San Ignacio Heights Street Maintenance Plan

A Roadmap Forward to Uniform Pavement Maintenance

January 2023

San Ignacio Heights Subdivision Boundary and Streets.

EXECUTIVE SUMMARY

GENERAL

San Ignacio Heights is located in Green Valley AZ an unincorporated community in Pima County. Each of the 80 subdivisions in Green Valley has an HOA. Many of these are responsible for street maintenance. Each HOA is represented by the Green Valley Council. It incorporated as an Arizona 501(c)(4) Corporation in 1973. The Council is an all-volunteer organization that serves as the community's "Civic Voice." It acts as Green Valley's liaison for governmental relations with local municipalities, the City of Tucson, Pima County, the State of Arizona, as well as Federal and Tribal governments.

San Ignacio Heights (SIH) was developed by Fairfield Homes beginning in 1990. The Community was constructed in four phases, with portions of the Community being built in 1990, 1991, 1992, and 1997. This makes the infrastructure, streets, sidewalks, sewer and water lines approximately 25 to 32 years old.

There are 159 homeowners in the subdivision. The subdivision is about 55 acres in size. There are about 20 acres of common areas. There are about 2.3 miles of 26 foot wide streets and about 0.2 miles of 42 feet wide Desert Jewel. SIH does not own the first 700 feet of Desert Jewel off Camino Del Sol.

FINDINGS

SIH streets were constructed by Fairfield Homes the developer. There were minimal or no standards required. There was no inspection by any governmental unit. The average life expectancy of an asphaltic concrete in this geographic region is approximately 25-35 years depending on how well they are maintained. SIH streets have been well maintained. SIH streets were built on soils that are a good road base. SIH streets are beyond their designed service life. Based on a detailed study reported on April 6, 2022 by Frank Civil Consulting 1/ most if not all of the streets should be milled and replaced with new asphalt. These findings are similar to those of other HOA's of similar age in Green Valley (Desert Hills II for example). Maintenance costs will continue to increase until the street surfaces are eventually milled and replaced with new asphalt. If left untreated asphalt will breakup and fail completely to a surface with potholes and broken asphalt. There have been and continue to be discussions through the Green Valley Council about the possibility of Pima County assuming maintenance/ownership of streets in Green Valleys HOA. However, there are considerable obstacle's.

CONCLUSION

Based on the findings, the SIH Roads Committee recommends completely milling and replacing the 2 ¼ inch layer of Asphalt Concrete (AC) on the streets to the standard of 2 to 2.5 inches for local streets and 3 inches for cul-de-sac as soon as possible.

INTRODUCTION

Arizona is the sunniest state in the United States. In Tucson there are an average of 3852 hours of sunlight per year (of a possible 4383) with an average of 10 hours and 32 minutes of sunlight per day. All that sun and heat are the leading cause of deterioration for asphalt. This is not unlike the asphalt underlayment on the roofs of our homes. It also deteriorates, becomes brittle and leaks.

Asphalt concrete or hot mix asphalt is made up of specified crushed rock and sand (Mineral Aggregates), asphalt liquid binder and mineral fillers). The harsh UV rays of Arizona's sunshine erode the surface of asphalt. UV rays combine with oxygen in the air to create a chemical effect — or "oxidation" — on asphalt. Oxidation steadily breaks down the asphalt's binders (or the refined petroleum product that gives asphalt its spreadable, watertight features), which leads it do become brittle and disintegrate.

While the sun is — on the whole — damaging to asphalt, Arizona's sunny climate does have its benefits. In other climates that experience longer, colder winters, a continuous "freeze-thaw" temperature cycle can seriously damage asphalt. When temperatures regularly dip below freezing and rise again, ice and warm, expanding air can cause deep cracks in asphalt's surface. Arizona avoids this cycle which is good for asphalt's lifespan.

Seal coating asphalt acts as a form of sunscreen for asphalt. Arizona asphalt should be seal coated periodically. Seal coats provide a wearing surface to reduce the impact of sun and storm water help to keep asphalt from becoming brittle and fills small cracks to keep water, dirt and debris out. Seal coating and chip seal can optimize the life of asphalt pavement when appropriately used.

Starting in mid-June and running through the end of September, Arizona's monsoon season brings heavy downpours. If an asphalt roadway is degraded enough these sudden intense rainfalls can erode damaged pavement and pond water allowing water to infiltrate to the road base and cause it to lose it structural integrity.

Because of the dry, warm environment, asphalt can be laid during most of the year (temperatures 45 degrees and rising). However, because of hot summers and monsoon season October through May are the best months to complete work. This is also the time with seasonal owners and renters and year round residents are absent. However, May through July can also be the most expensive time to do work as Contractors are solicited during those times when residents are absent.

As would be expected with changing board and committee members, San Ignacio Heights has had different types of pavement remediation over the last approximate 30 years. This has created a lack of uniformity in pavement conditions. Also, at 30 years the pavement has deteriorated to where further remediation is not effective in preventing further damage and a waste of homeowners money.

The purpose of this plan is to provide "A Roadmap Forward to Uniform Pavement Maintenance".

This plan is a living document, a blue print that the HOA board, roads committee and homeowners use to maintain the roads that we own in common. This helps us maintain and protect the investment each homeowner has in our streets. It provides future boards and roads committees with baseline and historical information on what has been done, when, where and why it was done and provides a basis for sound funding.

PAST STREET MAINTENANCE

Listed below are the major street maintenance projects conducted by the HOA over the last 26 years. These project were initiated and completed by the HOA Roads Committee. Records 2/ that include bids and billings have been maintained by the Roads Committee.

2022 - Frank Civil Consulting is $4,675

2017 - Bates Paving and Sealing - -$62,877 Crack sealing and overall sealing of all roadways except Desert Jewell

2016 – Bates Paving and Sealing - $137,850 included; Wescotta Ct, W. Mariquita (below Wescotta Dr.), S Anastasia Ct., West Circulo de la Pinata, W. Acala, S. Campina Ct., W. Mariquita (at Ramada) and intersection of Acala and Marquita. Crack seal Desert Jewell from Camino del Sol to below Emelita Dr.

2016- $4,870 Ace Asphalt – Repair Westcott Dr. & Wescotta Ct.

2015 - $13,286 Bates Paving and Sealing - Repair intersection of Wescotta Dr. and Mariquita, and cul de sac on Anastasia Ct.

2015 - $5,522 Bates Paving and Sealing – Anastasia Ct.

2014 - $4,414 Bates Paving and Sealing Asphalt Repairs –Anastasia Ct. & intersection of Wescott and Marquita

2012 - $58,665.09 Bates Paving and Sealing – Road repair, crack sealing and overall road sealing

2008 – SIH HOA received a bid from Bates to pulverize and process and reuse onsite 4 to 6 inches of all the streets for a proposed cost of $704,267. Excluding a list of items.

2008 - $36,613 Bates Paving and Sealing - Repairs and Seal coating

2007 - $38,613 Bates Paving and Sealing – Anastacia and Campina cul de sacs & Crack Seal all Streets.

2004 - $28,511 Ace Asphalt – Sealing and Repair Various locations

2002 - $9,816 Sunland – Crack Seal and Repair

1999 - $20,832 Sunland – Crack Seal & Seal Coating

1996 – $13,165 Saguaro - Seal Coating

Total Streets Maintenance 1996 to 2018 equals $439,691

There are about 65 two foot sewer access points with manhole covers and about 65 water access covers and survey monuments 8-10 inches in size. These require special attention during street maintenance operations. Paving companies charge to lower, then raise and reset them when repaving.

SAN IGNACIO STREETS

To better manage the street network, minimum standards have been adopted for all classifications of streets. These standards can be utilized in determining strategies and alternatives for maintenance, rehabilitation, and reconstruction activities to meet a goal of level B or better.

General Description of the driving surface

Level A Pavement is in relatively excellent condition, may require routine maintenance to arrest early signs of deterioration and to extend the pavement life

Level B Pavement is in very good condition, needs preventative maintenance to arrest early signs of deterioration and to prevent the development of pavement problems.

Level C Pavement is in somewhat good condition, needs routine and preventative maintenance to maintain relatively good performance level. Pavement is starting to deteriorate and is approaching a critical level.

Level D Pavement in fair condition, continuing to deteriorate and starting to suffer a reduction in performance. Beyond this point the rate of deterioration and cost to repair increases significantly. This level is a critical pavement condition.

Level E Pavement is in poor to very poor condition, needs major patching and repair including pothole repair.

Current Pavement Conditions are summarized in Table 1. below. This table shows each street, the sq. yds. of surface area and the current street condition level. This condition rating was developed based on the Frank Civil Consulting report and the knowledge and experience of Andy Miller and Al Loomis.

Table 1. San Ignacio Heights Street Inventory and Status as of January 2022.

Street Name	**Square Yds.**	**Current Level**
Acala St	3675	D
Amulet PL	2004	D
Anastacia Ct	2447	D
Champia Ct	2527	C
Circulo de la pinata	4366	D
Constancia	1684	D
Emelita Dr	3921	D
Manolita Dr	1884	D
Mariquita St	9815	C
Westcotta Dr	3505	D
Wescotta Ct	2007	C
Desert Jewell SIH Section	7056	C
Total	**44891**	

San Ignacio Heights Geology and Soils

Green Valley sits in the huge geologic Basin and Range Province that extends from southern Oregon to central Mexico. This mountain-valley topography results from a earth plate tectonic period of extension from about 15 to 5 million years ago that broke the crustal rocks of western North America into blocks, separated by steeply dipping faults. Some of these crustal blocks were uplifted to form ranges; other blocks subsided as much as 2.4 mi to form deep basins. Streams cut deep canyons into the rising ranges and transported eroded boulders, cobbles, gravel, sand and clay to aprons of sediment - alluvial fans and bajadas - in nearby subsiding basins. 3/ Green Valley sits in a basin trough. Sediments eroded over millions of years from the sides of the Sierrita and Santa Rita Mountains were and are carried north by the Santa Cruz River like a conveyor belt. The frontage road and I-19 are the western edge of the conveyor belt.

The streets and homes in SIH are built on 1 to 5 million year old dissected alluvial fan remnants and are at an elevation of about 3000 feet. These materials eroded from the ancient Sierrita Mountains to the west. McGee Ranch development is at the base of these mountains. Keystone Peak 6188 feet and Samaniego Peak 6000 feet are two prominent peaks that remain. The SIH streets and houses are on these very old stable non-flooding tops or flat terraces of these alluvial fan remnants. Because of these flat terraces cuts and fills were minimized in development of SIH. These terraces are armored by a large amount of gravel, cobble and boulders that have prevented erosion. The soils that formed in this alluvium are very old and stable. They have been further cemented by CaCO3 that has, over millions of years, blown from salt rich dust in surrounding playas. The San Ignacio Golf Course fairways and greens are located, for the most part, on the bottoms of these alluvial fan remnants which are not armored and have thus allowed for erosion or dissection. These bottoms occasionally flood.

The Surficial Geology Map 4/ describes two units in SIH. Qo2 – Early Pleistocene alluvium (~1 to 2 Million years old, highly dissected alluvial fan remnants with moderately well preserved fan surfaces and strong soil development. QTs - Early Pleistocene to Pliocene alluvium (~1 to 5 million years old). Unit QTs consists of very old, deeply dissected and highly eroded alluvial fan deposits. QTs surfaces are alternating ridges and deep valleys, with ridge crests typically 10 to 30 meters above adjacent active channels. The thickness of QTs deposits is not known. QTs surfaces are drained by deeply incised tributary channel networks. QTs deposits are dominated by gravel ranging from boulders to pebbles. Deposits are moderately indurated and are quite resistant to erosion because of the large clast size and carbonate cementation.

San Ignacio Heights Streets Subgrade (Soils Information)

The soils in the SIH HOA are an excellent road base. This is a main reason why our streets held up so well. They are a great mix of cobble, gravel, sand, silt and clay that is further cemented in areas with CaCO3 (lime) the same stuff used in concrete. The ratings on the USDA Soil Survey 5/ show that you can drive heavy military vehicles on them with little effect. The majority (47 acres) of the soils in the approximately 50 acre area delineated in the map below have an American Association of State Highway and Transportation Officials (AASTHO) rating of A-1 (excellent) for subgrade.

AASHTO Group Classification (Surface)—Pima County, Arizona, Eastern Part San Ignacio Heights HOA Soil Map

AASHTO Group Classification (Surface)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
	Arizo-Riverwash complex, 0 to 3 percent slopes	A-1	2.2	4.4%
60	Pinaleno-Stagecoach complex, 5 to 16 percent slopes	A-1	44.9	90.8%
81	Tubac gravelly loam, 1 to 8 percent slopes	A-4	2.4	4.8%
Totals for Area of Interest			**49.4**	**100.0%**

AASHTO group classification is a system that classifies soils specifically for geotechnical engineering purposes that are related to highway and airfield construction. It is based on particle-size distribution and Atterberg limits, such as liquid limit and plasticity index. This classification system is covered in AASHTO Standard No. M 145-82. The classification is based on that portion of the soil that is smaller than 3 inches in diameter.

Group A-1. The typical material of this group is a well-graded mixture of stone fragments or gravels, coarse sand, fine sand, and a non-plastic or slightly plastic soil binder. This group also includes stone fragments, gravels, coarse sand, volcanic cinders etc., without a well-graded binder of fine material. General Rating Subgrade Excellent to Good. Road base material used in road construction is classified as A-1. Thus the soils in SIH qualify as road base.

Detailed Street and Sidewalk Network Condition (Frank Civil Consulting Report)

Frank Civil Consulting completed an investigation of the existing asphalt conditions present in SIH. The purpose of this investigation was to evaluate existing pavement, drainage and related components and recommend remediation options. Visual examination of the site took place on Wednesday, March 2, 2022. During this examination, the existing pavement surfaces were reviewed and existing drainage and conveyance systems evaluated. Frank bored holes in the streets at select locations to measure the thickness of the pavement and to observe its condition. Based on 6 borings the thickness of the Asphalt Concrete (AC) is about 2 ¼ inches. The Aggregate Base Course (ABC) is 3 plus inches thick.

The Frank report provided the following summary.

> *In synopsis of the San Ignacio Heights Community, it was unfortunate that the Community has endeavored completing multiple different types of pavement remediation over its historical life. This has completed a lack of uniformity of surface appearance and structural conditions and has created difficult and expensive maintenance costs moving forward. These costs would have been greatly reduced had the Community chosen to complete more uniform pavement maintenance practices. Moving forward, Frank Civil Consulting's challenge will be to reestablish a baseline street condition for each street that will provide uniform appearance, structural condition, and continuity of regular ongoing maintenance. Over a significant amount of the asphalt surface, we noted considerable delamination due to over application in an attempt to a significant cosmetically cover over the structurally fatigued asphalt. The seal coat product that will continue to delaminate until removal and replacement of the pavement is completed. Further attempts to seal coat will only delaminate as well. We identified isolated concrete structural fatigue due to shallow tree root systems that should be addressed as a part of future pavement maintenance projects.*
>
> *Based on the recommendations provided within this report, should the board choose to pursue the work as identified, it can be expected that the remediation completed therein will provide the Community a good wearing surface for 3-5 years before further ongoing maintenance is recommended (excepting crack filling which should be evaluated every 12-18 months) or other unidentifiable structural repairs not evident at the time of this investigation. In addition, a reserve analysis of ongoing pavement maintenance should be part of a long range plan where corrective work is conducted annually over the life of the pavement to insure maximum life expectancy. This*

long range plan should incorporate the eventual and ultimate need to address complete removal and replacement of existing asphalt.

RECOMMENDATIONS

Based on the Frank Report the SIH Roads Committee developed the following options for streets maintenance. In each option the streets are completed according such as Pima County Standards 6/. These Pima County Standards prescribe 2 inches of Asphalt Concrete on local streets and 3 inches in cul-de-sacs. The table in Appendix A. shows cost estimates developed by Frank Civil Consulting, and estimates obtained by the Roads Committee to verify the Frank estimates.

Option A. Replace some streets and repair others

Option A was developed by Frank Civil Consulting at the request of the Roads Committee. It relies on the past work done by the HOA to repair and repave sections of the streets over the past years. Some streets are in better condition than others and that is reflected in this option. This option also relies on the Frank Investigation of the streets which showed the areas needing the most work. In this plan not all areas would be milled and replaced. The table below shows the cost by street. In this plan all streets would be brought to good repair but not completely milled and replaced.

Option A - per Frank Civil Consulting Plan Dated April 19,2022

Construction Year		**2024 to 2031**
Street Name	**Sq Yds.**	**Cost**
Acala St	3675	$84,286
Amulet PL	2004	$66,772
Anastacia Ct	2447	$79,201
Champia Ct	2527	$33,177
Circulo de la pinata	4366	$147,865
Constancia	1684	$54,828
Emelita Dr	3921	$126,903
Manolita Dr	1884	$62,067
Mariquita St	9815	$175,682
Westcotta Dr	3505	$121,229
Wescotta Ct	2007	$14,980
Desert Jewell SIH Section	7056	$87,262
Total	**44891**	**$1,054,252**

Total one time cost would be $6630 per homeowner. If paid over over 8 years @ $950 per year the cost per homowner would be $7,600 for an inflation (3.8%) adjusted total of $1,208,400.00. In 2023 $950 per homeowner is collected, but work might not begin until 2024.

Pros to option A.

- Likely more easy for most homeowners to fund.
- Does not waste money and other resources by removing some recently repaired areas that are in good condition.

Cons to option A.

- Will require several mobilizations, which is usually about 3-5% of the bid.
- May require more street saw, cut and patch when deep cracks work their way to the surface.
- Does not completely mill and replace streets to establish a new uniform base.

Option B. The HOA would mill and replace all streets.

In option B. each homeowner is assessed $9000 in 2023 for a total of $1,457,936. In 2024 the HOA would replaces asphalt on all streets. Second Option would be to collect $3,000 per year over 3 years. A third alternative for Option B. would be to spread the cost out over 10 years, $1100 per year for a total of $1,789,227 or $11,250 per homeowner. This assumes the historical rate of inflation of 3.8 percent. Any left-over funds remain in an interest bearing roads account and used for ongoing maintenance.

Pros to option B.

- Uniform pavement will reduce maintenance for 20-25 years and make it easier for HOA and Roads Committee to manage.
- A larger project may get a volume discount and lower pricing. Fewer mobilizations, which is usually about 3-5% of the bid.
- HOA aesthetics much improved, will appeal to homebuyers and increase home values.

Cons to option B

- Some homeowners may have a difficult time coming up with the funds.

Option C. Do Nothing

In option C the HOA continues to patch and fix the streets as best it can. The Roads Committee continues to fix the worst areas. The streets continue to deteriorate in this option to the point where they fail beyond repair. In this scenario the roads become so bad that a costly and time consuming complete replacement is required with ABC repair. We have no estimate for this option.

Pros to option C.

- Short-Term homeowners cost reduced

Cons to option C.

- Puts the burden for road replacement on future homeowners
- Increases street maintenance costs

HOW WOULD THE WORK BE DONE

The HOA board will contract with a private company to provide the following services.

1. Construction Requirements -Statement of Work (SOW)
2. Construction Specifications – Based on Arizona, Pima County and surrounding cities specs.
3. Quality Control Work Plan, identify a quality control manager, and technician at a minimum.
4. Bids Solicitation (Presented to Roads Committee and HOA Board for final decision) – Depending on the option chosen we will likely consider a multi-year solicitations in order to get a better price.
5. Traffic Control
6. Construction Inspection at both asphalt plant and onsite at streets. Inspector to observe and document daily construction activities and monitor paving operations.

- mix design verification (burn the sample to measure asphalt content, then run a gradation on the aggregate) to confirm specifications are met.
- density tests performed on the asphalt after compaction to make sure they are achieving compaction to the minimum density required. Density is the most important thing- it directly correlates with the pavement's longevity. Tests should show 90 percent compaction.
- Ensuring Manholes, Water Valves and Survey Monuments are reinstalled, compacted, and sealed correctly

7. Contract Supervisor for private company will recommend payment to HOA when work is completed to specifications.
8. Follow up remediation if any is needed.

The HOA Secretary/Treasurer would serve as the contracting officer (CO). The Chair of the Roads Committee would serve as the contracting officers technical representative (COTR) who signs off that the work has been completed according to the SOW. The Treasurer in consultation with the President of the HOA and the Chairperson of the Roads Committee will issue payment based on an agreed to schedule in the Statement of Work. HOA will notice homeowners on bid winner, work dates and times, etc. and will minimize impact to the extent possible on homeowners.

RISKS

Risks associated with the plan are;
1. The repaving is poorly done. This risk is mitigated by ensuring that diligent inspections are completed according the SOW.
2. Water and sewer lines, that are the same age as the streets, have to be dug up and replaced. This risk is somewhat mitigated by demanding that the new pipes are properly bedded and fill is compacted during installation and the area is repaved according to specifications.

SIH MAINTENANCE PLAN

The table below shows a long-term maintenance plan.

SIH Asphalt Long-term Maintenance Plan			
Year	**Proposed Actions***	**Estimated Cost****	**Actual Cost**
2031	Seal	$80,000	
2034	Seal	$90,000	
2037	Seal	$100,000	
2040	Seal	$110,000	
2043	Chip Seal	$250,000	
2046	Seal	$130,000	
2049	Seal	$140,000	
2053	Mill and Replace	$2,500,000	
* Cracks are sealed annually as they appear			
**Adjusted for historical average 3.8% rate of inflation			

CONCLUSION

The homeowners of SIH own the streets in common. The streets are ours to repair and maintain. There is no city government that taxes us to repair and maintain our streets and sidewalks.

The HOA has homeowners with some skill and expertise who currently serve as volunteers to help us all maintain our streets. We do not have a staff of planners, engineers, technicians, contract officers, contract officers technical representatives, clerical staff, etc.

Current roads committee Chair Al Loomis has 25 plus years' experience in road building and asphalt industry. Andy Miller is past Chair and a 15 plus year member of the Road Committee who understands the work that has been done, problem areas and the history.

Past Road Chairs or Co-Chairs include Gill Le Claire, Vern Evert, Mike McDonald and committee members include Bill Goss, Harley Medgard, Bob Lane, Jim Lambert, Leo Prather, Dan Wilking, Steve Campbell, and Tom Kane. HOA board liaisons have included Bill Allen, Rick Lupu, Bob Mitacek, Dale Miller and current board member John Plantz.

This plan presents the diligent work of these and many other homeowners over the years to did the best they could with the funds they had. This plan is owned by the homeowners and is a living document that is to be used by future homeowners to maintain our streets. Ideally a plan like this would have been put in place when the HOA was first formed. If funds had been collected over the past 30 years for the required street surface replacement it would have fairly spread the burden to all homeowners over the years. Since that did not happen, now is the time to start so that history does not repeat itself.

REFERENCES

1/ Report of Findings San Ignacio Heights Homeowners Association April 6, 2022, Michael Frank, Frank Civil Consulting

2/ SIH Roads Committee 3-ring binder of past activities

3/ Bezy, J.V. and Conway, F.M., 2020. Island Mountains of Southeastern Arizona: Geology, Vegetation & Wildlife. Arizona Geological Survey Down-to-Earth #24, 99 p.

4/ Surficial Geologic Maps and Geologic Hazards of the Green Valley – Sahuarita Area, Pima County, Arizona By Philip A. Pearthree and Ann Youberg Arizona Geological Survey Digital Geologic Map 3. October, 2000, Arizona Geological Survey 416 W. Congress, Tucson, AZ 85701

5/ USDA Natural Resources Conservation Service, Soil Survey of Pima County Arizona. (https://websoilsurvey.sc.egov.usda.gov)

6/ Roadway and Development Streets Standards Manual. Pima County Transportation, Pima County Arizona 2020

Appendix A. Preliminary Cost Estimates for Budget Planning.

San Ignacio Heights HOA Street Mill and Replace Initial Cost Estimates - January 2023						
	Frank Civil	APS	Sunrise	Bates	Pima County	Sahaurita
Mill and Replace or Pulverize and Replace about 46,000 Sq. Yds. with 2 to 3 inches of new AC	$1,010,047.50	1,000,000.00	1,000,000.00	1,138,500.00	875,000.00	804,500.00
Manhole, Utility Adj, 65 Manhole, 65 wv/sm	$52,400.00		$52,400.00		$52,400.00	$97,500.00
Concrete Repair	$6,450.00	$6,450.00	$6,450.00	$6,450.00	$6,450.00	$6,450.00
Drainage Repair	$3,500.00	$3,500.00	$3,500.00	$3,500.00	$3,500.00	$3,500.00
Traffic Control	$9,000.00				$9,000.00	$9,000.00
Gen Contractor/Tech. Asst.	$114,217.00	$114,217.00	$114,217.00	$114,217.00	$114,217.00	$114,217.00
Sales Tax	$37,867.00	$37,867.00	$37,867.00	$37,867.00	$37,867.00	$37,867.00
Subtotal	**$1,233,481.50**	**$1,162,034.00**	**$1,214,434.00**	**$1,300,534.00**	**$1,098,434.00**	**$1,073,034.00**
Contingency	$224,455.00			150,000.00		
Total	$1,457,936.50					
Cost Per Homeowner without Contingency	$7,757.75	$7,308.39	$7,637.95	$8,179.46	$6,908.39	$6,748.64
Cost Per Homeowner with Contingency	$9,169.41			$9,122.86		

All estimates are for mill and replace with new Asphalt Concrete (AC) except for Bates estimate which is for pulverizing the existing AC and mixing it with 4 inches of the Aggregate Base Course (ABC). This process if done right can create the best possible ABC because it adds the old sticky asphalt to the ABC and compacts very hard. However, you have to get the right mix between the old AC and old ABC. So operator experience is very important. They would then put down 2" of new AC on top with 3" in the cul-de-sac's. Based on years of past experience with SIH HOA Bates feels that our ABC has problems and that this would be the best possible solution. It could offer the least maintenance over the next 25 plus years. More research is needed on this option. Bates could also do a mill and replace at about the same cost. These estimates are provided as a comparison to the Frank Consulting estimate. The General Contractor/Technical assistance line is for compaction testing of the ABC and AC and other tasks where the HOA does not have the expertise.