,686**

APPENDIX IV
COST ESTIMATE
Stand Alones, Years 7-10
Town of Carefree

SUBDIVISION: Stand Alones, Years 7-10	**STREET NAMES:**	CC Rd minus WB east of Pima, Rising Sun, Stagecoach Pass E. of Tom Darlington		
TYPE OF IMPROVEMENT: Repairs, Crack Seal, and AC Preservative Seal				
Schedule of Items	**Unit**	**Quantity**	**Unit Price**	**Total**
Mill and Overlay with Asphalt Concrete Surface Course, 1.25", d1/2	Square Yard		$12.00	$0
Asphalt Rubber Chip Seal Leveling Course (per spec)	Square Yard		$8.00	
Asphalt Concrete Chip Seal Leveling Course (per spec)	Square Yard		$5.00	
Slurry Seal Type II (modified)	Square Yard		$3.50	
MTR Plus / Rubberized Asphalt Concrete Preservative Seal	Square Yard	135,000	$0.85	$114,750
MTR / Rubberized Asphalt Concrete Preservative Seal	Square Yard		$0.65	
TRMSS / Tire Rubberized Modified Surface Seal	Square Yard		$0.50	
Remove & Replace Asphalt	Square Yard	100	$40.00	$4,000
Thickened Edge (Cut 0.5-1 ft, add 2 ft) Maricopa Edge	Linear Foot		$1.00	
Crack Seal	Linear Foot	85,000	$0.40	$34,000
Adjustments / Striping / Drainage Repair / Miscellaneous	Lump Sum			$7,400
Subtotal				**$160,150**
Contingencies	Lump Sum		15% of cost	$24,023
TOTAL:				**$184,173**

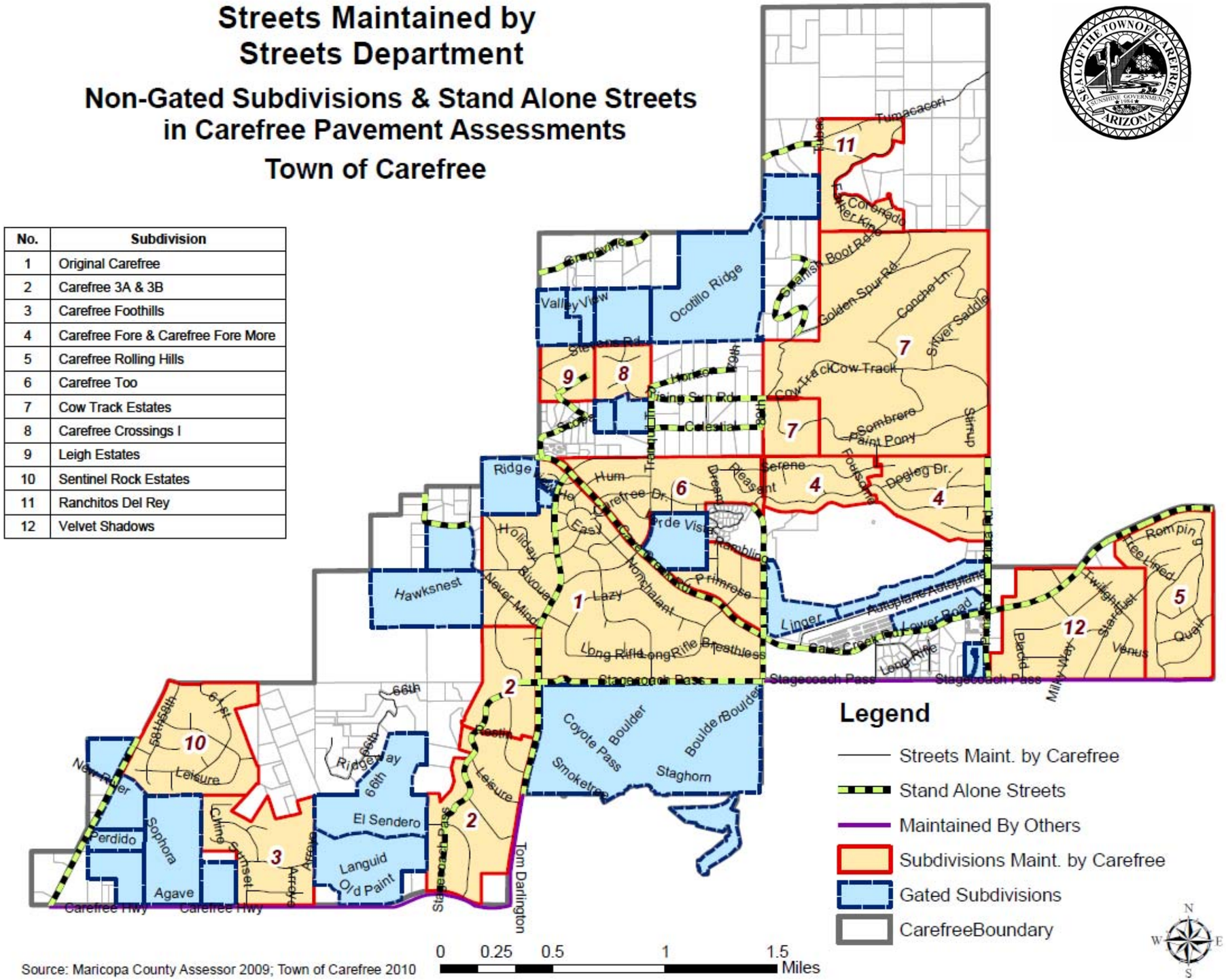
(This page is intentionally left blank.)

Streets Maintained by Streets Department

Non-Gated Subdivisions & Stand Alone Streets in Carefree Pavement Assessments

Town of Carefree

No.	Subdivision
1	Original Carefree
2	Carefree 3A & 3B
3	Carefree Foothills
4	Carefree Fore & Carefree Fore More
5	Carefree Rolling Hills
6	Carefree Too
7	Cow Track Estates
8	Carefree Crossings I
9	Leigh Estates
10	Sentinel Rock Estates
11	Ranchitos Del Rey
12	Velvet Shadows



Source: Maricopa County Assessor 2009; Town of Carefree 2010

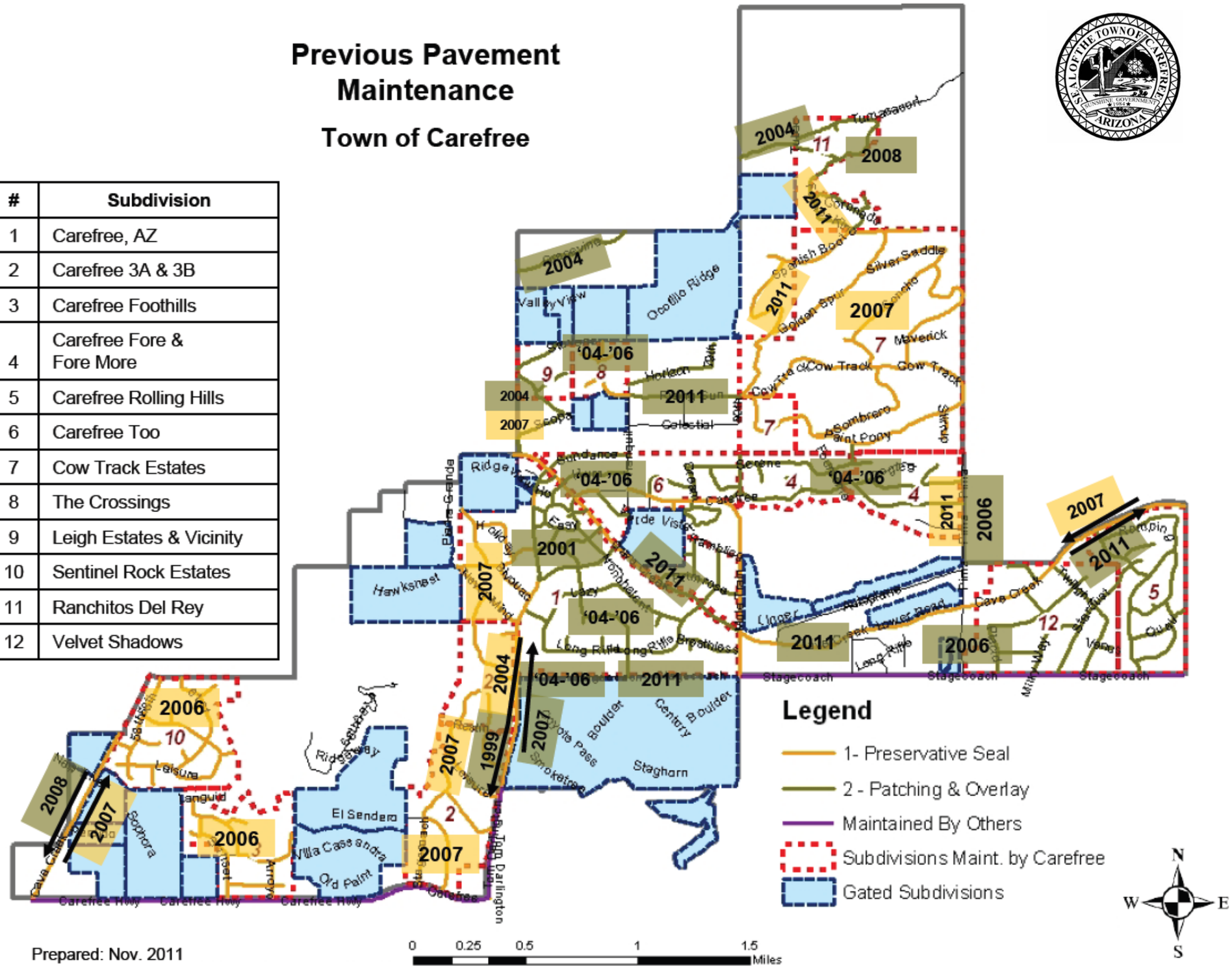
(This page is intentionally left blank.)

APPENDIX V-2
MAP OF PREVIOUS PAVEMENT MAINTENANCE

Previous Pavement Maintenance

Town of Carefree

#	Subdivision
1	Carefree, AZ
2	Carefree 3A & 3B
3	Carefree Foothills
4	Carefree Fore & Fore More
5	Carefree Rolling Hills
6	Carefree Too
7	Cow Track Estates
8	The Crossings
9	Leigh Estates & Vicinity
10	Sentinel Rock Estates
11	Ranchitos Del Rey
12	Velvet Shadows

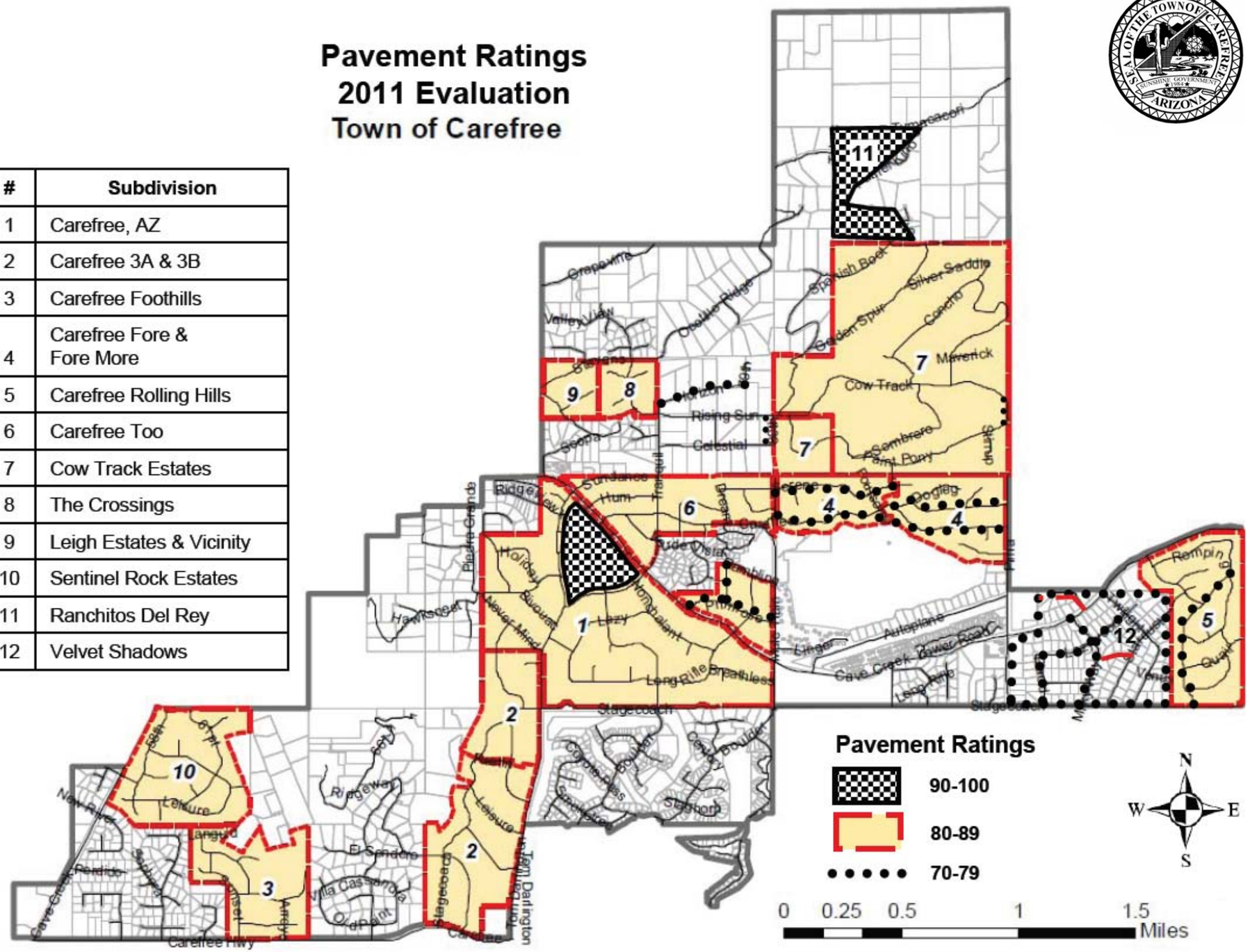


(This page is intentionally left blank.)

APPENDIX V-3
MAP OF
PAVEMENT
RATINGS

Pavement Ratings
2011 Evaluation
Town of Carefree

#	Subdivision
1	Carefree, AZ
2	Carefree 3A & 3B
3	Carefree Foothills
4	Carefree Fore & Fore More
5	Carefree Rolling Hills
6	Carefree Too
7	Cow Track Estates
8	The Crossings
9	Leigh Estates & Vicinity
10	Sentinel Rock Estates
11	Ranchitos Del Rey
12	Velvet Shadows



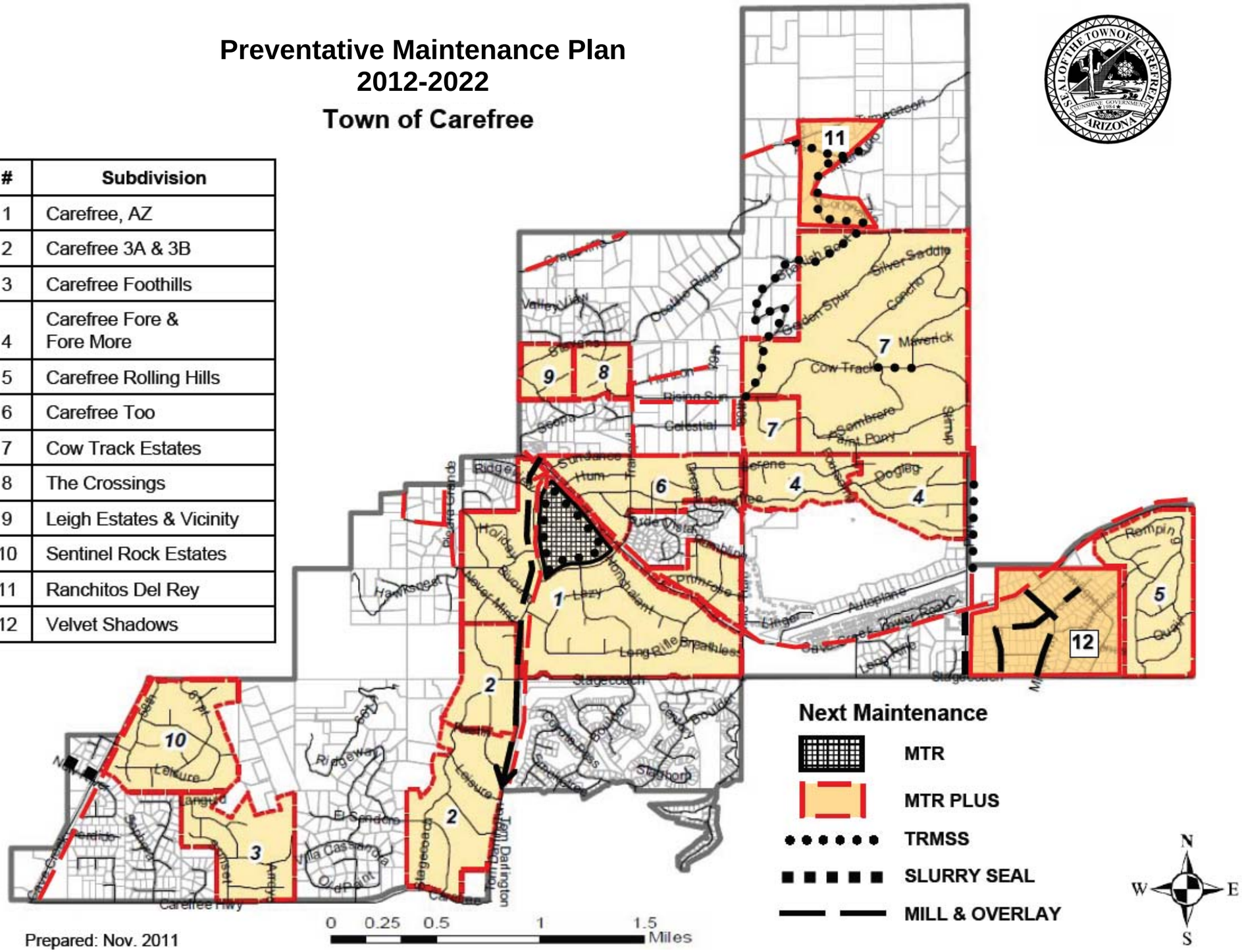
Prepared: Nov. 2011

(This page is intentionally left blank.)

APPENDIX V-4
MAP: PREVENTATIVE MAINTENANCE PLAN
2012-2022

Preventative Maintenance Plan
2012-2022
Town of Carefree

#	Subdivision
1	Carefree, AZ
2	Carefree 3A & 3B
3	Carefree Foothills
4	Carefree Fore & Fore More
5	Carefree Rolling Hills
6	Carefree Too
7	Cow Track Estates
8	The Crossings
9	Leigh Estates & Vicinity
10	Sentinel Rock Estates
11	Ranchitos Del Rey
12	Velvet Shadows



Prepared: Nov. 2011

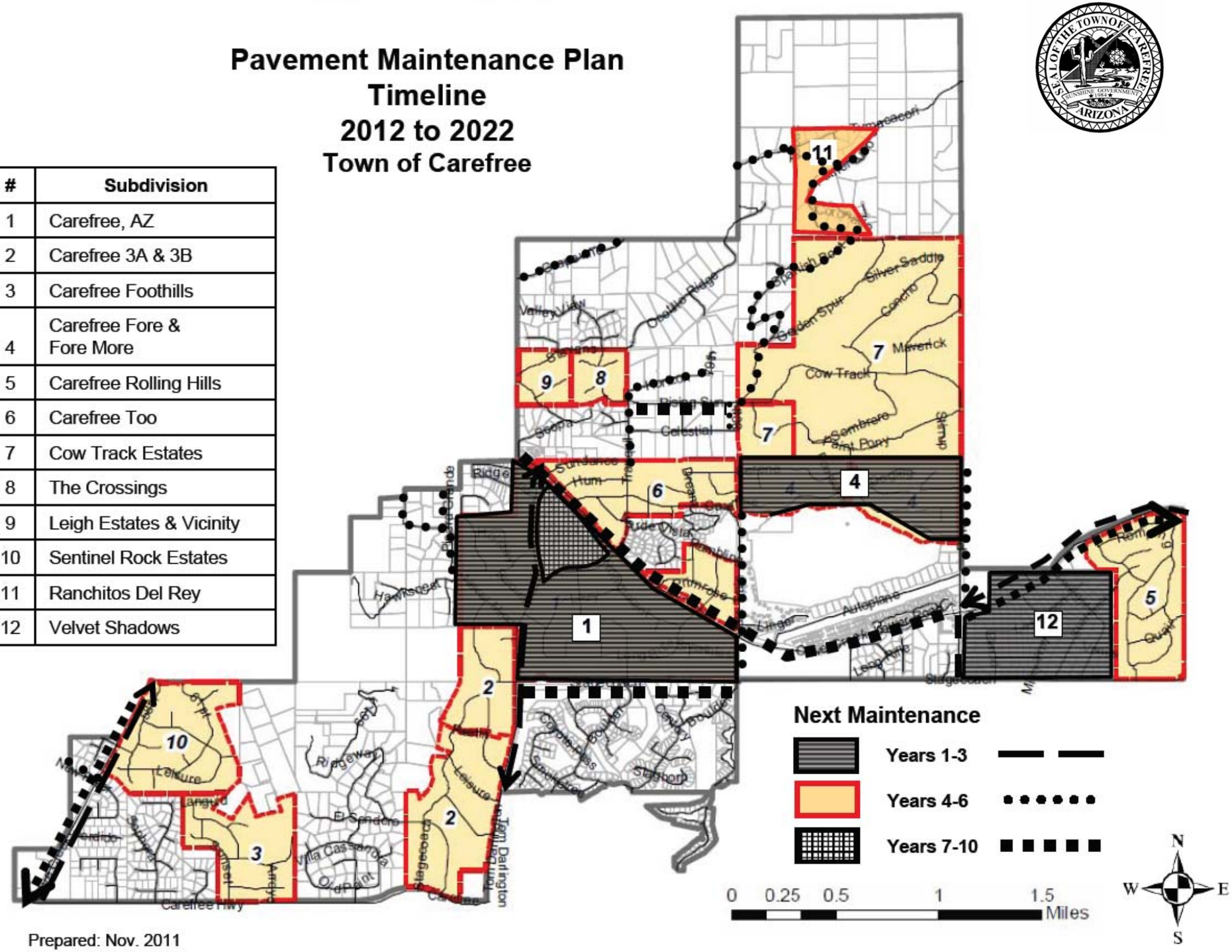
(This page is intentionally left blank.)

APPENDIX V-5
MAP OF PREVENTATIVE MAINTENANCE PLAN TIMELINE

Pavement Maintenance Plan Timeline 2012 to 2022

Town of Carefree

#	Subdivision
1	Carefree, AZ
2	Carefree 3A & 3B
3	Carefree Foothills
4	Carefree Fore & Fore More
5	Carefree Rolling Hills
6	Carefree Too
7	Cow Track Estates
8	The Crossings
9	Leigh Estates & Vicinity
10	Sentinel Rock Estates
11	Ranchitos Del Rey
12	Velvet Shadows



Prepared: Nov. 2011

(This page is intentionally left blank.)