

HAMILTON TEXAS STREET REPAIR PLAN 2024

Durable Lasting Repairs & Long-Term Maintenance Planning

As proposed by
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Hamilton, Texas Administrator
& Ratified by
Hamilton City Council

Enhanced Hamilton Street System Plan

2024

INTRODUCTION

It is still the major priority of the City of Hamilton TX to address the “Road and Street” problems that seem to plague our city. As emphasized in the Citizen Survey results of the past few years, and the top listed focus of the 2023 survey, the underground utilities are second in importance to replacing and reconstructing the roadways.

This Plan builds on a street condition survey that was conducted in 2018, updated in 2021, and our ongoing experience in learning to repair our own streets, which is far more cost effective than using subcontracted vendors. Additionally, we have much more control of results, quality of repairs, and labor and material costs in performing our own repairs. To that end we will discuss in this new plan many issues such as purchasing paving equipment and materials, labor and training, and potentially other expenses as well as the time element required to make this proposal effective.

This document borrows on previous classifications and measures of all paved streets within the city limits. During this survey it was also noted if any curb and gutter was present, and the lengths thereof. A “Street needs and assessment study” conducted by Public Sector Consulting in 1998 has been reviewed for compiling this updated 2023 Street Plan. This study classified each street in Hamilton as an artery, a feeder, residential or State maintained street. It also listed the length of each street. This is logical and useful and will remain within the modified plan.

The City Council of 2019-2020 had made the repair and reconstruction of streets a top priority. Previously this Council, in February 2020, met in a called meeting to begin information gathering in order to take action through a plan that would have to evolve as staff continued to gather data. At the February meeting, the council also identified the most used collector streets which were earmarked to preserve and reclaim. The initial plan, as well as older Hamilton Street plans included hiring contractors to do the work for the city. After hiring a contractor to chip seal Lemmons and North Brown in 2020, which consumed the entire annual street budget in that one small project, the Administration decided that the city can do the same work in a more economical way and can better control the quality of street improvement in house.

Funding has always been the limiting issue for fixing streets.

The mind-set in the past has been that the city does not have enough money to do a full depth reconstruction of streets. This was most certainly true when we think about having independent contractors doing the work for the city. To some extent it is still true, but it cannot keep us from having good quality streets. We needed to find a way to fund our street repairs. Presently the responsibility falls on the City Council and City Administrator to find a way to stretch public funds and make the available budgeted amounts cover needed repairs and

improvements without obligating the city to a loan or bond. Council directed city staff to look at how other cities are accomplishing street improvements, and scale the effort to stay within the required Hamilton budget.

City staff first contacted the City of Seguin and the City of Quanah to research this process of fixing streets using city staff. Both cities are not as small as Hamilton, but most all cities have the same pothole and base deterioration issues with city streets. Council and staff tasked themselves to stretch the dollar and put the public funds to the best use.

The city's first attempt to address the designated streets involved hiring a contractor and using the entire year's asphalt budget to chip seal for preservation, 8 blocks of North Lemmons and 5 blocks of North Brown. The contractor's price was almost \$114,000. This chip seal process in the fall of 2020 was procured in order to extend the life of two of our heavily travelled collector routes. Currently most of the Hamilton streets will need more than a chip seal, in fact most will need full depth "base" repairs (FDR), stabilization and a chip seal top layer to provide smooth long-lasting repairs. This will provide roads that will last many years, and an in-house road repair system. This is the most cost-effective process available. This will also provide a way for Hamilton Texas to accomplish more road repairs in a single year.

Current activity:

The chip seal process was observed in action as a training aid, and planning began, to be able to perform the process in house with City employees. Initially this seemed to be the way forward to satisfy our street repair needs, but as noted above most of the City streets will need a full depth reconstruction of the base below the asphalt rather than just a chip seal to restore integrity and durability of the streets. Chip seal will still be required in conjunction with the full base restoration (FBR) for some street repairs locally. As we are still learning this process, due to staff turnover and all of the limitations such as temperatures and density of base materials, additional training is an ongoing need and continual requirement.

The Administration researched different ways to reconstruct street base as well. Council approved the purchase of an asphalt zipper to do full depth reconstruction on streets and began training staff on the equipment in March **2021**. Additional street machinery is being purchased to adequately outfit the Hamilton Street department with the equipment needed to accomplish all street repair. Since ALL streets in Hamilton Street Department's responsibility are assessed to be in fair or poor condition in 2023 it is recommended that sufficient equipment be purchased to be able to run two crews simultaneously. There is an issue also of "seasonality" of road repairs as asphalt will not compact properly or achieve structural integrity below 65 degrees. **If we attempt to work this plan with only one crew it is expected it will never be completed and citizens of Hamilton will continue to be dissatisfied.**

Since all of the City's water and sewer lines are under the middle of city streets, the City Administrator realizes that city staff will be repairing and rebuilding roads that may need to be excavated at a later time due to water or sewer leaks. This also supports the second crew requirement. However, this repair process allows for smaller repairs to be done effectively as

well as processing larger roadways. By city staff having the ability to rebuild streets, the city is ensured great economic benefit, savings, and better-quality road maintenance after these repairs.

Additionally, it has been observed that ATMOS excavates gas lines that are also beneath city streets, and there is no existing process to track and monitor their activities to ensure restoration of road surfaces after the completion of their activities. It is recommended that Atmos gets a “permit” for each area they excavate which should be logged in a file. This file would then be cleared when ATMOS requests inspection of their completed road repairs and the repair is verified to have been completed up to city standards. Presently there are locations in Hamilton awaiting them to return and perform restorative repairs.

Atmos should be required to complete the repair at the same quality or pay for Hamilton Road Department to do the work.

The final top layer to this planned Full Depth Base Reconstruction Road Repair is the chip seal, as a load bearing smooth driving surface is the desired end result. The city will continue to work toward acquiring the machinery that will help obtain this level of quality that the community desires. The superior durability, longevity and quality of the road surface justifies the cost. Although the primary load capability is derived from a strong base layer, the chip seal adds stability, a seal from weather for the underlying layers, and a strong smooth driving surface.

This proposed plan also takes into consideration the current effectiveness of storm water drainage, traffic flow, the existing condition of the driving surfaces, and the structural integrity of the existing pavement. Adding missing curbs and gutters adds cost. However; by increasing edge thickness of asphalt roads being repaired, durability and longevity is also increased. Curbs decreases the frequency of repair and long-term cost. Cost estimates for these proposed improvements are provided at the end of this report.

There are approximately 39 miles of streets within the City. Approximately 10 miles of those streets have some form of concrete curb and gutter, which is primarily located in the downtown area. The conditions used to classify the streets are identified below.

Street Classification System

Condition	Description
Excellent	New
Good	Small amounts of oxidation, cracking, ravelling, and no base failures; good maintenance has been practiced.
Fair	Oxidized and inactive; moderate surface cracking and scattered failures.
Poor	Numerous base failures, cross-hatched cracking; unpaved streets, very narrow driving surfaces, poor drainage problems.

In 2021 approximately 5.5% of our city road were listed as “good” condition. A 2024 current assessment of city streets revealed deterioration and that there are presently no city-maintained roads that can be considered “good” or “excellent”. This demonstrates that the

existing process and capacity is not sufficient to “gain ground” on the needed quantity of lasting quality road repairs

Currently weather conditions prevent ongoing work intended to rectify this situation. Road work and asphalt repair and replacement has a built-in seasonality by the nature of the process. Asphalt cannot be effectively repaired or replaced in weather that does no consistently maintain 65 degrees or more. A common slogan with asphalt work is: “Heat = Compaction” which is essential for repairing asphalt or laying new asphalt. Below the 65-degree threshold sufficient compaction for durability and longevity does not occur. Although this assessment of city streets is not encouraging; the state of the City of Hamilton Road Department is encouraging. Some “new” pieces of road repair equipment have been acquired, training has taken place, and the road repair process has begun successfully at a much more economical cost structure.

As this is a new process in house we are still in a “learning curve” but outlook is extremely positive. A properly trained and experienced “Zipper Team” is supposed to be capable of deep base reconstruction and compacting of between 300’ and ½ mile per day depending on the size/ model of the “Asphalt Zipper”™. This is dependent on also the other available support equipment required for the process and the width of the target street to be repaired. This is with an experienced crew and utilizing the proper process which includes sweeping, full depth reclamation, crushing and re-using the existing asphalt materials. This excludes the chip seal process initially.

As was noted previously **funding has always been the limiting factor in “getting” the road repairs in Hamilton completed, and still is the barrier to the advancement** of this project. It was noted above that there is some new equipment and Hamilton has started repairing its own streets. However, in order for Hamilton to actually “catch up” and get roads into a properly repaired state, patch potholes that arise in this time frame, provide road repairs after utility work etc., there needs to be 2 full crews with the proper equipment working toward completion of this project. Seasonality will provide approximately a 9 month “road repair” window annually and under these parameters it will still require several years to complete this work, although “work in progress” will provide improved driving surfaces and improved levels of customer/ resident satisfaction as the street repairs progress. The new target date of project completion is dependent on equipment acquired and available grants/ city funding etc.

As it was defined in the original street plan it was recommended that the primary arteries of the city are repaired first. These arteries were defined as:

Major Arteries:

Major streets that carry high volumes of traffic through the city:

• S.H. 36	• FM932
• U.S. Hwy 281	• FM1241
• FM 218	• Railroad Street

Note that all of these major streets are maintained by TxDOT except Railroad/Blansit Road and are not relative to this discussion. Railroad/Blansit Road will be deferred temporarily as it has become a favorite route of Tractor Trailer traffic wishing to avoid the tight turn at the intersection of US 281 and S.H. 36 due to the difficulties presented from the size of the small

intersection. When Blansit/ Railroad Street is repaired it will need to be transitioned to a “Load Bearing” road surface to provide strength, longevity and durability, or an alternate traffic route will need to be provided for big truck traffic.

Collectors

Collector streets feed the arterials. The main collectors in the north part of Hamilton consist of Little Street, McDurmitt, and McCaleb. Clarke Street, Cage Street, Lemmons Street, Ross Street, and Henry Street are the major collectors in the northwest. Ross Street and Henry Street also extend into the northeast section of Hamilton as a Collector. They are joined here by Pecan Street, Bell and Hall Street as additional Collectors. Grogan, Shive Road, Taylor, Crews, and Standifer make up the main Collectors in the southwest section of Hamilton. This leaves Jonesboro Road, Pecan Street, Lloyd and Bell Street in the southeast section. Each of these streets are high priority for rehabilitation and expenditures because of high traffic volume.

Residential

Residential streets feed the collectors. All other streets within Hamilton are classified as residential. Residential streets have considerably lower traffic volumes and do not deteriorate as quickly as the arterials and collectors. Therefore, residential streets are usually a lower priority for rehabilitation procedures and expenditures.

All of the streets in Hamilton are rated as "fair" or "poor" and need improvement. These streets are in their current conditions because of age, inadequate sub-grade preparation, poor quality base material (or insufficient quantity), excessive traffic loading, and inadequate maintenance. The existing street system in Hamilton needs rehabilitation to improve the quality of streets.

Specific problems regarding the streets in Hamilton are as follows:

- Most streets need to be completely scarified and reconstructed.
- Poor drainage – corrective actions needed.
- Narrow streets, lack of curb and gutter and a lack of storm sewers contributes greatly to low life expectancy of streets. Asphalt thin on edges.
- Asphaltic low water crossings located on McDurmitt Street just north of East Little Street, on Ross Street north of Pecan, and on Pierson east of Bouldin there are low water crossings with no culverts. Water travels across the roadway and comes into direct contact with the asphalt pavement. Adequate culverts should be installed or the crossings should be constructed of concrete to prevent erosion and repeated saturation of the pavement structure.
- Exposed utilities crossing a bridge at Henry and Railroad and another on a low water crossing on Pierson east of Railroad. Each of these situations creates a potential hazard for vehicular traffic and should be replaced beneath the driving surface.

PROPOSED STREET SYSTEM IMPROVEMENTS

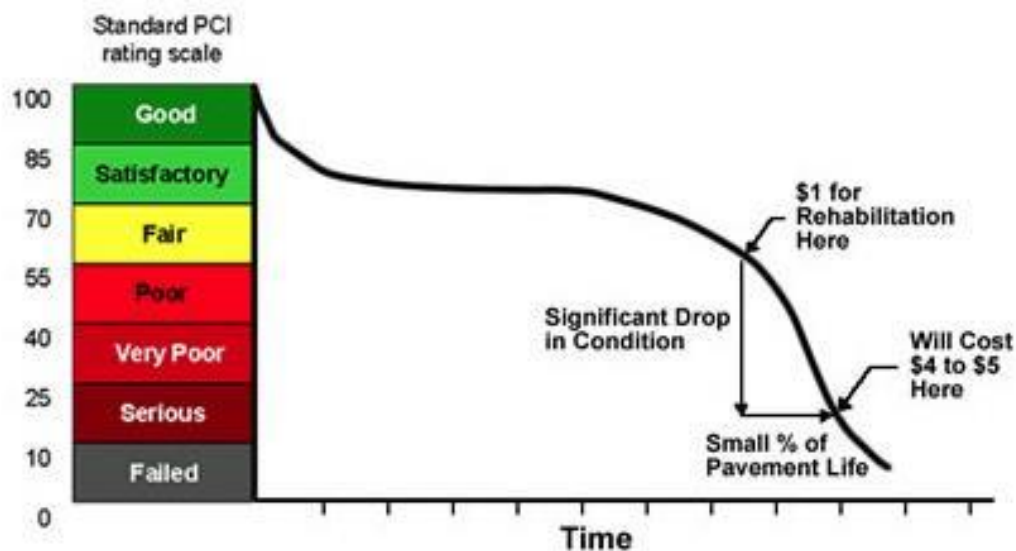
GOALS AND OBJECTIVES

The goal of the street system plan is to improve the existing street system in Hamilton through a 10-year plan broken into phases. This will be converted into a smaller plan timeframe if Grant Funding can be acquired. With consideration to existing street conditions, it would seem that initially almost all street repairs will be FBR Full Base Restorations. As overall road conditions improve, chip sealing streets will be a potential fix on a street that has maintained the base integrity over time. To acquire funds and chip seal initial repairs is required to repair streets that will have an expected 8–10-year service life with minimal maintenance and repairs.

Structural integrity of streets is directly influenced by quality of original construction materials, workmanship, and also inspection and periodic maintenance. Curbs and gutters are also critical to long term durability and strength of streets. These help maintain edge thickness and the structural integrity of the road over time. Curbs also help keep water from penetrating the asphalt and delaminating it. Water penetration of the road surface is one of the most destructive risks. Efforts must be made to ensure that these three factors (quality of original construction materials, workmanship, and also inspection and periodic maintenance) are adequately addressed to ensure the City of Hamilton has high quality roadways. The remainder of this section gives several recommendations for rehabilitating streets and describes in detail two surface treatment options.

Pavement Condition Index

The importance of maintenance on city streets can be seen in the Index chart below:



As

shown in the chart, when streets are neglected, the maintenance cost can increase exponentially in just a short time.

Reconstruction Procedures

Sometimes consultation with an engineer and soil testing laboratory may be advisable because the stress from the bottom of the road is more damaging than the stress from the top. Engineering will give a higher degree of certainty because there is no guarantee without data such as geotechnical info and using a falling weight deflectometer. In a \$100,000 project, an engineer will use about 15% from start to finish, 6% for design only with no supervision, and 18% to find utilities as well. Prior to beginning the construction or reconstruction of pavement structures, the city could consult a testing laboratory to ascertain the soil characteristics of the construction area and obtain a recommended pavement structure design. The testing lab will examine the material to determine the gradation, Atterberg limits, and load bearing capacity of the subgrade material. (The Atterberg limits are a basic measure of the critical water contents of a fine-grained soil: its shrinkage limit, plastic limit, and liquid limit. As a dry, clayey soil takes on increasing amounts of water, it undergoes distinct changes in behavior and consistency.)

A Street or roadway is a load bearing structure that must be designed to support a specific type of load and volume of traffic. This structure has several components including the subgrade, base, and surface (wearing) course. The following description for a typical street identifies the location of each of these components:

The **subgrade** usually consists of material that must be scarified and re-compacted in order to achieve the recommended 95% density as determined by an approved test method. A soil test will often indicate that the material must be stabilized with an additive to achieve the required load bearing capacity. Common soil stabilizing additives are lime, cement, P2S1 Stabilizer, and asphalt.

The **base course** consists of a mixture of rock aggregate with small fines that fill in the voids and bind the entire mixture into a load-bearing unit. Through many years of research and testing, the Texas Department of Transportation has developed a specification for roadway base material that is reliable and widely used throughout the State of Texas.

Two types of **surface treatment** are available to the city for topping the flexible base course or existing pavement surface. These two types are Asphalt Penetration Surface Treatment (Chip Seal) and Hot Mix Asphaltic Concrete (Hot Mix or HMA).

The surface penetration type of surface treatment consists of asphalt or emulsion sprayed on the base or existing pavement, followed by application of asphalt covered aggregate. The aggregate is then rolled (compacted) into the asphalt material to produce the driving surface. This procedure can be quite successful when applied properly and regular maintenance is performed. However, one or two surface penetration courses are below 1" thick and do little to level-up an uneven driving surface.

The Hot Mix Asphaltic Concrete (HMA) surface treatment is superior to surface penetration because it is usually installed with a thickness greater than 1", and it adds some structural integrity to the underlying base course. This type of surface treatment has been widely used within the State with favorable results. A common approach to resurfacing existing streets

is to lay a 1"-2" level-up course in order to smooth out any bumps, depressions, or irregularities in the base or existing road surface, and then place a 1"-2" surface course over the level-up.

The HMAC is the most desirable surface treatment because it is a mixture of asphalt and aggregate prepared at a "plant", placed and rolled to the desired thickness – usually 1.5"-2". Penetration surfaces are constructed by spreading oil on the prepared base, covering with aggregate and rolling the aggregate into the oil. As one might expect, the cost of HMAC surface is approximately double that of a 2-course Penetration Surface. The most desirable street layout for drainage and driving is one with a curb and gutter. This is generally a more difficult goal to achieve because of higher costs associated with constructing and modifying roadways to include a curb and gutter and the additional cost of curb or gutter.

The City of Hamilton has approximately 39 miles of streets to maintain on a continuous basis. Maintenance of these streets should be included in the budget for each year, regardless of the apparent condition of the streets. A long-term maintenance plan is being adopted to ensure that all the streets receive the required maintenance each year. This plan is the beginning of this process. It is however dependent on funding. Hamilton will be assessing potential for US/DOT grants as well as other sources.

Maintenance Procedures

- A. Sealing of Cracks by hand-held applicators is usually practiced on hot-mix and any concrete streets which have very few longitudinal cracks resulting from shrinking, swelling, and drying of the asphalt or concrete. A slurry seal is ideal for an overall treatment to seal these cracks, but heated AC-5 liquid asphalt may be applied by hand-held applicators to each crack, and then topped with dry sand. This filler will be flexible as a joint when expansion occurs and it will provide an effective moisture barrier.

***Sealing of cracks that have resulted from failing base and/or subgrade should not be attempted. Reconstruction is the only remedy for this type of crack.

- B. Seal Coating may consist of several different types of material applicators, all designed to be quick and economical, and it rejuvenates the existing asphaltic wearing surface.
1. **Fog Sealing** is a light application of liquid asphalt, usually without aggregate, that is used to fill very small cracks and stop slight oxidation that may be starting in relatively new asphalt wearing surfaces. A fog seal will reduce or eliminate the entrance of air and water into the pavement and reactivate the asphalt. The fog seal material is usually diluted, slow-curing, asphalt emulsion applied at about 0.1 to 0.2 gallons per square yard.
 2. **Slurry Sealing** is a mixture of slow-setting asphalt emulsion with fine aggregate (sand) and mineral filler. Slurry sealing may be considered when cracks in the street surfaces are larger than 1/8" wide and oxidation is obvious. Slurry sealing will fill small voids and make the asphalt surface appear "slick" in texture.
 3. **One-Course Penetration** seal coating (Surface Penetration) can be used to rejuvenate asphalt surfaces that are severely oxidized and dry, but still have

structurally sound base courses. Grade 5 or Grade 6 aggregate with AC-5 or RC-2 is generally used in the warm summer months to seal coat suitable surfaces. Cracks up to 14" width can be covered, but any base failures and potholes should be repaired prior to seal coating.

C. Other Practices

1. **Hot Mix Overlays (HMOL)** may also be considered as maintenance, even though it is more expensive. An overlay can be used over any existing asphaltic surface to fill shrinkage cracks and level up small depressions and irregularities. An overlay will not bridge over any base failure. Such failures should be replaced prior to overlaying. $\frac{3}{4}$ inch of HMAC should be the minimum thickness for an overlay course.
2. **Asphalt Zipper Process of Scarifying and Reconstruction** of existing pavement may be used as a maintenance procedure if sufficient base material exists. The subgrade should be determined satisfactory before considering of this. Scarifying and reconstruction involves scarifying the asphaltic wearing surface with the full depth of the base course, mixing the pulverized asphalt with the base material and P2S1 stabilizer, re-compacting the combined material into a "new" or "recycled" base course, and coating with asphaltic P2S1 Primer coat and a new asphaltic wearing course.

1.1.1 RECOMMENDED IMPROVEMENTS AND COST ESTIMATES

The "Arterial" thoroughfares or State Highways traversing through the city control the traffic patterns in Hamilton. These thoroughfares consist of State Highway 36, Farm to Market (FM) 218, U.S. Highway 281 and FM 932, which is also FM 1241. Another arterial street in the city is Blansit Road, also called Railroad. With the exception of Blansit or Railroad, these arterial streets are maintained by TxDOT.

The second category of streets is "Collectors". Collector streets transport high volumes of traffic to the arterial streets. It is recommended that the City maintain these high-volume streets first (in any priority ranking) because of the historical investment in these streets. Less investment will be required to maintain the initial investment than it will when the street is severely deteriorated.

Upon completion of restoring the collector streets it is recommended that the City maintain the "Residential" streets. Residential streets do not carry the high volume of traffic that the collectors may carry; however, they are important to the residents that depend on the roadways. Restoring residential streets may financially benefit the City less than a Collector, but it will create a more visible improvement to the residents on the restored streets.

After defining each type of street, it is important to determine the type of restoration required. For instance, a street may need to be completely scarified and reconstructed or it may

only require a fog sealing. City residents would probably see a more visible improvement from reconstructing a residential street than from fog sealing a major arterial.

Grogan Street, between Price and Stidham, is classified as a "collector" and is in need of complete reconstruction. McDurmitt, located in the northern section of Hamilton, is also classified as a "collector" and is in need of complete reconstruction. Bell Street, located in central Hamilton, is not a main collector. However, since traffic volumes are large on this street, and it parallels U.S. 281 and Railroad, restoring this street would be a wise choice. Johnson Street, located in the eastern section of Hamilton, also requires complete reconstruction. Boynton Street, by the hospital, is a heavily travelled collector and requires complete reconstruction. The West side of Leslie Street is a frequently used collector and requires reconstruction between Price and Stidham.

It is recommended that the city address the Collector streets which will require complete reconstruction first, it would be advisable to have a second crew with additional equipment to repair potholes, repair streets after utility repairs and also do temporary repairs that become urgent and not disturb the Full base reconstruction/ chip seal repairs that are restoring the main roads back to "Like New" conditions. Mixing in sections that require minor improvements in the same area of town, and addressing the streets that require fewer demanding improvements could also be part of the second crew's functions.

It is also recommended that the city give serious consideration to a street sweeper schedule and run it regularly. Removal of sediment in near-flat areas (gutters, swales, etc.) and along streets where ponding water could be eliminated, would greatly enhance the life of many streets. Moisture which enters cracks destroys pavement structure when it expands by freezing in winter, and by softening poorly constructed pavements in warm months. A street sweeper will eliminate the beginning, or creation, of small "ponds". These and other "road deteriorating" situations can be avoided and increase longevity of roadways. An additional employee would make a regular schedule possible.

It is undesirable and unrealistic to create a 20-year plan at this time. Therefore, this plan will be considered a short-term complete plan, while looking for a solution to the funding solution for the funds necessary to restore Hamilton streets. We do not wish to "punt this down the road". But we also do not wish to put any unrealistic schedules here that further exacerbate expectations and frustrate residents. It is absolutely essential that Hamilton puts together a thorough search and applies for Grant Funding- repeatedly until successful- to fix our streets. It is unrealistic to believe that the streets can be maintained under the current tax base.

Possible funding options (examples):

- **US-DOT Grants**
- **Rural Transportation grants**
- **Rehabilitation grants**
- **Work force grants**

- Philanthropic grants
- Pandemic recovery grants
- Electric vehicle grants
- Job retraining grants
- Etc

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Document Approvals

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City Council Approval by Mayor	Rodney Craddick		08Feb2024
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Procurement Manager <i>(If applicable)</i>			

Street Name	Direction	Collector/ Residential	Street Classificatio n	Length (ft)	Total Sq. Yards	Avg Hourly wages combined	Approximate hours to complete	Labor cost	Full Asphalt restoration cost	Chip Seal	Total Est. Cost. (labor and Matls)
Bell	N-S	Collector	Fair	5530	11,060	\$65.33	84.6	\$ 5,530	\$ 53,862	\$ 20,944	\$ 80,336
Cage St.	N-S	Collector	Fair / Poor	3490	6,980	\$65.33	53.4	\$ 3,490	\$ 33,993	\$ 13,218	\$ 50,700
Clarke St.	E-W	Collector	Poor	1820	3,640	\$65.33	27.9	\$ 1,820	\$ 17,727	\$ 6,893	\$ 26,440
Crews	E-W	Collector	Fair/ Poor	2670	5,340	\$65.33	40.9	\$ 2,670	\$ 26,006	\$ 10,112	\$ 38,788
Grogan	E-W	Collector	Poor	3040	6,080	\$65.33	46.5	\$ 3,040	\$ 29,610	\$ 11,513	\$ 44,163
Hall St.	N-S	Collector	Fair	2700	5,400	\$65.33	41.3	\$ 2,700	\$ 26,298	\$ 10,226	\$ 39,224
Henry	E-W	Collector	Fair / Poor	8050	16,100	\$65.33	123.2	\$ 8,050	\$ 78,407	\$ 30,488	\$ 116,945
Jonesboro Rd.	E-W	Collector	Fair / Poor	3700	7,400	\$65.33	56.6	\$ 3,700	\$ 36,038	\$ 14,013	\$ 53,751
Lemmons	N-S	Collector	Fair / Poor	2870	5,740	\$65.33	43.9	\$ 2,870	\$ 27,954	\$ 10,870	\$ 41,693
Little St.	E-W	Collector	Poor	2670	5,340	\$65.33	40.9	\$ 2,670	\$ 26,006	\$ 10,112	\$ 38,788
Lloyd St.	N-S	Collector	Fair	390	780	\$65.33	6.0	\$ 390	\$ 3,799	\$ 1,477	\$ 5,666
McCaleb	E-W	Collector	Poor	1270	2,540	\$65.33	19.4	\$ 1,270	\$ 12,370	\$ 4,810	\$ 18,450
McDurmitt	N-S	Collector	Poor	2530	5,060	\$65.33	38.7	\$ 2,530	\$ 24,642	\$ 9,582	\$ 36,754
Old Shive Rd.	N-S	Collector	Fair / Poor	1500	3,000	\$65.33	23.0	\$ 1,500	\$ 14,610	\$ 5,681	\$ 21,791
Pecan	N-S	Collector	Fair	5650	11,300	\$65.33	86.5	\$ 5,650	\$ 55,031	\$ 21,398	\$ 82,079
Ross	E-W	Collector	Fair / Poor	11140	22,280	\$65.33	170.5	\$ 11,140	\$ 108,504	\$ 42,191	\$ 161,834
Standifer	E-W	Collector	Fair/ Poor	7840	15,680	\$65.33	120.0	\$ 7,840	\$ 76,362	\$ 29,693	\$ 113,894
Taylor	N-S	Collector	Poor	3350	6,700	\$65.33	51.3	\$ 3,350	\$ 32,629	\$ 12,688	\$ 48,667
Leslie	E-W	Collector	Fair/ Poor	5650	11,300	\$65.33	86.5	\$ 5,650	\$ 55,031	\$ 21,398	\$ 82,079
Sub-Totals				75860	151,720	\$65.33	1,161.2	\$ 75,860	\$ 738,876	\$ 287,307	\$ 1,102,044
2nd St. / Baker	E-W	Residential	Poor	2790	5,580	\$65.33	42.7	\$ 2,790	\$ 27,175	\$ 10,567	\$ 40,531
3st St.	E-W	Residential	Poor	890	1,780	\$65.33	13.6	\$ 890	\$ 8,669	\$ 3,371	\$ 12,929
4th St.	E-W	Residential	Poor	960	1,920	\$65.33	14.7	\$ 960	\$ 9,350	\$ 3,636	\$ 13,946
Alamo	N-S	Residential	Fair / Poor	2590	5,180	\$65.33	39.6	\$ 2,590	\$ 25,227	\$ 9,809	\$ 37,626
Barkley Ave.	N-S	Residential	Poor	1960	3,920	\$65.33	30.0	\$ 1,960	\$ 19,090	\$ 7,423	\$ 28,474
Blansit /Railroad	N-S	Arterial	On Hold	0	0	\$65.33	0.0	\$ -	\$ -	\$ -	\$ -
Boulden	N-S	Residential	Poor	1830	3,660	\$65.33	28.0	\$ 1,830	\$ 17,824	\$ 6,931	\$ 26,585
Boynton	E-W	Residential	Fair / Poor	790	1,580	\$65.33	12.1	\$ 790	\$ 7,695	\$ 2,992	\$ 11,477

Street Name	Direction	Collector/ Residential	Street Classificatio n	Length (ft)	Total Sq. Yards	Avg Hourly wages combined	Approximate hours to complete	Labor cost	Full Asphalt restoration cost	Chip Seal	Total Est. Cost. (labor and Matls)
Brown St.	N-S	Residential	Fair	2950	5,900	\$65.33	45.2	\$ 2,950	\$ 28,733	\$ 11,173	\$ 42,856
Butch	E-W	Residential	Fair	740	1,480	\$65.33	11.3	\$ 740	\$ 7,208	\$ 2,803	\$ 10,750
Cheyenne Mesa	N-S	Residential	Poor	2690	5,380	\$65.33	41.2	\$ 2,690	\$ 26,201	\$ 10,188	\$ 39,079
Coke	E-W	Residential	poor	4140	8,280	\$65.33	63.4	\$ 4,140	\$ 40,324	\$ 15,680	\$ 60,143
College	N-S	Residential	fair	3080	6,160	\$65.33	47.1	\$ 3,080	\$ 29,999	\$ 11,665	\$ 44,744
Dempster	N-S	Residential	Poor	1390	2,780	\$65.33	21.3	\$ 1,390	\$ 13,539	\$ 5,264	\$ 20,193
E. Lee	F-W	Residential	Fair / Poor	500	1,000	\$65.33	7.7	\$ 500	\$ 4,870	\$ 1,894	\$ 7,264
Elm St.	E-W	Residential	Poor	290	580	\$65.33	4.4	\$ 290	\$ 2,825	\$ 1,098	\$ 4,213
Francis Marion Rd.	E-W	Residential	Poor	3730	7,460	\$65.33	57.1	\$ 3,730	\$ 36,330	\$ 14,127	\$ 54,187
Gentry St.	E-W	Residential	Fair	8120	16,240	\$65.33	124.3	\$ 8,120	\$ 79,089	\$ 30,753	\$ 117,962
Hercules	N-S	Residential	Poor	980	1,960	\$65.33	15.0	\$ 980	\$ 9,545	\$ 3,712	\$ 14,237
Hill	E-W	Residential	Fair / Poor	4540	9,080	\$65.33	69.5	\$ 4,540	\$ 44,220	\$ 17,194	\$ 65,954
Hill Top Rd.	E-W	Residential	Fair / Poor	1180	2,360	\$65.33	18.1	\$ 1,180	\$ 11,493	\$ 4,469	\$ 17,142
Hoard	E-W	Residential	Poor	1150	2,300	\$65.33	17.6	\$ 1,150	\$ 11,201	\$ 4,355	\$ 16,706
Howard	N-S	Residential	Fair / Poor	4970	9,940	\$65.33	76.1	\$ 4,970	\$ 48,408	\$ 18,823	\$ 72,201
James St.	E-W	Residential	Poor	650	1,300	\$65.33	9.9	\$ 650	\$ 6,331	\$ 2,462	\$ 9,443
Johnson	N-S	Residential	Fair	990	1,980	\$65.33	15.2	\$ 990	\$ 9,643	\$ 3,749	\$ 14,382
Lanthe Ave.	N-S	Residential	Poor	710	1,420	\$65.33	10.9	\$ 710	\$ 6,915	\$ 2,689	\$ 10,314
Laura F.	E-W	Residential	Poor	690	1,380	\$65.33	10.6	\$ 690	\$ 6,721	\$ 2,613	\$ 10,024
Lee Drive	N-S	Residential	Fair	1140	2,280	\$65.33	17.4	\$ 1,140	\$ 11,104	\$ 4,318	\$ 16,561
Liveoak Ln.	N-S	Residential	Poor	1,050	2,100	\$65.33	16.1	\$ 1,050	\$ 10,227	\$ 3,977	\$ 15,254
Manning St.	N-S	Residential	Fair	3180	6,360	\$65.33	48.7	\$ 3,180	\$ 30,973	\$ 12,044	\$ 46,197
Meadow Lark Ln.	N-S	Residential	Fair	1290	2,580	\$65.33	19.7	\$ 1,290	\$ 12,565	\$ 4,886	\$ 18,740
Nancy Ann	N-S	Residential	Fair / Poor	2260	4,520	\$65.33	34.6	\$ 2,260	\$ 22,012	\$ 8,559	\$ 32,832
Navajo Trail	N-S	Residential	Fair	2080	4,160	\$65.33	31.8	\$ 2,080	\$ 20,259	\$ 7,878	\$ 30,217
Nickelson	N-S	Residential	Poor	350	700	\$65.33	5.4	\$ 350	\$ 3,409	\$ 1,326	\$ 5,085
North Jones Ave.	N-S	Residential	Fair	360	720	\$65.33	5.5	\$ 360	\$ 3,506	\$ 1,363	\$ 5,230
N.Mary Nelson St.	N-S	Residential	Poor	1140	2,280	\$65.33	17.4	\$ 1,140	\$ 11,104	\$ 4,318	\$ 16,561
Oak Hill	N-S	Residential	Fair / Poor	510	1,020	\$65.33	7.8	\$ 510	\$ 4,967	\$ 1,932	\$ 7,409
Oak Ridge	E-W	Residential	Poor	810	1,620	\$65.33	12.4	\$ 810	\$ 7,889	\$ 3,068	\$ 11,767
Oak St.	E-W	Residential	Poor	630	1,260	\$65.33	9.6	\$ 630	\$ 6,136	\$ 2,386	\$ 9,152

Street Name	Direction	Collector/ Residential	Street Classificatio n	Length (ft)	Total Sq. Yards	Avg Hourly wages combined	Approximate hours to complete	Labor cost	Full Asphalt restoration cost	Chip Seal	Total Est. Cost. (labor and Matis)
Park Hill Road	N-S	Residential	Fair / Poor	3230	6,460	\$65.33	49.4	\$ 3,230	\$ 31,460	\$ 12,233	\$ 46,923
Pierson	E-W	Residential	Poor	6180	12,360	\$65.33	94.6	\$ 6,180	\$ 60,193	\$ 23,406	\$ 89,779
Pipes Street	N-S	Residential	Poor	990	1,980	\$65.33	15.2	\$ 990	\$ 9,643	\$ 3,749	\$ 14,382
Price St.	N-S	Residential	Fair/ Poor	5370	10,740	\$65.33	82.2	\$ 5,370	\$ 52,304	\$ 20,338	\$ 78,012
Regan	N-S	Residential	Fair	5080	10,160	\$65.33	77.8	\$ 5,080	\$ 49,479	\$ 19,240	\$ 73,799
Sherry Lee	N-S	Residential	Fair	600	1,200	\$65.33	9.2	\$ 600	\$ 5,844	\$ 2,272	\$ 8,716
Smith Ave.	N-S	Residential	Poor	1400	2,800	\$65.33	21.4	\$ 1,400	\$ 13,636	\$ 5,302	\$ 20,338
Snell Road	E-W	Residential	Poor	320	640	\$65.33	4.9	\$ 320	\$ 3,117	\$ 1,212	\$ 4,649
Snell St.	E-W	Residential	Poor	1080	2,160	\$65.33	16.5	\$ 1,080	\$ 10,519	\$ 4,090	\$ 15,690
Stidham	N-S	Residential	Fair / Poor	3310	6,620	\$65.33	50.7	\$ 3,310	\$ 32,239	\$ 12,536	\$ 48,085
Stonewall Jackson	E-W	Residential	Poor	340	680	\$65.33	5.2	\$ 340	\$ 3,312	\$ 1,288	\$ 4,939
Thompson St.	N-S	Residential	Poor	160	320	\$65.33	2.4	\$ 160	\$ 1,558	\$ 606	\$ 2,324
Vernon St.	N-S	Residential	Poor	380	760	\$65.33	5.8	\$ 380	\$ 3,701	\$ 1,439	\$ 5,520
West McCaleb	E-W	Residential	Poor	3420	6,840	\$65.33	52.3	\$ 3,420	\$ 33,311	\$ 12,953	\$ 49,683
White St.	E-W	Residential	Fair / Poor	3910	7,820	\$65.33	59.8	\$ 3,910	\$ 38,083	\$ 14,808	\$ 56,802
Whitney St.	E-W	Residential	Fair / Poor	3730	7,460	\$65.33	57.1	\$ 3,730	\$ 36,330	\$ 14,127	\$ 54,187
Wieser St.	N-S	Residential	Poor	1420	2,840	\$65.33	21.7	\$ 1,420	\$ 13,831	\$ 5,378	\$ 20,629
Williams St.	N-S	Residential	Fair / Poor	2730	5,460	\$65.33	41.8	\$ 2,730	\$ 26,590	\$ 10,339	\$ 39,660
Subtotals Residential				265,470	530,940	5,030	4,064	\$ 113,750	\$ 2,585,678	\$ 430,809	\$ 3,130,237

Collectors cost	\$ 75,860	\$ 738,876	\$ 287,307	\$ 1,102,044
Residential Cost	\$ 113,750	\$ 2,585,678	\$ 430,809	\$ 3,130,237
Railroad St Cost				
For street Repairs Excluding Curbs/ Gutters				
TOTAL COST	estimated			4,232,280

Notes

Notes/ Conditions

- 1 Material Costs provided in calculations are 2023 costs and verified on
- 2 Labor costs are current as of 2/8/2023.
- 3 Costs here are for road repairs only and do not include new equipment or equipment maintenance
- 4 Hours to complete are "uninterrupted" hours contiguously and are "Hours applied to task".

Street Name	Direction	Collector/ Residential	Street Classification	Length (ft)
Bell	N-S	Collector	Fair	5530
Cage St.	N-S	Collector	Fair / Poor	3490
Clarke St.	E-W	Collector	Poor	1820
Crews	E-W	Collector	Fair/ Poor	2670
Grogan	E-W	Collector	Poor	3040
Hall St.	N-S	Collector	Fair	2700
Henry	E-W	Collector	Fair / Poor	8050
Jonesboro Rd.	E-W	Collector	Fair / Poor	3700
Lemmons	N-S	Collector	Fair / Poor	2870
Little St.	E-W	Collector	Poor	2670
Lloyd St.	N-S	Collector	Fair	390
McCaleb	E-W	Collector	Poor	1270
McDurmitt	N-S	Collector	Poor	2530
Old Shive Rd.	N-S	Collector	Fair / Poor	1500
Pecan	N-S	Collector	Fair	5650
Ross	E-W	Collector	Fair / Poor	11140
Standifer	E-W	Collector	Fair/ Poor	7840
Taylor	N-S	Collector	Poor	3350
Leslie	E-W	Collector	Fair/ Poor	5650
Sub-Totals				75860

Curb/ Gutter cost
\$ 110,600
\$ 69,800
\$ 36,400
\$ 53,400
\$ 60,800
\$ 54,000
\$ 161,000
\$ 74,000
\$ 57,400
\$ 53,400
\$ 7,800
\$ 25,400
\$ 50,600
\$ 30,000
\$ 113,000
\$ 222,800
\$ 156,800
\$ 67,000
\$ 113,000
\$ 1,517,200

2nd St. / Baker	E-W	Residential	Poor	2790
3st St.	E-W	Residential	Poor	890
4th St.	E-W	Residential	Poor	960
Alamo	N-S	Residential	Fair / Poor	2590
Barkley Ave.	N-S	Residential	Poor	1960
Blansit /Railroad	N-S	Arterial	On Hold	0
Boulden	N-S	Residential	Poor	1830
Boynton	E-W	Residential	Fair / Poor	790
Brown St.	N-S	Residential	Fair	2950
Butch	E-W	Residential	Fair	740
Cheyenne Mesa	N-S	Residential	Poor	2690
Coke	E-W	Residential	poor	4140
College	N-S	Residential	fair	3080
Dempster	N-S	Residential	Poor	1390
E. Lee	F-W	Residential	Fair / Poor	500
Elm St.	E-W	Residential	Poor	290
Francis Marion Rd.	E-W	Residential	Poor	3730
Gentry St.	E-W	Residential	Fair	8120
Hercules	N-S	Residential	Poor	980
Hill	E-W	Residential	Fair / Poor	4540
Hill Top Rd.	E-W	Residential	Fair / Poor	1180

\$ 55,800
\$ 17,800
\$ 19,200
\$ 51,800
\$ 39,200
\$ -
\$ 36,600
\$ 15,800
\$ 59,000
\$ 14,800
\$ 53,800
\$ 82,800
\$ 61,600
\$ 27,800
\$ 10,000
\$ 5,800
\$ 74,600
\$ 162,400
\$ 19,600
\$ 90,800
\$ 23,600

Hoard	E-W	Residential	Poor	1150	\$	23,000
Howard	N-S	Residential	Fair / Poor	4970	\$	99,400
James St.	E-W	Residential	Poor	650	\$	13,000
Johnson	N-S	Residential	Fair	990	\$	19,800
Lanthe Ave.	N-S	Residential	Poor	710	\$	14,200
Laura F.	E-W	Residential	Poor	690	\$	13,800
Lee Drive	N-S	Residential	Fair	1140	\$	22,800
Liveoak Ln.	N-S	Residential	Poor	1,050	\$	21,000
Manning St.	N-S	Residential	Fair	3180	\$	63,600
Meadow Lark Ln.	N-S	Residential	Fair	1290	\$	25,800
Nancy Ann	N-S	Residential	Fair / Poor	2260	\$	45,200
Navajo Trail	N-S	Residential	Fair	2080	\$	41,600
Nickelson	N-S	Residential	Poor	350	\$	7,000
North Jones Ave.	N-S	Residential	Fair	360	\$	7,200
N.Mary Nelson St.	N-S	Residential	Poor	1140	\$	22,800
Oak Hill	N-S	Residential	Fair / Poor	510	\$	10,200
Oak Ridge	E-W	Residential	Poor	810	\$	16,200
Oak St.	E-W	Residential	Poor	630	\$	12,600
Park Hill Road	N-S	Residential	Fair / Poor	3230	\$	64,600
Pierson	E-W	Residential	Poor	6180	\$	123,600
Pipes Street	N-S	Residential	Poor	990	\$	19,800
Price St.	N-S	Residential	Fair/ Poor	5370	\$	107,400
Regan	N-S	Residential	Fair	5080	\$	101,600
Sherry Lee	N-S	Residential	Fair	600	\$	12,000
Smith Ave.	N-S	Residential	Poor	1400	\$	28,000
Snell Road	E-W	Residential	Poor	320	\$	6,400
Snell St.	E-W	Residential	Poor	1080	\$	21,600
Stidham	N-S	Residential	Fair / Poor	3310	\$	66,200
Stonewall Jackson	E-W	Residential	Poor	340	\$	6,800
Thompson St.	N-S	Residential	Poor	160	\$	3,200
Vernon St.	N-S	Residential	Poor	380	\$	7,600
West McCaleb	E-W	Residential	Poor	3420	\$	68,400
White St.	E-W	Residential	Fair / Poor	3910	\$	78,200
Whitney St.	E-W	Residential	Fair / Poor	3730	\$	74,600
Wieser St.	N-S	Residential	Poor	1420	\$	28,400
Williams St.	N-S	Residential	Fair / Poor	2730	\$	54,600
Total linear feet				265,470	\$	2,275,000
Subtotals for Residential					\$	2,275,000
Subtotals for Collector Streets					\$	1,517,200
Total cost for curbs					\$	3,792,200

2023 Road Study
Revision of Cost estimates.

		Per SqYd	Process ID	SqYds 600				
Materials COST: excludes labor, wear on machines, repairs cost Insurance cost.		sq yds		input table				
SqYds per 18'x300 block	600	Matl cost per yard		gal	unit cost	tot cost	SqYds tot	cost per Yd
P2S1 stabilizer – used in the Zipper Process. \$2.69 per gallon 900 gallons per 18'x300' foot block		600.00	Stabilizer	900	\$ 2.96	\$ 2,664.00	600	\$ 4.44
	600	\$ 2.96						
P2S1 Primer – used to seal the street. primer is the same as stabilizer just has to be mixed with water \$2.96 per gallon 200 gallons per 18'x300' foot block			primer	200	\$ 2.96	\$ 592.00	600	\$ 0.99
	600	\$ 2.96		200	\$ 2.96	\$ 592.00	600	\$ 0.99
Total Cost of Base Reconstruction : .54 cents /sq.ft. or \$4.87/sq.yd.		4.87	Base					\$ 4.87

CWE2 chip seal tack oil 3.10 per gallon 250 gallons per 18'x300' foot block			Tack oil	250	\$ 3.10	\$ 775.00	600	\$ 1.29
			Chip Seal Rock	7	\$ 51.60	\$ 361.20	600	\$ 0.60
Chip seal rock delivered from Zach Burkett 51.60 per ton delivered approximately 7 tons per 18'x300' foot block	361		Chip seal total					\$ 1.89
	600							
Total Cost of Chip Seal: .	600	\$ 1.80						
		\$ 1,080.00						
Total cost of full depth base reconstruction with chip seal = \$6.67 per square yard								
Chip seal - 18 x 300 block		\$ 1,062.50						
Cost for one block 330 X 18 = \$4021.5	\$ 1.77							
600								