

City of Monett

Preventive Pavement Maintenance Plan



Prepared For:

City of Monett,
Missouri

Prepared By:

CMV Engineering, LLC
5751 Greenton Way
St. Louis, MO 63128
314-807-8149

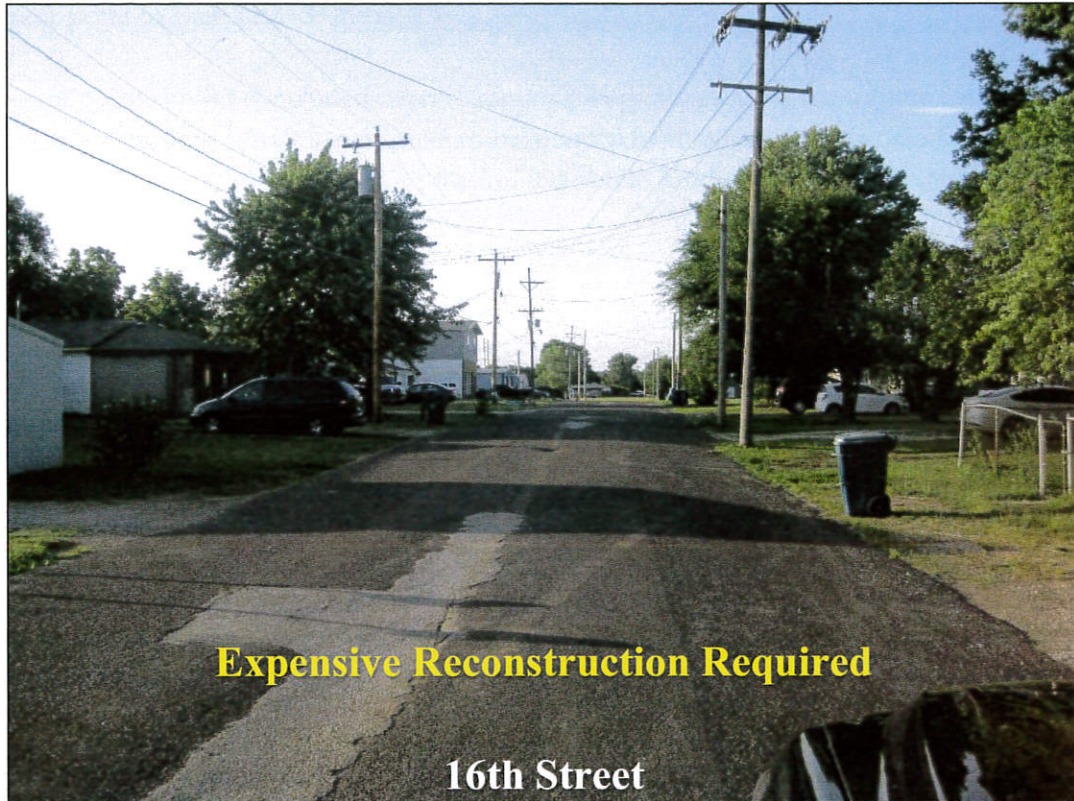
Table of Contents

	<u>Page</u>
Introduction	3
Preventive Pavement Maintenance Program	4
Framework and Strategy – Program Development	9
Preferred Pavement Treatment Types	12
Collector/Arterial Roadway Map	22
Street Groupings	23
Chip and Seal History Map	52
PPMP Treatment Table	53
Pavement Resurfacing Schedule Map	54



Introduction

Road pavements gradually deteriorate due to weather and daily traffic loads. Once the condition of a pavement deteriorates beyond a certain point, reconstruction is the only means of repair. Before the pavement reaches that point, relatively inexpensive preventive maintenance techniques can cut short the cycle of deterioration, improve the pavement condition, and postpone the need for expensive reconstruction.

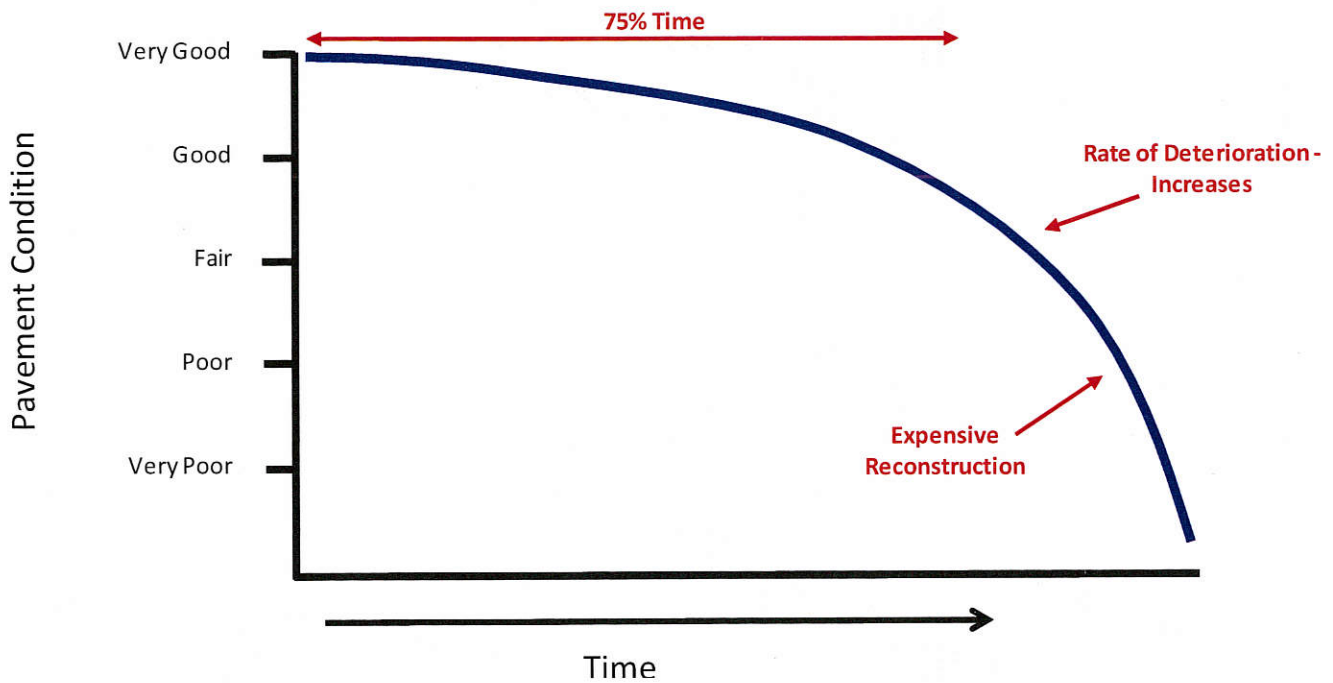


The goal of this Preventive Pavement Maintenance Program (PPMP) is to become pro-active with regard to pavement repairs, which will stop potholes before they start – thereby reducing regular maintenance costs – and stretch reconstruction dollars by extending the life of the pavement that has not yet deteriorated too severely. Ultimately, the program will not only improve the streets in City of Monett, but help make better use of City funds as well.

Preventive Pavement Maintenance Program

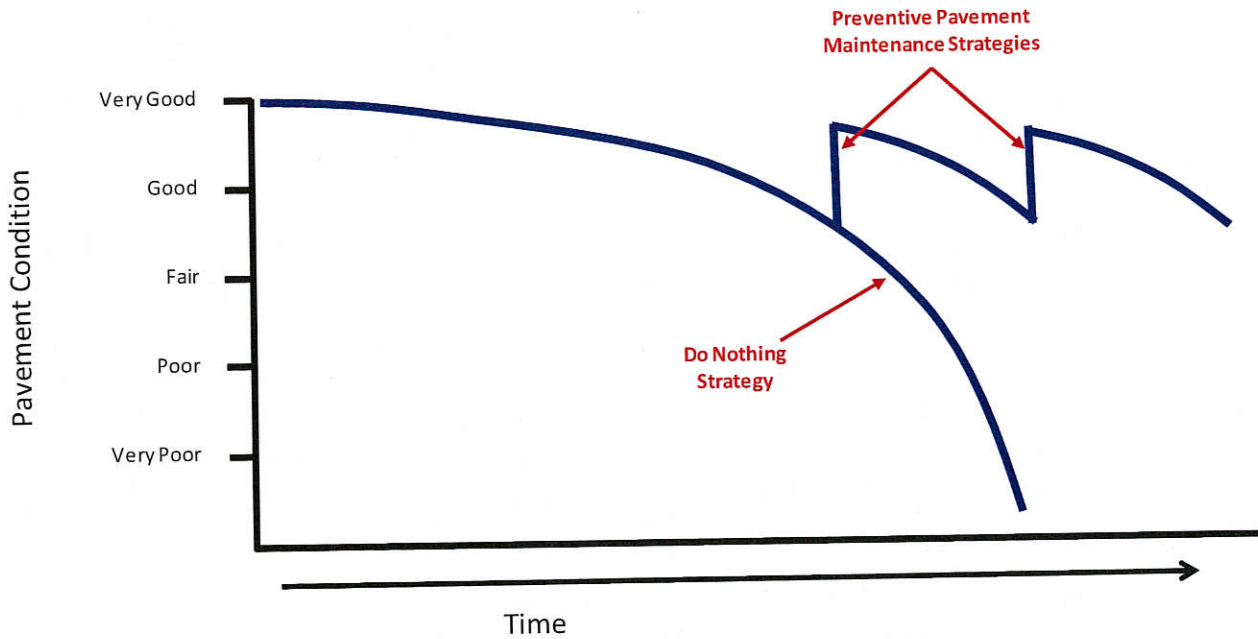
The figure below represents a pavement performance curve in terms of rehabilitation costs. You can see that rehabilitation costs will increase by over 4 times if rehabilitation is deferred only 12% of a pavement’s design life. For typical pavements, 12% amounts to only about 2 years. In view of this fact, deferred rehabilitation is very expensive. Good pavement maintenance management dictates that rehabilitation occur at a time so as to derive the greatest benefit (or extension of serviceability) possible. The problem becomes very complex since each different pavement structure has a different performance curve and on similar structures with similar curves different pavements will be at a different point in their service lives.

An important point can be concluded here. Unless a jurisdiction has all the money for rehabilitation, it is almost certainly a mistake to program rehabilitation on a “worst-first” basis. Maximum benefit cannot be derived from the limited public funds available if an agency binds itself to a “worst-first” programming philosophy.



Our proposed Preventive Pavement Maintenance Program establishes a guideline to preserve the structural integrity and extend the service life of the City’s street network.

A preventive maintenance program is a systematic approach to using a series of preventive maintenance treatments over time. One treatment will improve the quality of the pavement surface and extend the pavement life, but the true benefits of pavement maintenance are realized when there is a consistent schedule for performing the preventive maintenance. The graphic below illustrates this process:



As a result, the performance of pavements depend upon the type, time of application, and quality of the maintenance it receives. Pavement maintenance can be classified into three types of pavement maintenance operations:

- **Routine maintenance** is the day-to-day maintenance activities that are scheduled or whose timing is within the control of our street maintenance personnel. Examples of routine maintenance include filling cracks in pavement as necessary, street sweeping, trash collection, and re-painting faded pavement markings.
- **Reactive Maintenance** are activities that must be done in response to events beyond the control of the City’s Street Department. Some events require response as soon as possible to avoid serious consequences because a present or imminent danger exists. Reactive maintenance cannot be scheduled because they occur without warning and often must be immediately addressed. Examples of reactive maintenance activities include pothole patching, removing and patching pavement blowups.

- **Preventive Maintenance** is the planned strategy of cost-effective treatments to an existing roadway system that preserves the system, retards future deterioration and maintains or improves the functional condition of the system without significantly increasing structural capacity. In essence, preventive maintenance activities protect the pavement and decrease the rate of deterioration. Preventive maintenance should be performed on pavements that have oxidized (i.e. surface skin of oil has worn off), but not when significant cracking and joint separation is exhibited.



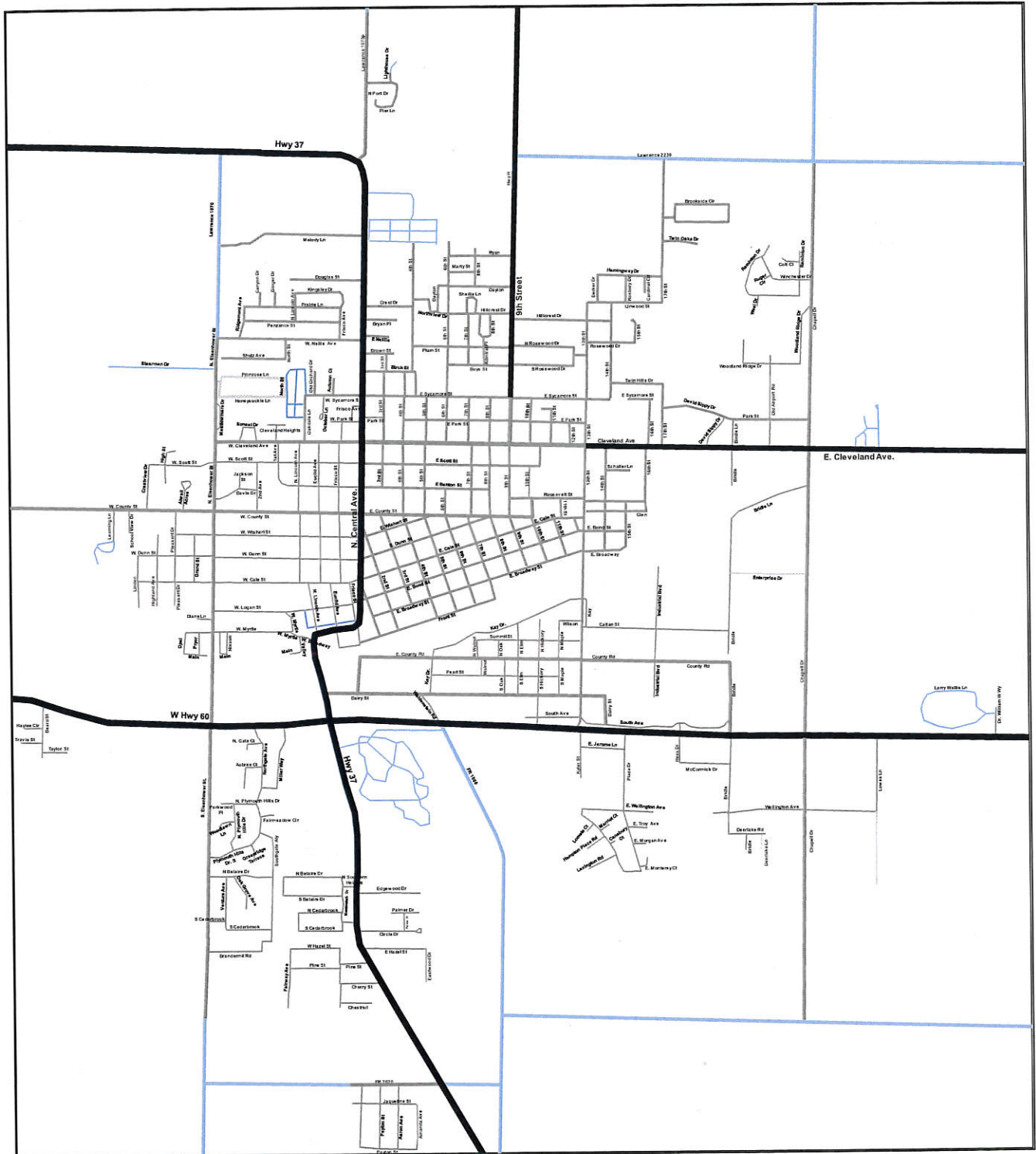
All types of maintenance are needed in a comprehensive pavement maintenance program. However, emphasizing preventive maintenance may prevent a pavement from requiring reactive maintenance. Although all three types of maintenance are important, we have created this PPMP to cost-effectively prolong the pavement service life of the City of Monett streets.

In Summary:

Delays in preventive maintenance increase the quantity of pavement defects and their severity so that, when corrected, the cost is much greater. The purpose of our PPMP is to protect the pavement structure, slow the rate of pavement deterioration and correct pavement surface deficiencies. As an aid to assess the effectiveness of the PPMP, a bi-yearly review should be conducted on all City owned and maintained streets.



Overall map of the City of Monett.



Framework and Strategy – Program Development

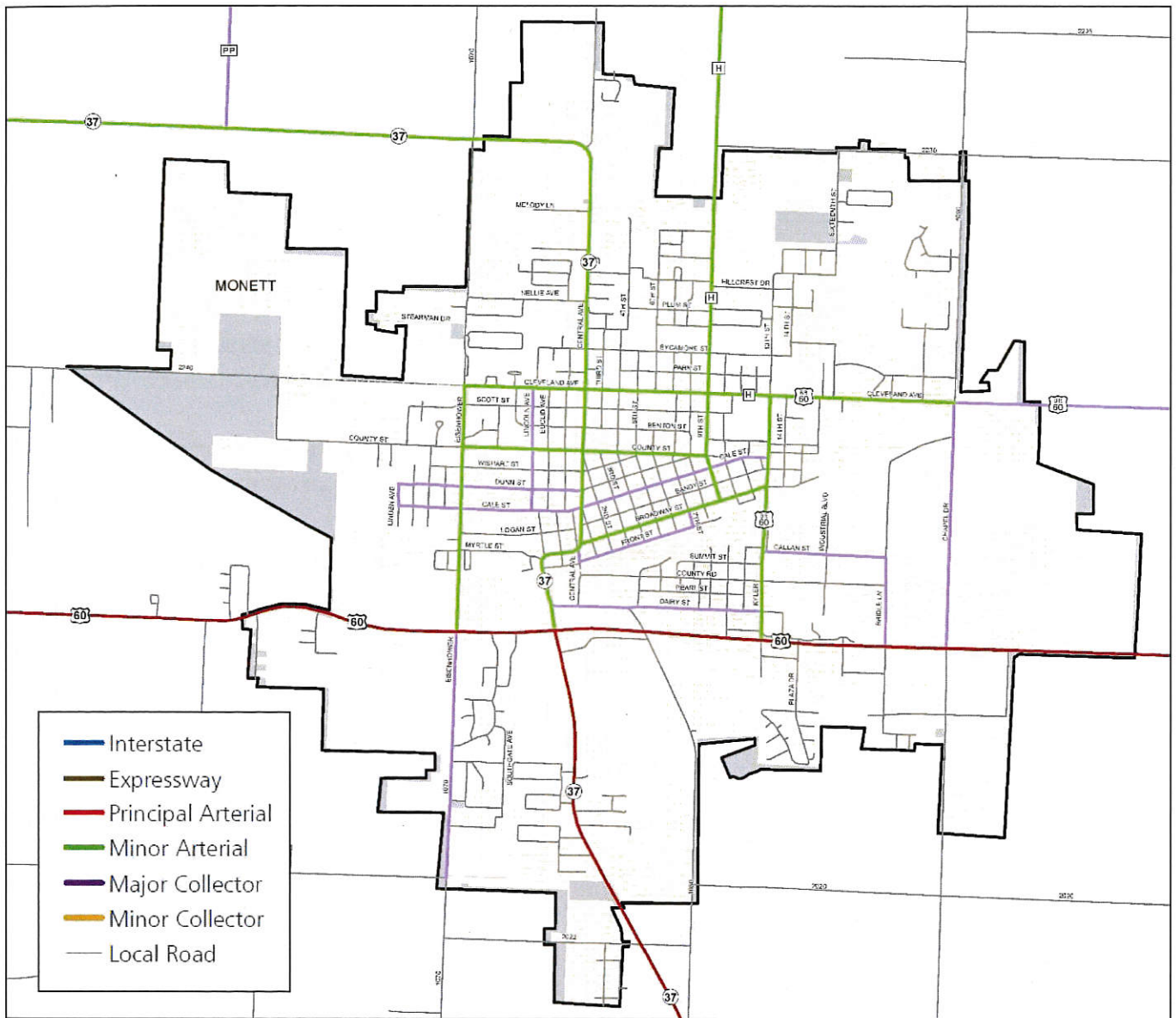
It is important to note that City representatives and CMV Consultant personnel discussed and met several times to: a) integrate ideas from different perspectives; and b) work together to create an implementation plan that made sense from a public perception standpoint and City budgeting perspective.

Both parties learned from each other and worked together to develop the plan. As a result, we developed this plan based on the following issues and circumstances, which were specific to the City of Monett street network system.

1. **Existing Pavement Conditions** - we assessed the pavement conditions of all City streets and determined the appropriate levels of maintenance that were/could be warranted.
2. **Classification by Roadway Type** - we grouped and clustered the roadways by type/characteristic. Specifically, we identified roadways into two main categories: a) residential asphalt streets; and b) collector/arterial asphalt roadways.
3. **Roads Eligible for Federal Funding** - the Missouri Department of Transportation (MoDOT) maintains a master list of roadways eligible for federal funding. MoDOT is responsible for maintaining and updating the region's Roadway Functional Classification System mandated under federal law.

Roadways are classified according to their urban or rural setting and the type of service they provide based on considerations such as: connectivity, mobility, accessibility, vehicle miles traveled, average annual daily traffic, and abutting land use. The purpose of roadway functional classification is to describe how travel is channelized through the roadway network and to determine project eligibility for inclusion in MoDOT's Long Range Plan and short-range Transportation Improvement Program (TIP). A roadway must already be classified at minimum as a planned or existing Urban Collector or Rural Major Collector in order to be eligible for federal funds allocated in the TIP. The map on the following page shows the current status of roadways eligible in the City of Monett.

The colored roadways are currently eligible for federal funding in the City of Monett.



4. **Group Concept** - we determined that it would be more cost effective from a bid pricing standpoint to combine roads in grouped areas. This would save extra mobilization costs and minimize disruption to the residents. This group concept would eliminate the need for the paving contractor to jump to three different areas in the City during a paving operation. It makes more sense to group streets together for maintenance/rehabilitation from a cost and mobilization standpoint. In addition, this idea would help prevent construction trucks driving over pavements that were resurfaced the year before.
5. **Construction Cost Estimating** – we quantified and estimated the cost of each street’s proposed treatment.
6. **Program Budget** - the program was developed in a way that the City could plan and budget to make the plan work. It is important to take into consideration of the City’s budget regarding when the streets should be treated.

Note: this program budget and plan does not include concrete slab replacement, sidewalk or alley repair work.

7. **Pavement Treatment Selection** - final development of the plan based on the cost and performance of the preferred pavement treatments as described in the next section.

Preferred Pavement Treatment Types

This PPMP utilizes surface treatments as categories of work. These surface treatments are targeted at pavement surface defects primarily caused by the environment and vehicular loads. Preventive maintenance treatments used to protect the pavement structure and slow the rate of pavement deterioration include the following:

- Crack and Joint Sealing
- Chip and Seal
- Microsurfacing
- Nova Chip – Ultra Thin Asphalt
- Surface Milling, Paving Fabric, and Asphalt Overlay
- Full Depth Road Reconstruction

Crack and Joint Sealing

Description: Crack and joint sealing consists of cleaning the crack in the pavement surface and placing the specified materials into and above the crack to substantially reduce infiltration of water and to reinforce the adjacent pavement. The fill method consists of cutting the desired reservoir shape at the working crack in the existing surface, cleaning the cut surfaces and placing the specified materials into the cavity to prevent the intrusion of water and incompressibles into the crack.

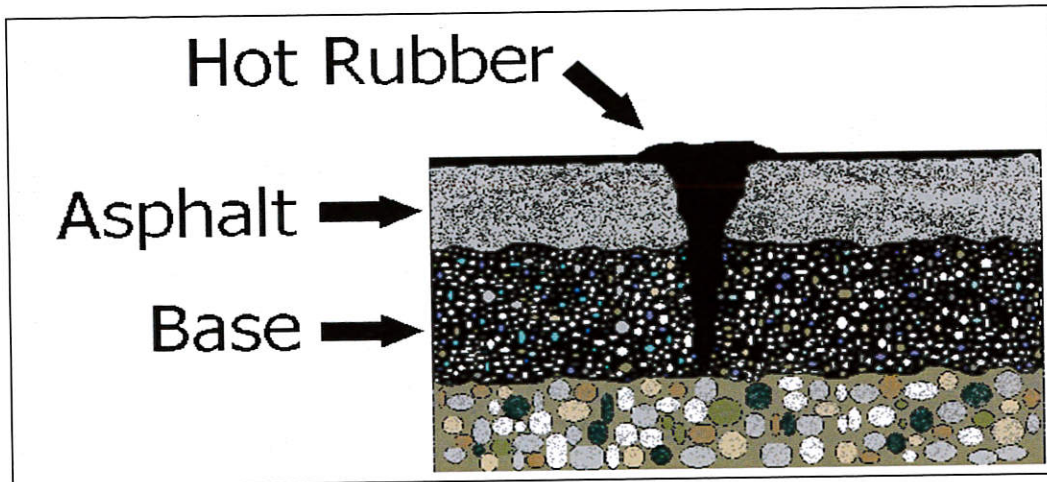
Purpose: The purpose of sealing and filling cracks in the pavement surface is to prevent water and incompressibles from entering the pavement structure.

Existing pavement condition: Concrete pavements should have cracks filled every two years. On asphalt pavements, crack filling should begin two to four years after resurfacing, and on a composite pavement, one to two years old. The visible surface distress may include: fairly straight open longitudinal and transverse cracks with slight secondary cracking and slight raveling at the crack face, and no patching or very few patches in excellent condition.

Existing pavement surface preparation: None.

Performance: The effectiveness of the seal will greatly depend upon the width of crack being sealed and the movement of the pavement structure at the crack.

Life Extension: This treatment is not a one shot operation. In order to maintain the sealed pavement surface, a routine maintenance crack sealing and filling operation should follow up this treatment, as additional cracks develop.



Chip and Seal

Description: a preservation treatment that supports the integrity of a road by protecting its surface. The application of chip seal is comparable to using a layer of wax to protect one's car from harsh elements that can rust the car's exterior. During the chip seal application, liquid asphalt emulsion is sprayed onto the road's surface, which is then covered with fine aggregate. Rollers follow to embed the crushed aggregate into the emulsion and sweepers then remove remaining loose aggregate.

Purpose: Acting as a waterproofing membrane, chip seal shields the road's surface from the damaging effects of sun and water and combats oxidation that causes asphalt to become brittle and more susceptible to fractures or cracks. It also helps the road shed water, which restricting water's ability to seep into the road's base material and compromise the road's integrity.

Existing pavement condition: The existing pavement should exhibit a uniform cross section and a good base. The visible distress may include slight cracking, rutting, minor surface irregularities, flushed or polished surface and/or moderate raveling.

Existing pavement surface preparation: Surface preparation typically includes crack fill, bump removal if necessary, removal of thermoplastic pavement markings and seal patching for large voids and potholes.

Performance: Chip seal is applied to roads with asphalt pavement surfaces throughout their life cycle. Chip seal is applied one to three years after the completion of a reconstruction or resurfacing improvement project to preserve the investment and extend the life of the road. Chip seal is applied to roads showing signs of deterioration. Chip seal increases the "friction factor" of the road's surface, helping to reduce the number of wet and snow-related vehicle accidents

Life Extension: This treatment is not a one shot operation. In order to maintain the sealed pavement surface, a routine maintenance crack sealing and filling operation should follow up this treatment, as additional cracks develop. Chip seal shields the road from damaging effects of sun and water prolongs the service life of a road by at least 5 to 7 years.

Micro-surfacing

Description: Micro-Surfacing is a mixture of polymer modified asphalt emulsion, mineral aggregate, mineral filler, water, and other additives, properly proportioned, mixed, and placed on a paved surface.



Purpose: A single course micro-surfacing will retard oxidation and improve skid resistance in the pavement surface. A multiple course micro-surfacing is used to correct certain pavement surface deficiencies including severe rutting, minor surface profile irregularities, polished aggregate or low skid resistance and light to moderate raveling. Micro-surfacing is typically used on flexible or composite pavements and can perform under all traffic volumes.

Existing pavement condition: The existing pavement should exhibit a uniform cross section and a good base. The visible distress may include slight cracking, rutting, minor surface irregularities, flushed or polished surface and/or moderate raveling.

Existing pavement surface preparation: Surface preparation typically includes crack fill, bump removal if necessary, removal of thermoplastic pavement markings and seal patching for large voids and potholes.

Performance: A micro-surface performs well on roadways to correct pavement surface conditions described above.

Life Extension: We expect that micro-surfacing applied at warranted conditions will provide a life extension of 5 years on arterial streets and 6 years on residential/low volume streets.

Performance Limitations: A standard micro-surfacing formulation should not be used on a pavement with moderate to heavy surface cracks. Due to its brittle nature, it is a poor crack sealer. Because micro-surfacing mixes require warm to moderate temperatures for curing, the City should plan to only perform this work in the middle of the summer.

Not Recommended: Unfortunately, numerous micro-surfacing projects throughout the area have exhibited extensive stripping from the existing pavement. As a result, after three to five years, the aesthetic look of the striped micro-surfacing pavements is criticized by residents and public officials. Therefore, we do not recommend this preventive pavement maintenance treatment for the City of Monett.



Nova Chip

Description: The Nova Chip (Ultra Thin Asphalt) paving process places a thin, coarse aggregate hot mix over a special asphalt membrane, on an existing asphalt surface. NovaChip combines a surface seal with a hot mix level-paving surface and the flexibility of a thin maintenance treatment, which results in a durable surface



Purpose: The special NovaBond membrane prevents water leakage and provides a superior bond to the old asphalt or concrete surface.

Existing pavement condition: NovaChip can be used as preventative maintenance or as a surface rehabilitation treatment. The NovaChip results in a thinner surface than hot mix, making it suitable where over height clearance and drainage profile problems may occur. It's good for high traffic areas because the process moves quickly and all in one pass. This means the road will be opened sooner resulting in less traffic delays.

Existing pavement surface preparation: Surface preparation typically includes minor milling at commercial entrances, bump removal if necessary, removal of thermoplastic pavement markings and patching for large voids and potholes.

Performance: This type of treatment will protect the remaining pavement structure, slow the rate of deterioration and improve the ride quality.

Life Extension: We expect that NovaChip applied at warranted conditions will provide a life extension of 6-8 years on arterial streets and 7-9 years on residential/low volume streets.

Performance Limitations: This treatment should not be used on an existing pavement that shows evidence of a weak base.



Surface Milling with Bituminous Overlay

Description: The removal of an existing bituminous surface by the cold milling method, placement of paving fabric, and the placement of a dense graded bituminous mixture. In most streets in the City of Monett, we recommend the MoDOT BP-2 mixture of asphalt.

Purpose:

Milling - The cold milling operation is used to: (1) correct specific existing surface deficiencies, and (2) correct the shape of the existing cross section. The cold milling operation is used to correct rutting in the existing bituminous surface layer where the rutting is not caused by a weak base and when the condition of the exiting pavement has deteriorated to a point where it is not practical to correct the problem by a more economical treatment. The cold milling operation is also used to remove an existing bituminous course that is debonding and to remove the existing bituminous surface to retain the existing curb face.



Paving Fabric - The paving fabric is used as a water proofing membrane and increases pavement life in three ways:

1. Substantially eliminates the number one cause of pavement deterioration, water intrusion through the asphalt.
2. Slows reflective cracking from existing asphalt or concrete pavements. FHWA studies show that cracks as small as 1/8 inch will allow 97% of the water striking the pavement to pass through to the base. Slight movements associated with old cracks or joints are dissipated by the membrane. More importantly, even if the crack reflects through, the membrane remains intact and continues to waterproof.
3. Studies show that paving fabrics increase the fatigue life by 100% to 300%. Asphalt is a flexible pavement and research has shown that pavements with a paving fabric can flex two to three times more before fatigue failure.



Asphaltic Surface Course - The bituminous overlay replaces the bituminous material that is removed.



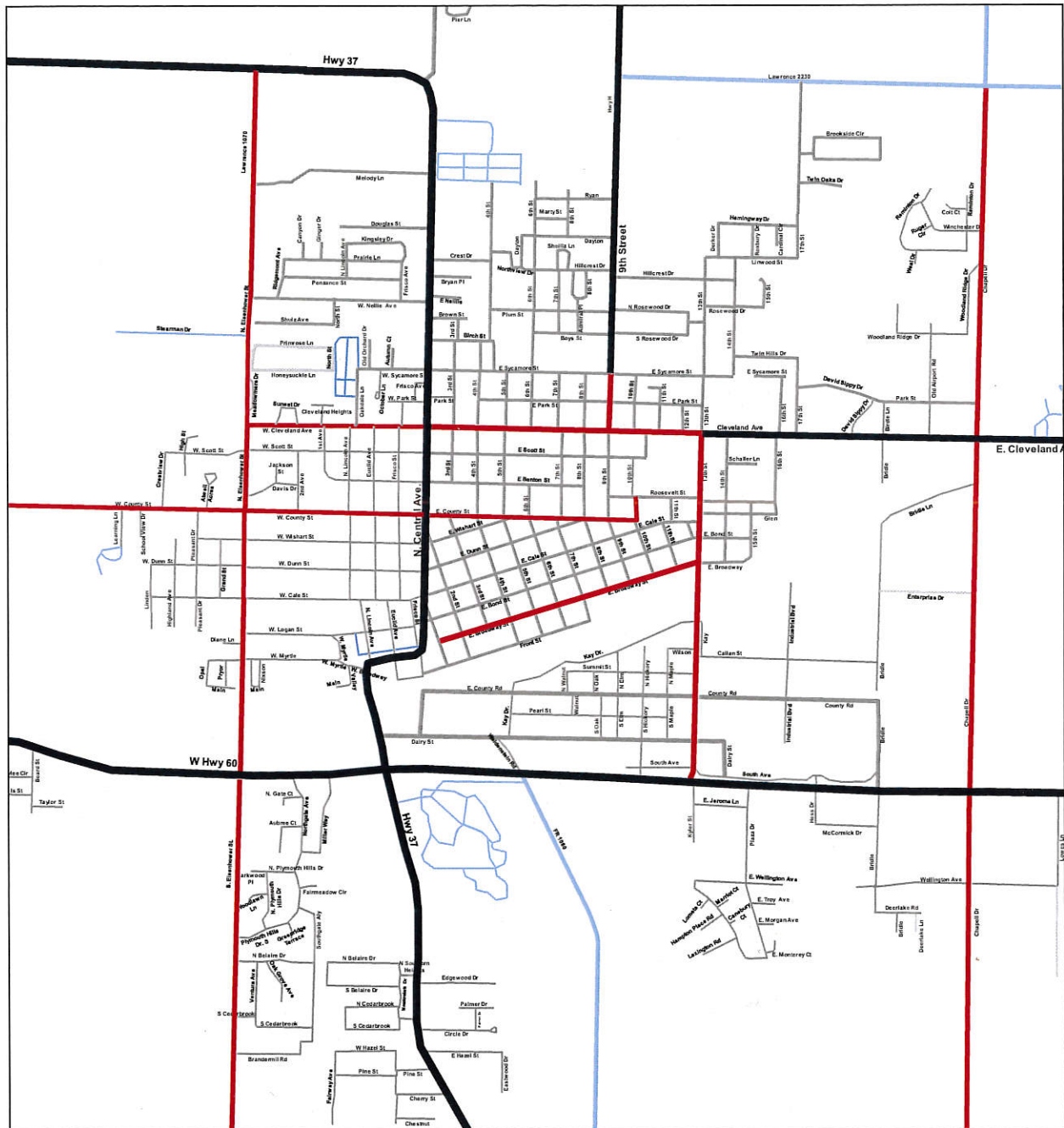
Existing Pavement Condition: The existing pavement should exhibit a good base condition. The visible surface distress may include: severe surface raveling, multiple longitudinal and transverse cracking with slight raveling, a small amount of block cracking, patching in fair condition, debonding surface and slight to moderate rutting.

Performance: This type of treatment will protect the remaining pavement structure, slow the rate of deterioration and improve the ride quality.

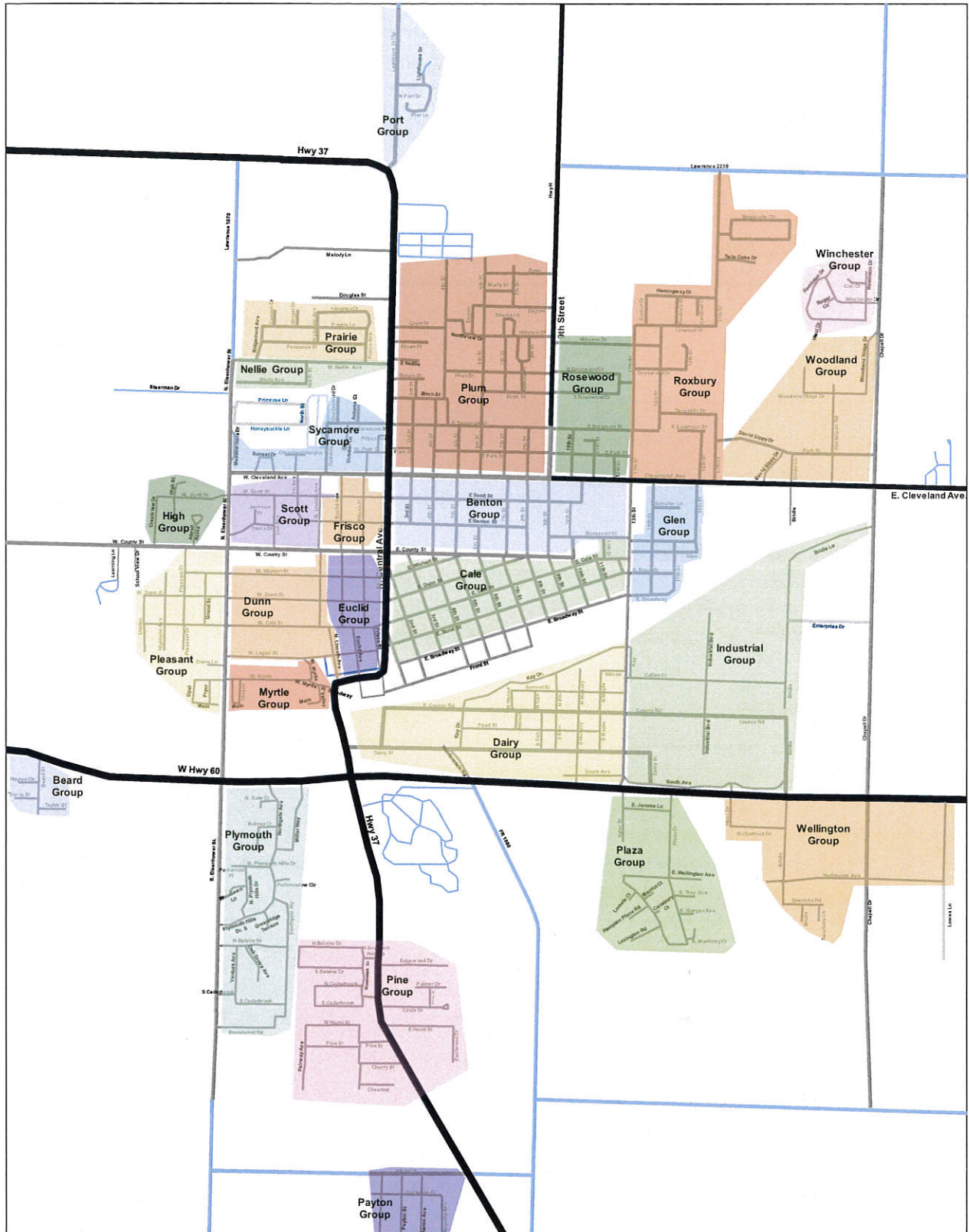
Performance Limitations: This treatment should not be used on an existing pavement that shows evidence of a weak base.



Collector/Arterial Roadways in Monett – these roadways serve a critical role in the roadway network by gathering traffic from local roads and funneling them to the Arterial network. Within the context of functional classification, collectors are broken down into two categories: major collectors and minor collectors. Generally, collector routes are longer in length; have lower connecting driveway densities; have higher speed limits; are spaced at greater intervals; have higher annual average traffic volumes; and may have more travel lanes than local/residential streets.

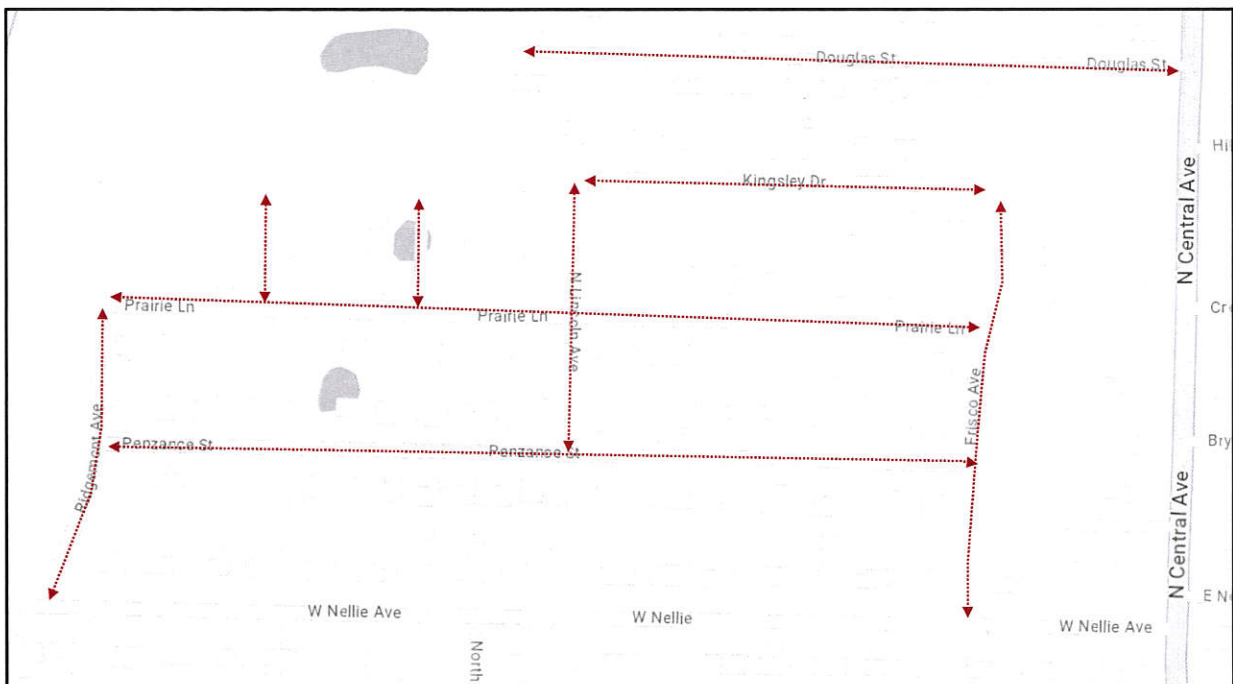


PPMP Residential Street Groupings - As a result of the above discussion, information, concepts, ideas, and City of Monett budgeting parameters, we offer the following "Street Groupings."



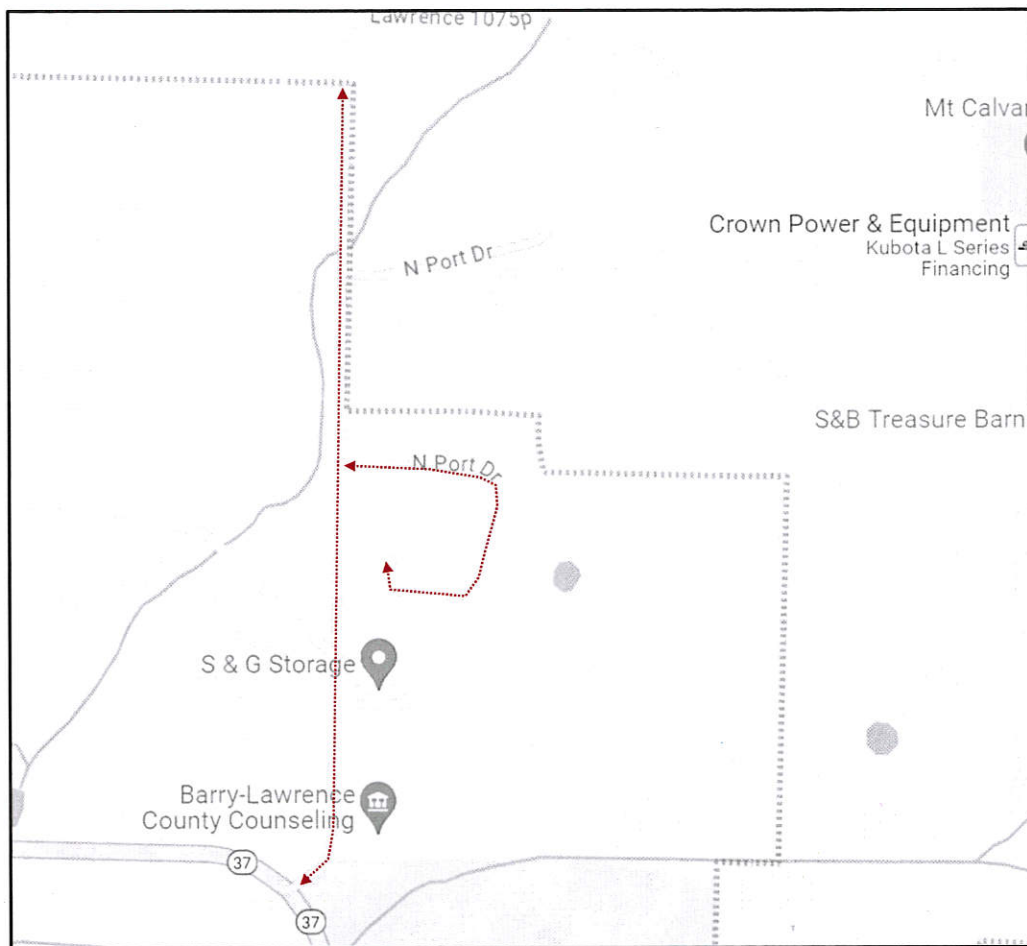
Prairie Group

Street Name	From	To	Length	Width	SF	SY
Ridgemont Ave	W. Neillie Ave	Prairie Ln	800	27	21,600	2,400
Prairie Ln	Ridgemont Ave	Frisco Ave	1,692	27	45,684	5,076
Canyon Dr	Prairie Ln	End	218	27	5,886	654
Ginger Dr	Prairie Ln	End	218	27	5,886	654
Penzance St	Ridgemont Ave	Frisco Ave	1,670	27	45,090	5,010
N. Lincoln Ave	Penzance St	Kingsley Dr	530	27	14,310	1,590
Douglas St	N. Central Ave	End	1,260	27	34,020	3,780
Kingsley Dr	N. Lincoln Ave	Frisco Ave	828	27	22,356	2,484
Frisco Ave	W. Neillie Ave	Kingsley Dr	867	27	23,409	2,601
					0	0
Totals =			8,083		218,241	24,249



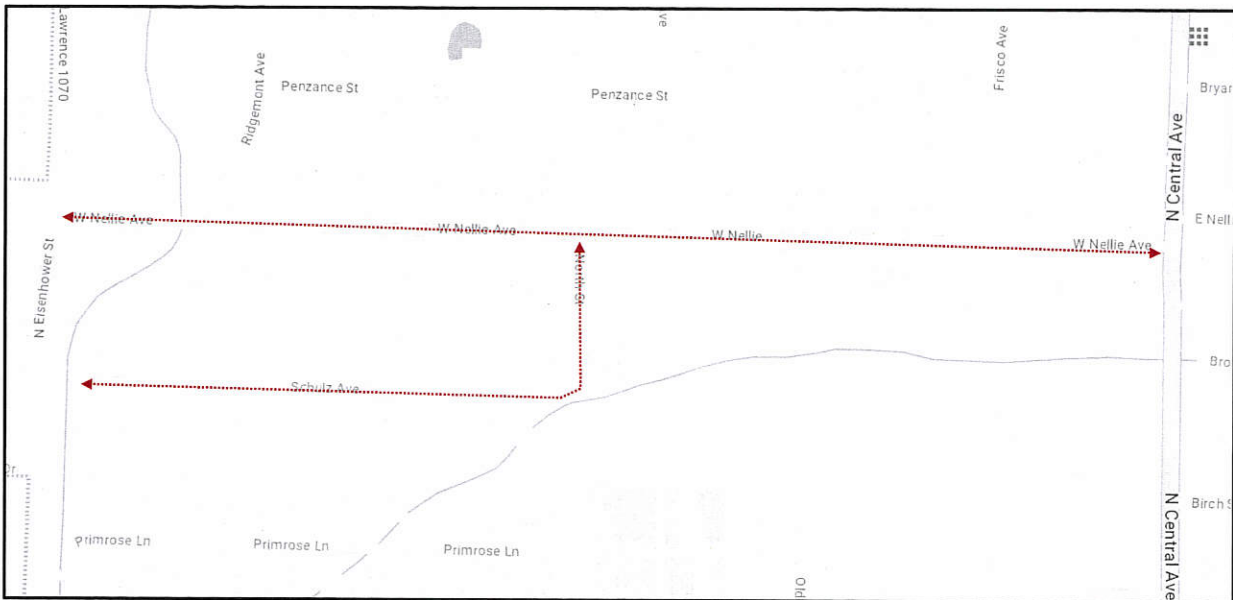
Port Group

Street Name	From	To	Length	Width	SF	SY
Lawrence 1075p	Hwy 37	North City Limit	3,060	18	55,080	6,120
Lighthouse Drive	N Port Dr.	Private	160	36	5,760	640
N Port Dr/Pier Ln	Lawrence 1075p	End	1,370	36	49,320	5,480
					0	0
					0	0
Totals =			4,590		110,160	12,240



Nellie Group

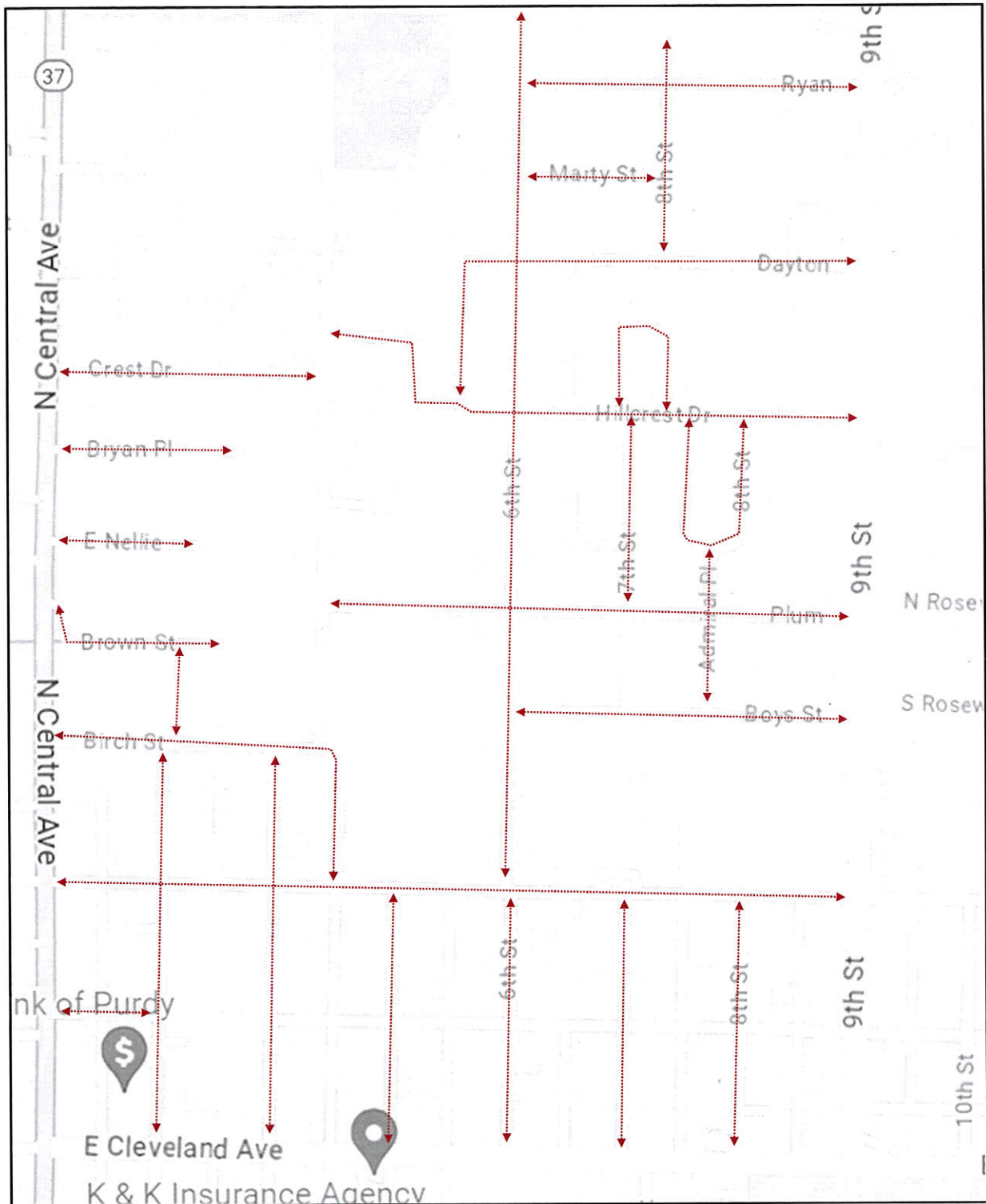
Street Name	From	To	Length	Width	SF	SY
Shulz and North St.	N. Eisenhower	W. Nellie Ave	1,500	26	39,000	4,333
W. Nellie Ave	N. Eisenhower	N. Central Ave	2,530	35	88,550	9,839
					0	0
					0	0
					0	0
Totals =			4,030		127,550	14,172



Plum Group

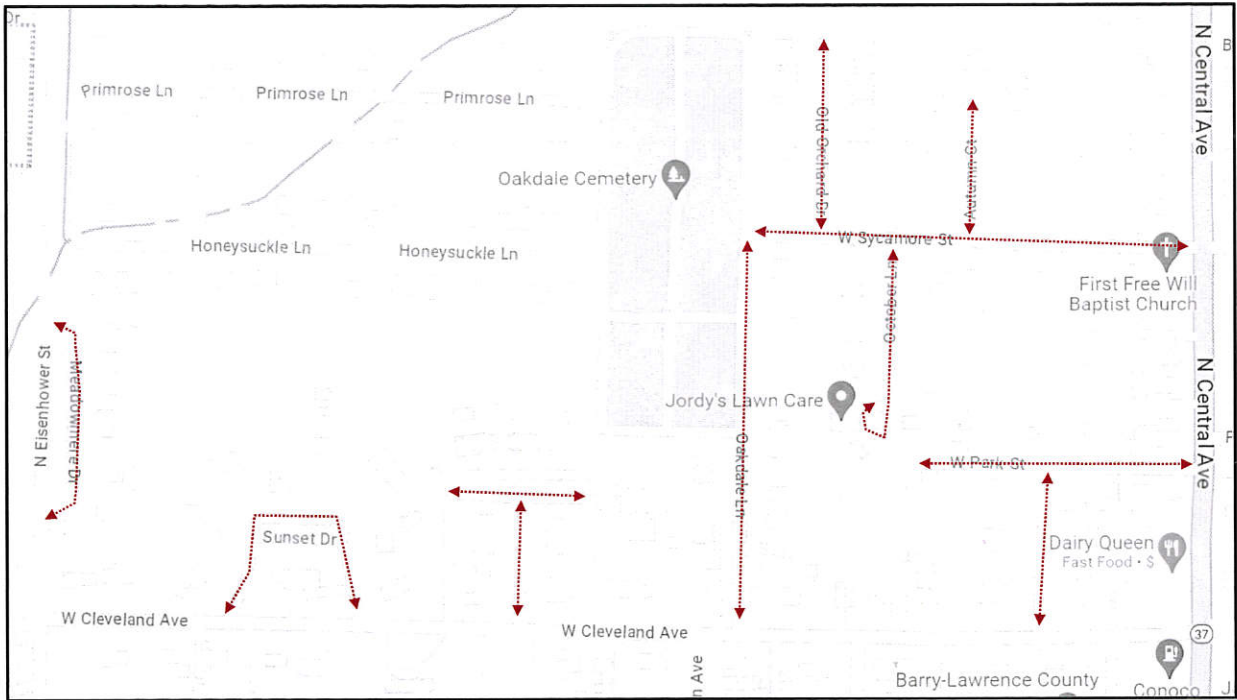
Street Name	From	To	Length	Width	SF	SY
Park St	N. Central Ave	3rd St	350	36	12,600	1,400
3rd St	Cleveland Ave	Birch St	1,275	31	39,525	4,392
Birch St	N. Central Ave	E. Sycamore St	1,360	30	40,800	4,533
3rd St	Birch St	Brown St	300	28	8,400	933
Brown St	N. Central Ave	End	625	26	16,250	1,806
E. Neillie St	N. Central Ave	End	590	20	11,800	1,311
Bryan Pl	N. Central Ave	End	590	22	12,980	1,442
Crest Dr	N. Central Ave	4th St	860	22	18,920	2,102
4th St	Birch St	Cemetary	2,410	22	53,020	5,891
Plum St	4th St	9th St	1,720	27	46,440	5,160
4th St	Cleveland Ave	Birch St	1,275	30	38,250	4,250
5th St	Cleveland Ave	E. Sycamore St	825	30	24,750	2,750
6th St	Cleveland Ave	E. Sycamore St	825	36	29,700	3,300
E. Park St	4th St	9th St	1,900	34	64,600	7,178
7th St	Cleveland Ave	E. Sycamore St	825	40	33,000	3,667
8th St	Cleveland Ave	E. Sycamore St	825	40	33,000	3,667
E. Sycamore St	N. Central Ave	9th St	2,580	28	72,240	8,027
Northview Dr	4th St	9th St	1,950	22	42,900	4,767
Sheilia Ln	Hillcrest Dr	Hillcrest Dr	700	24	16,800	1,867
7th St	Boys St	Hillcrest Dr	960	26	24,960	2,773
Boys St	6th St	9th St	1,120	28	31,360	3,484
Admiral Pl	Boys St	8th St	555	32	17,760	1,973
8th St	Hillcrest Dr	Hillcrest Dr	965	34	32,810	3,646
6th St	E. Sycamore St	End	3,000	26	78,000	8,667
Dayton	Northview Dr	9th St	1,775	34	60,350	6,706
Marty St	6th St	8th St	460	28	12,880	1,431
Ryan	6th St	9th St	1,100	28	30,800	3,422
8th St	Dayton	End	725	28	20,300	2,256
					0	0
Totals =			32,445		925,195	102,799

Plum Group



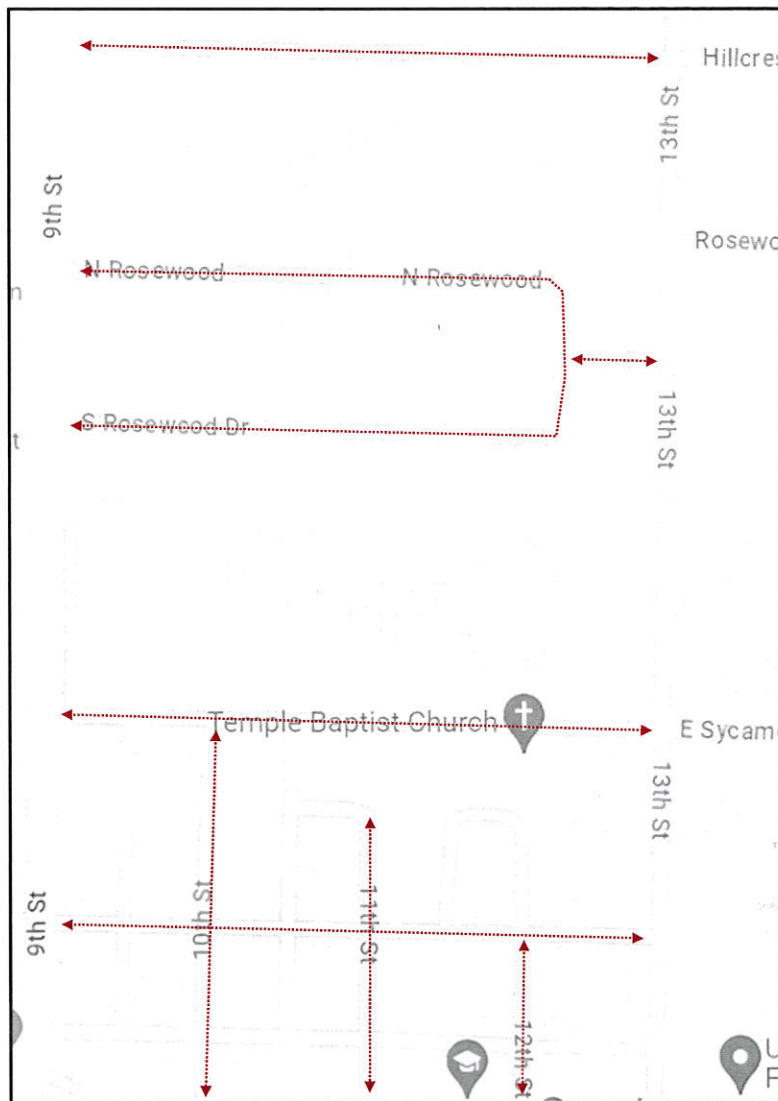
Sycamore Group

Street Name	From	To	Length	Width	SF	SY
Meadowmere Dr	N. Eisenhower	N. Eisenhower	520	15	7,800	867
Sunset Dr	W. Cleveland Ave	W. Cleveland Ave	840	22	18,480	2,053
Cleveland Heights	W. Cleveland Ave	W. Cleveland Ave	930	28	26,040	2,893
Oakdale Ln	W. Cleveland Ave	W. Sycamore	881	12	10,572	1,175
Old Orchard Dr	W. Sycamore	End	435	26	11,310	1,257
October Ln	W. Sycamore	End	525	12	6,300	700
Autumn Ct	W. Sycamore	End	350	26	9,100	1,011
W. Sycamore St	Oakdale Ln	N. Central Ave	1,007	26	26,182	2,909
W. Park St	N. Central Ave	End	690	30	20,700	2,300
Frisco St.	W. Park St	W. Cleveland Ave	365	24	8,760	973
					0	0
Totals =			6,543		145,244	16,138



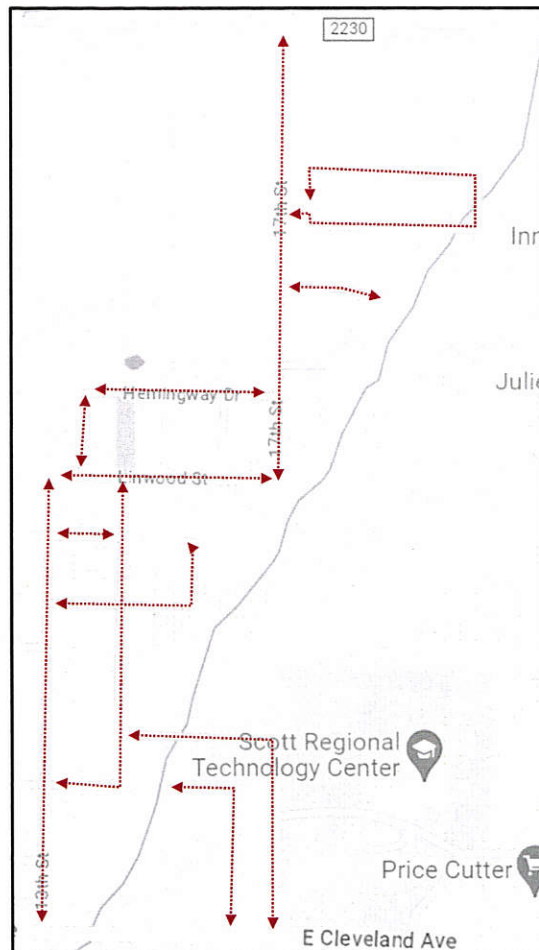
Rosewood Group

Street Name	From	To	Length	Width	SF	SY
Hillcrest Dr	9th Street	13th Street	1,300	35	45,500	5,056
N. & S. Rosewood	9th Street	9th Street	2,500	30	75,000	8,333
12th Street	N. & S. Rosewood	13th Street	215	30	6,450	717
E. Sycamore St	9th Street	13th Street	1,300	28	36,400	4,044
10th Street	E. Sycamore St	Cleveland Ave	830	22	18,260	2,029
11th Street	End	Cleveland Ave	650	18	11,700	1,300
E. Park Street	9th Street	13th Street	1,320	18	23,760	2,640
12th Street	Cleveland Ave	E. Park Street	630	20	12,600	1,400
					0	0
Totals =			8,745		229,670	25,519



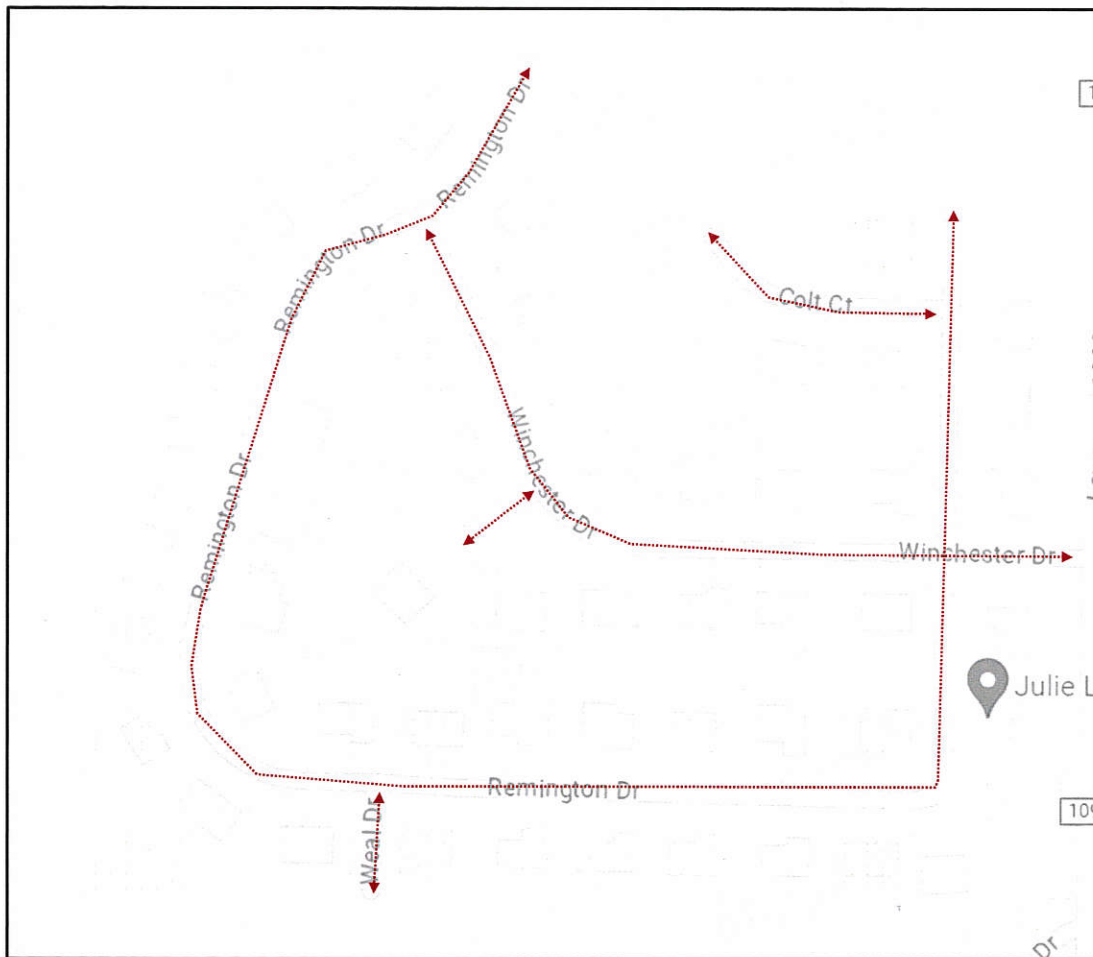
Roxbury Group

Street Name	From	To	Length	Width	SF	SY
13th Street	Cleveland Ave	Linwood St	2,650	29	76,850	8,539
Derker Dr	Linwood St	Hemingway Dr	500	35	17,500	1,944
Hillcrest Dr	13th Street	14th Street	420	28	11,760	1,307
Hemingway Dr	Derker Dr	17th Street	1,130	38	42,940	4,771
Roxbury Dr	Linwood St	Hemingway Dr	500	38	19,000	2,111
Linwood St	13th Street	17th Street	1,300	26	33,800	3,756
Rosewood/15th	13th Street	End	1,250	38	47,500	5,278
14th Street	Linwood St	13th Street	2,220	36	79,920	8,880
Twin Hills/17th	14th Street	Cleveland Ave	2,060	25	51,500	5,722
E Sycamore/16th	Cleveland Ave	End	1,250	22	27,500	3,056
Cardinal Cir	Hemingway Dr	End	375	35	13,125	1,458
17th Street	Linwood St	Lawrence 2230	2,650	26	68,900	7,656
Twin Oaks Dr	17th Street	End	640	32	20,480	2,276
Brookside Cir	17th Street	17th Street	2,715	26	70,590	7,843
					0	0
Totals =			19,660		581,365	64,596



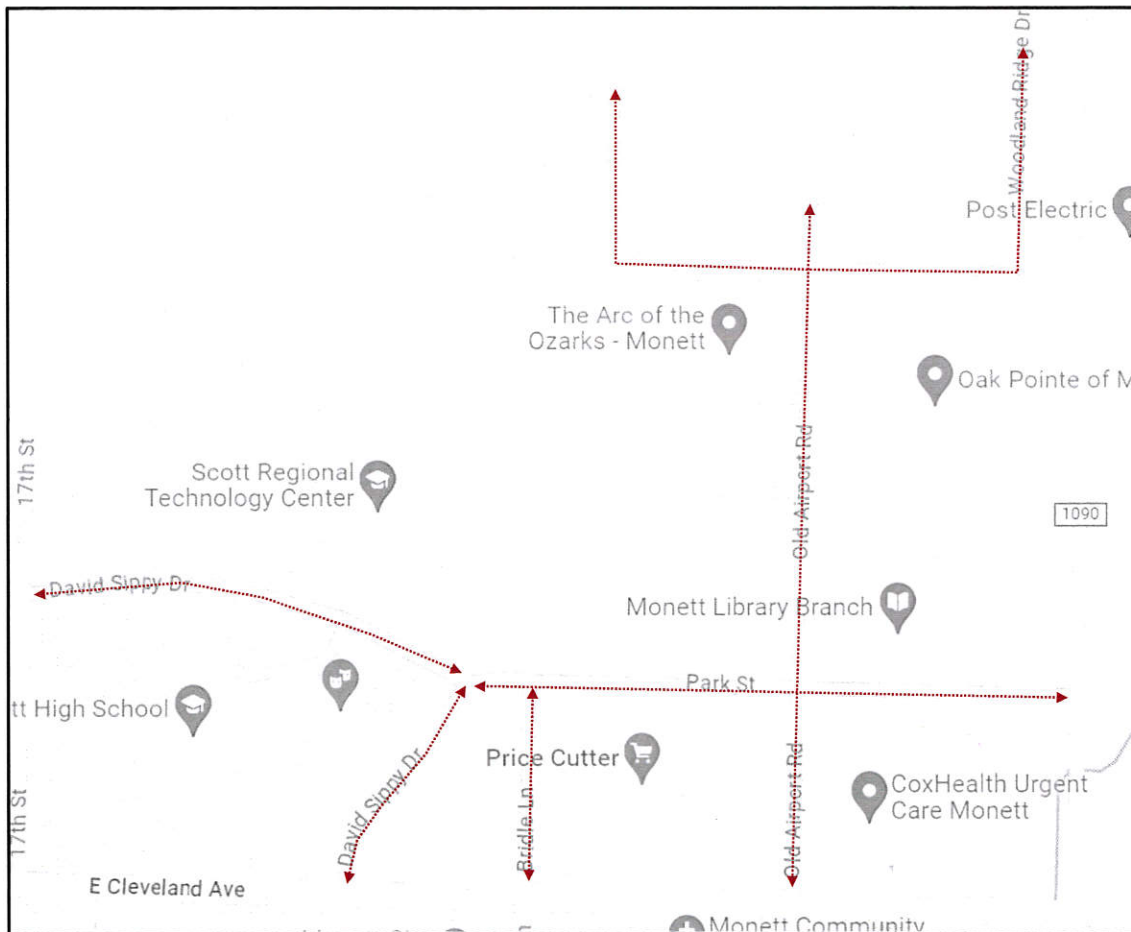
Winchester Group

Street Name	From	To	Length	Width	SF	SY
Remington Dr	Winchester Dr	End	2,786	27	75,222	8,358
Ruger Cir	Winchester Dr	End	341	27	9,207	1,023
Winchester Dr	Chapell Dr	Remington Dr	1,072	27	28,944	3,216
Colt Ct	Remington Dr	End	468	27	12,636	1,404
Weal Dr	Remington Dr	End	150	27	4,050	450
					0	0
Totals =			4,817		130,059	14,451



Woodland Group

Street Name	From	To	Length	Width	SF	SY
Woodland Ridge Dr	End	End	2,100	25	52,500	5,833
Old Airport Rd	Cleveland Ave	End	1,700	36	61,200	6,800
David Sippy Dr	17th St	Park St	1,143	24	27,432	3,048
David Sippy Dr	Cleveland Ave	Park St	600	24	14,400	1,600
Birdle Ln	Cleveland Ave	Park St	500	35	17,500	1,944
Park St	David Sippy Dr	Chapell Dr	1,500	36	54,000	6,000
					0	0
Totals =			7,543		227,032	25,226



High Group

Street Name	From	To	Length	Width	SF	SY
Crestview Dr	W. County St	W. Scott St	850	38	32,300	3,589
W. Scott St.	Crestview Dr	N. Eisenhower St	1,163	38	44,194	4,910
High St	W. Scott St.	End	390	37	14,430	1,603
Atwell Acres	W. Scott St.	W. Scott St.	860	26	22,360	2,484
					0	0
Totals =			3,263		113,284	12,587



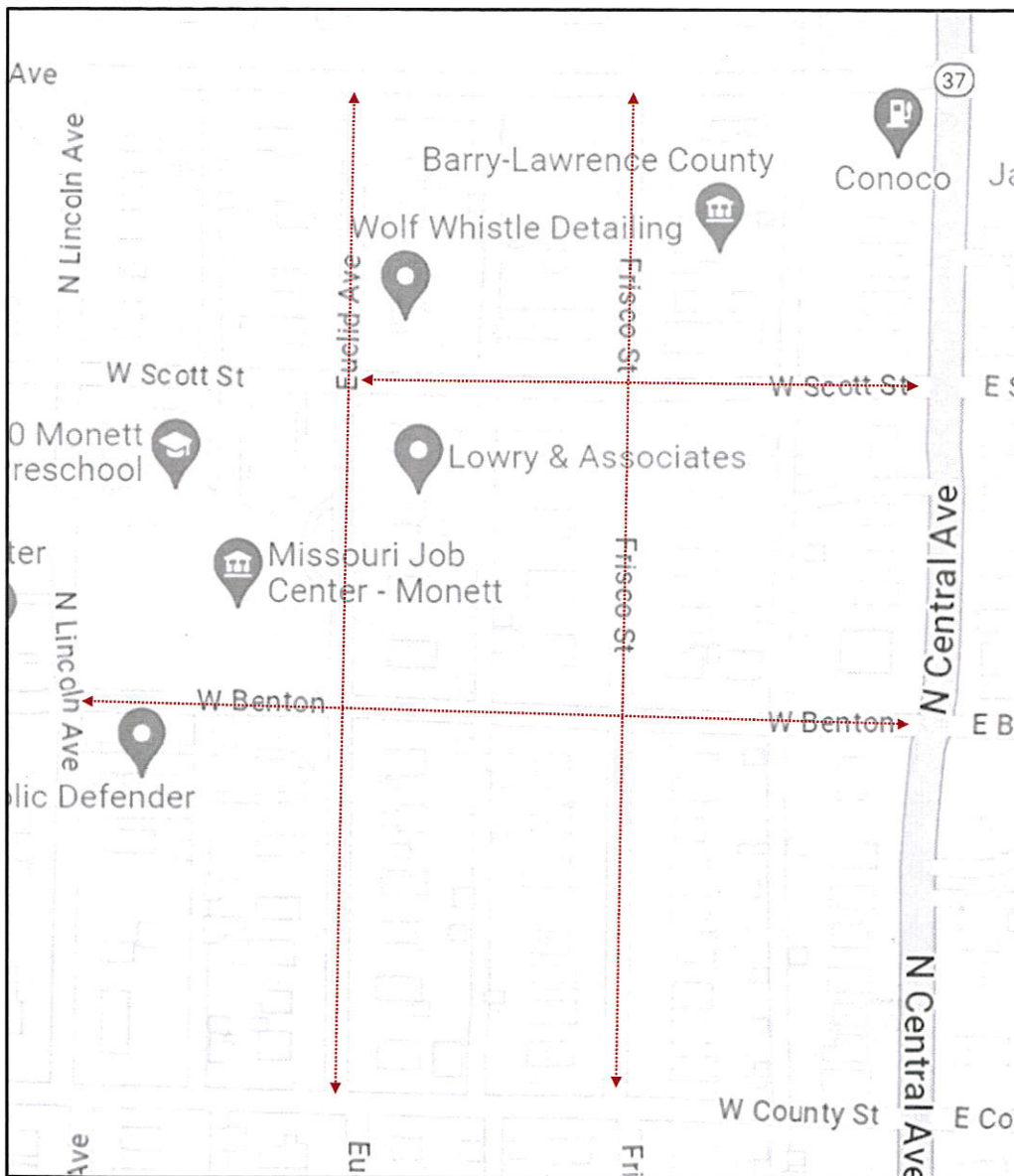
Scott Group

Street Name	From	To	Length	Width	SF	SY
W. Scott St	N. Eisenhower St	Euclid Ave	1,807	30	54,210	6,023
Jackson St	Davis Dr	End	260	30	7,800	867
Davis Dr	N. Eisenhower St	2nd Ave	840	24	20,160	2,240
2nd Ave	W. Scott St	W. County St	890	30	26,700	2,967
1st Ave	N. Lincoln Ave	W. Cleveland Ave	1,060	29	30,740	3,416
N. Lincoln Ave	W. Cleveland Ave	W. County St	1,269	28	35,532	3,948
					0	0
Totals =			6,126		175,142	19,460



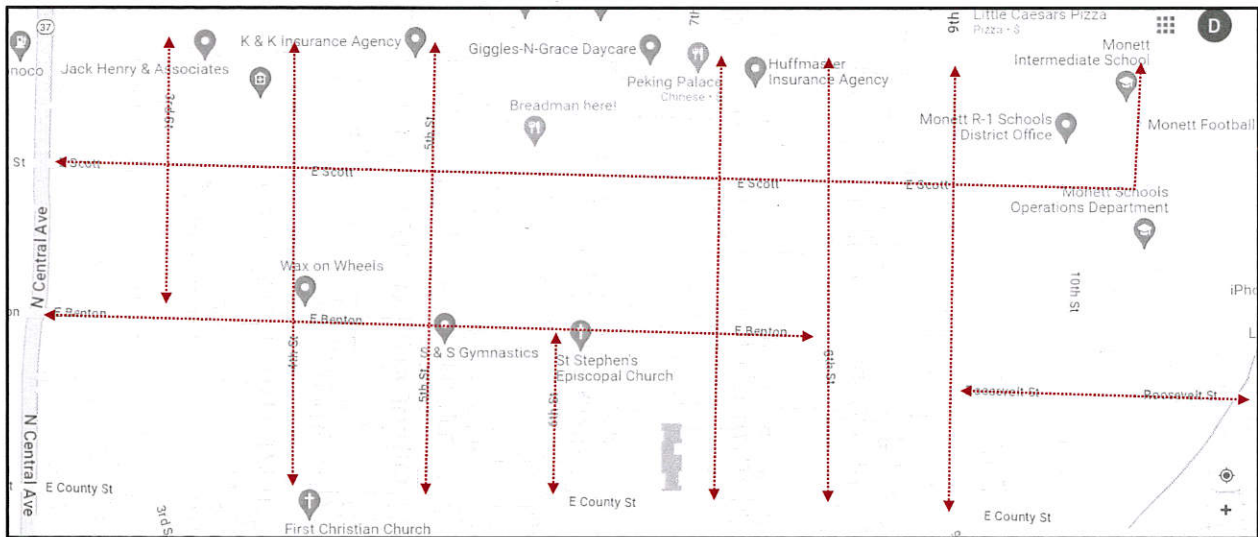
Frisco Group

Street Name	From	To	Length	Width	SF	SY
Euclid Ave	W. Cleveland Ave	W. County St	1,280	34	43,520	4,836
W. Scott St	Euclid Ave	N. Central Ave	760	28	21,280	2,364
Frisco St	W. Cleveland Ave	W. County St	1,280	34	43,520	4,836
W. Benton Ave	N. Lincoln Ave	N. Central Ave	1,100	30	33,000	3,667
					0	0
Totals =			4,420		141,320	15,702



Benton Group

Street Name	From	To	Length	Width	SF	SY
3rd St	Cleveland Ave	E Benton St	810	30	24,300	2,700
4th St	Cleveland Ave	E County St	1300	30	39,000	4,333
E Benton St	N. Central Ave	8th St	2240	25	56,000	6,222
5th St	Cleveland Ave	E County St	1300	30	39,000	4,333
6th St	E Benton St	E County St	460	30	13,800	1,533
7th St	Cleveland Ave	E County St	1300	30	39,000	4,333
E Scott St	N. Central Ave	Cleveland Ave	3500	27	94,500	10,500
8th St	Cleveland Ave	E County St	1300	25	32,500	3,611
9th St	Cleveland Ave	E County St	1300	28	36,400	4,044
10th St	E Scott St	Roosevelt St	570	22	12,540	1,393
Roosevelt St	9th St	13th Street	1300	18	23,400	2,600
Totals =			15,380		410,440	45,604



Glen Group

Street Name	From	To	Length	Width	SF	SY
Schaller Ln	14th St	End	450	24	10,800	1,200
14th St	E. Broadway	Cleveland Ave	1,932	30	57,960	6,440
E Bond St	13th St	15th St	700	42	29,400	3,267
E Broadway/15th	13th St	End	1,557	26	40,482	4,498
16th St	14th St	Cleveland Ave	2,215	25	55,375	6,153
					0	0
Totals =			6,854		194,017	21,557



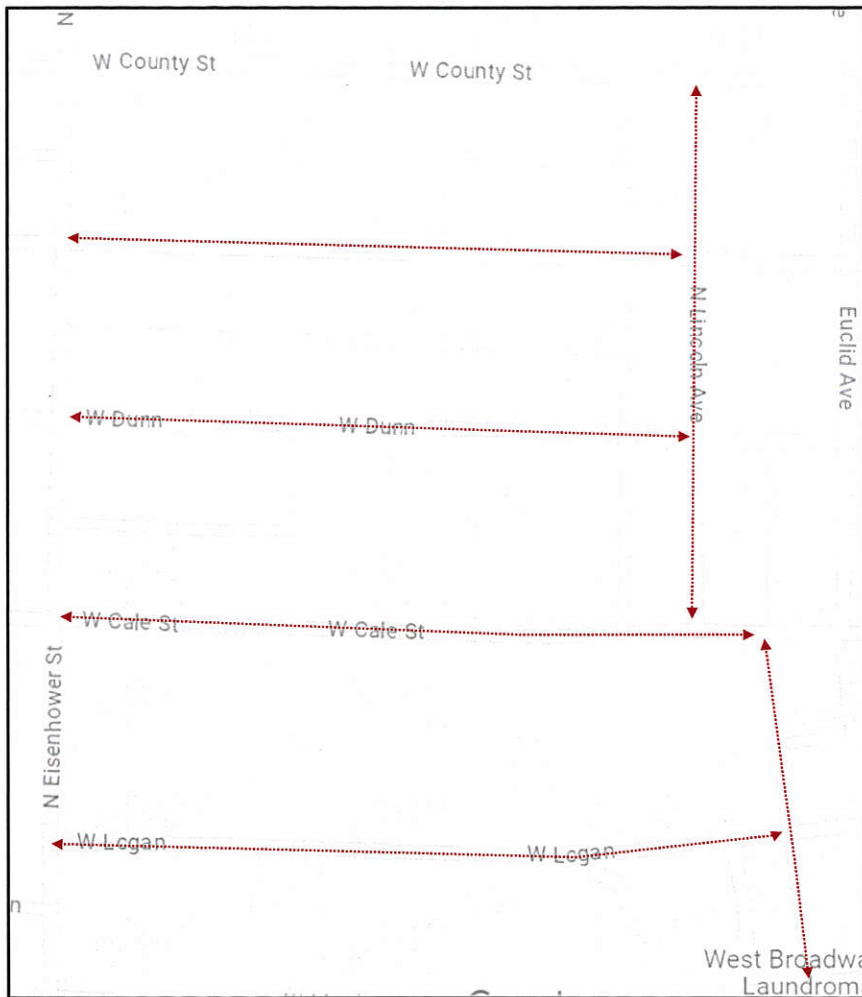
Pleasant Group

Street Name	From	To	Length	Width	SF	SY
W. Wishart St	Pleasant Dr	N. Eisenhower St	670	30	20,100	2,233
Linden	End	W. Dunn St	970	55	53,350	5,928
Highland Ave	End	End	1,365	30	40,950	4,550
W. Dunn St	Linden	N. Eisenhower St	1,300	32	41,600	4,622
Pleasant Dr	W. County St	End	1,760	29	51,040	5,671
Grand St	W. Cale St	W. Wishart St	900	35	31,500	3,500
W. Cale St	Linden	N. Eisenhower St	1,300	24	31,200	3,467
Dian Ln	End	N. Eisenhower St	300	36	10,800	1,200
Opal/Main	N. Eisenhower St	N. Eisenhower St	1,375	21	28,875	3,208
Pryor	Main	Opal	400	24	9,600	1,067
					0	0
Totals =			10,340		319,015	35,446



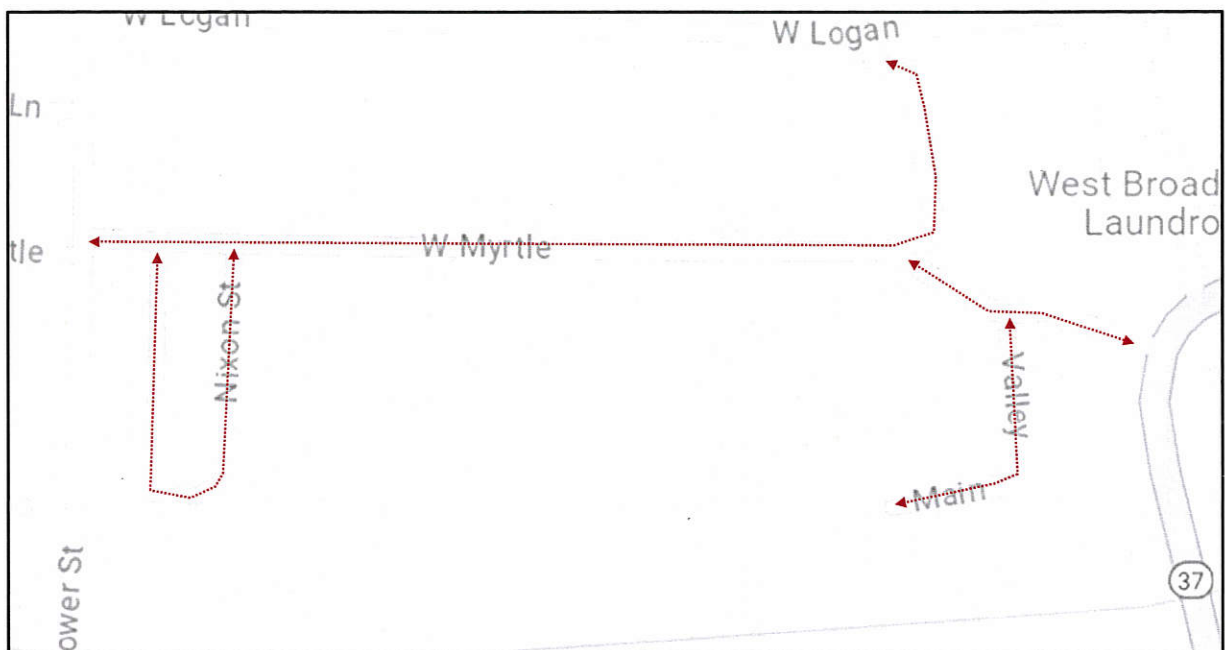
Dunn Group

Street Name	From	To	Length	Width	SF	SY
W. Wishart St	N. Eisenhower St	N. Lincoln Ave	1,480	28	41,440	4,604
W. Dunn St	N. Eisenhower St	N. Lincoln Ave	1,480	31	45,880	5,098
W. Cale St	N. Eisenhower St	N. Lincoln Ave	1,670	22	36,740	4,082
W. Logan St	N. Eisenhower St	N. Lincoln Ave	1,770	22	38,940	4,327
N. Lincoln Ave	W. Cale St	N. Central Ave	960	29	27,840	3,093
N. Lincoln Ave	W. Cale St	W. County St	1,300	29	37,700	4,189
					0	0
Totals =			8,660		228,540	25,393



Myrtle Group

Street Name	From	To	Length	Width	SF	SY
Main/Nixson	W. Myrtle	W. Myrtle	910	15	13,650	1,517
W. Myrtle	N. Eisenhower St	W. Logan St	1,780	21	37,380	4,153
W. Broadway	W. Myrtle	N. Central Ave	475	22	10,450	1,161
Valley/Main	End	W. Broadway	480	16	7,680	853
					0	0
Totals =			3,645		69,160	7,684



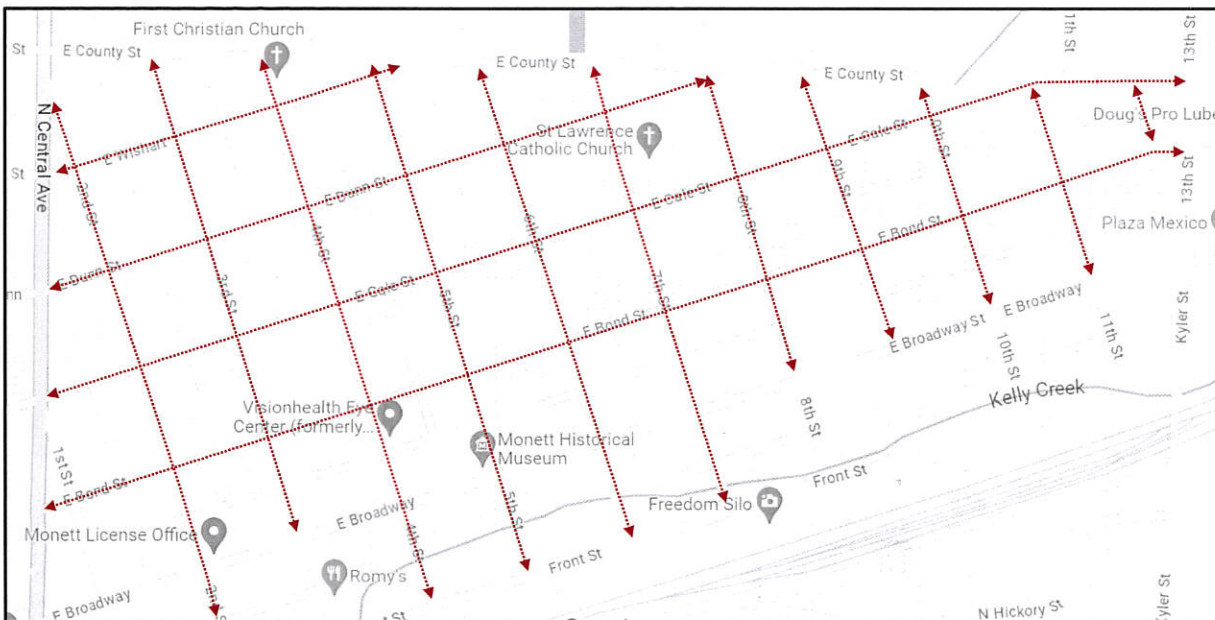
Euclid Group

Street Name	From	To	Length	Width	SF	SY
W. Wishart St	N. Lincoln Ave	N. Central Ave	1,056	31	32,736	3,637
Euclid Ave	W. Cale St	W. County St	1,300	29	37,700	4,189
W. Dunn St	N. Lincoln Ave	N. Central Ave	1,050	30	31,500	3,500
Frisco Ave	W. Cale St	W. County St	1,300	34	44,200	4,911
W. Cale St	N. Lincoln Ave	N. Central Ave	890	30	26,700	2,967
Euclid Ave	W. Cale St	N. Central Ave	875	26	22,750	2,528
Frisco St	W. Cale St	N. Central Ave	815	20	16,300	1,811
W. Logan St	N. Lincoln Ave	Frisco St	700	22	15,400	1,711
					0	0
Totals =			7,986		227,286	25,254



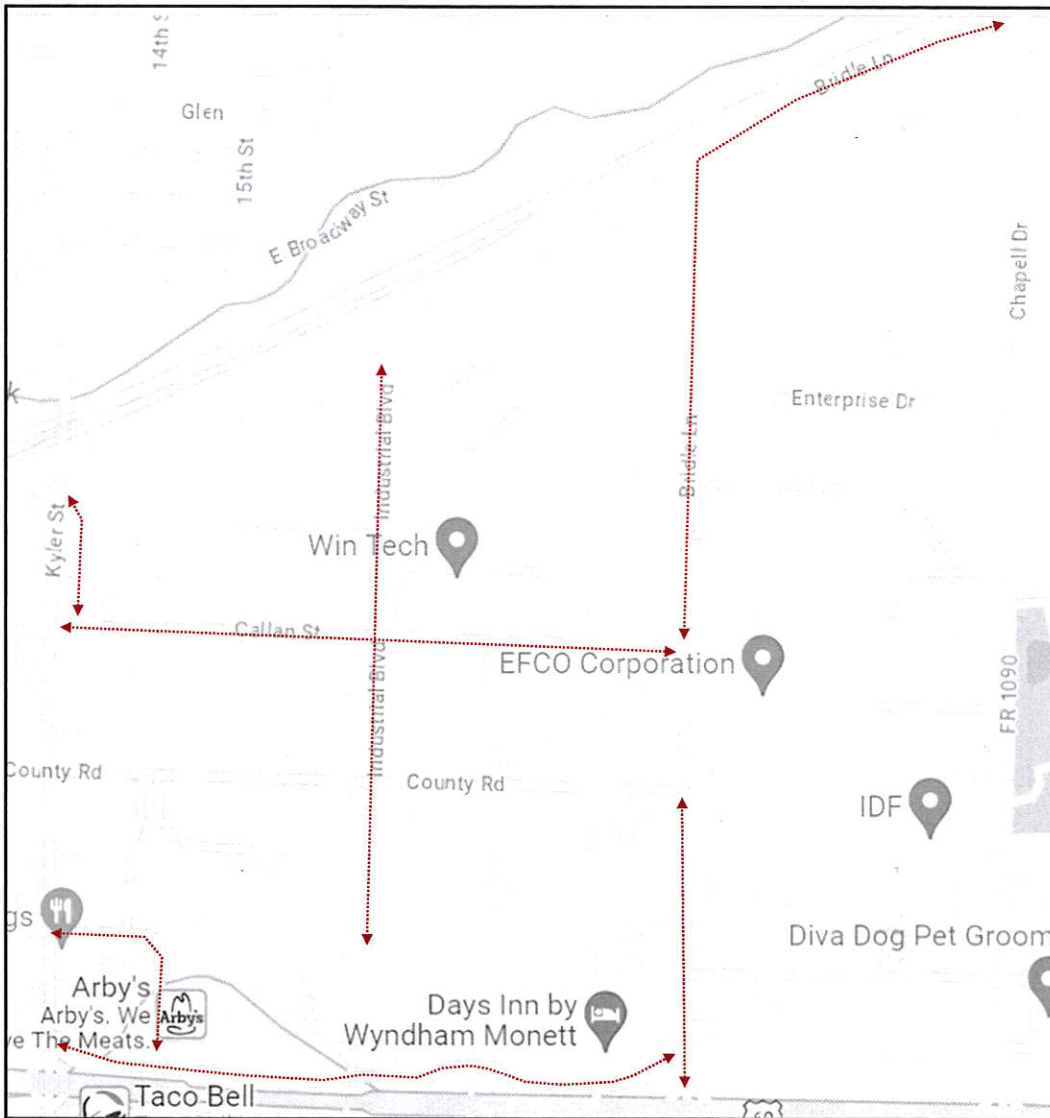
Cale Group

Street Name	From	To	Length	Width	SF	SY
W. Wsihart St	N. Central Ave	E. County St	1,330	30	39,900	4,433
E. Dunn St	N. Central Ave	E. County St	2,425	28	67,900	7,544
2nd St	N. Central Ave	Front St	2,170	30	65,100	7,233
3rd St	E. County St	E. Broadway St	2,100	30	63,000	7,000
4th St	E. County St	Front St	2,000	28	56,000	6,222
5th St	E. County St	Front St	1,873	28	52,444	5,827
6th St	E. County St	Front St	1,750	30	52,500	5,833
7th St	E. County St	Front St	1,600	30	48,000	5,333
E. Cale St	N. Central Ave	13th St	4,100	30	123,000	13,667
E. Bond St	N. Central Ave	14th St	4,100	39	159,900	17,767
8th St	E. County St	E. Broadway St	1,400	30	42,000	4,667
9th St	E. County St	E. Broadway St	1,000	30	30,000	3,333
10th St	E. County St	E. Broadway St	1,045	30	31,350	3,483
11th St	E. Cale St	E. Broadway St	981	30	29,430	3,270
12th St	E. Cale St	E. Bond St	280	30	8,400	933
11th St	E. Cale St	Roosevelt St	340	30	10,200	1,133
					0	0
Totals =			28,494		879,124	97,680



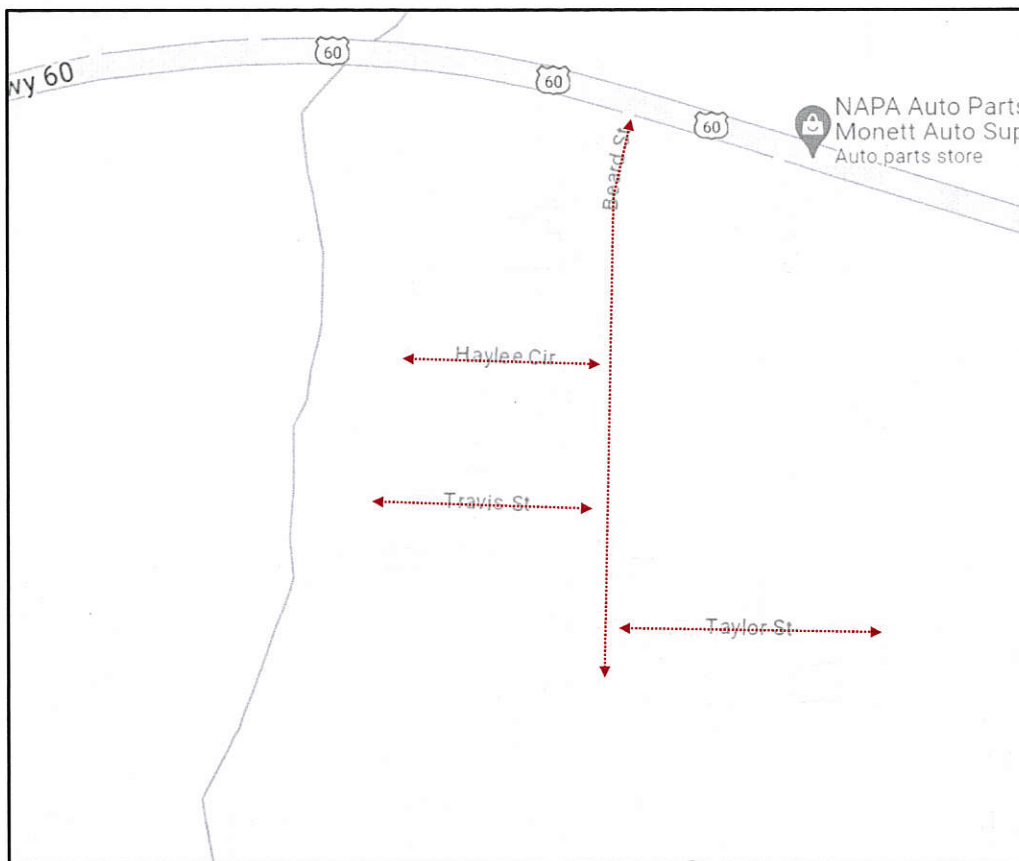
Industrial Group

Street Name	From	To	Length	Width	SF	SY
Kay St	Kyler St	Callan St	540	24	12,960	1,440
Industrial Blvd	End	End	2,420	31	75,020	8,336
Dairy St	Kyler St	South Ave	1,025	27	27,675	3,075
South Ave	Kyler St	Bridle Ln	2,750	26	71,500	7,944
Callan St	Kyler St	Bridle Ln	2,650	40	106,000	11,778
Bridle Ln	Hwy 60	Chapell Dr	5,400	36	194,400	21,600
					0	0
Totals =			14,785		487,555	54,173



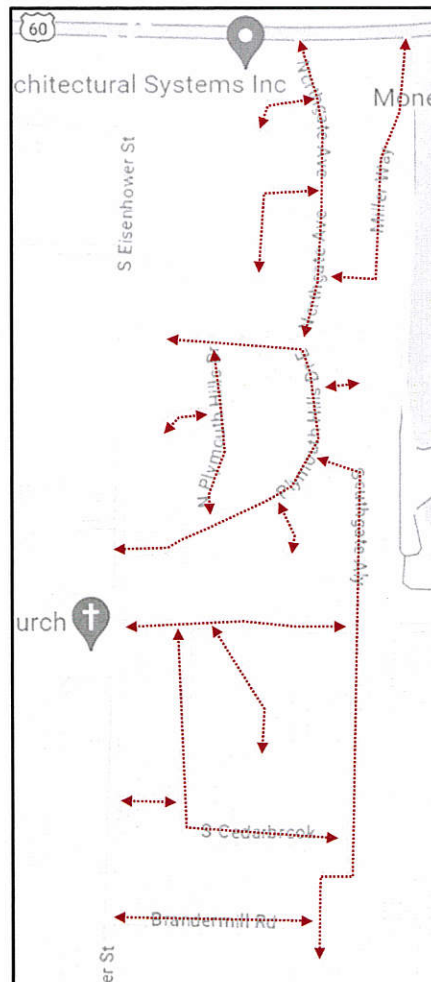
Beard Group

Street Name	From	To	Length	Width	SF	SY
Haylee Cir	End	Beard St	390	26	10,140	1,127
Travis St	End	Beard St	435	26	11,310	1,257
Beard St	Hwy 60	End	1,000	42	42,000	4,667
Taylor St	Beard St	End	520	26	13,520	1,502
					0	0
Totals =			2,345		76,970	8,552



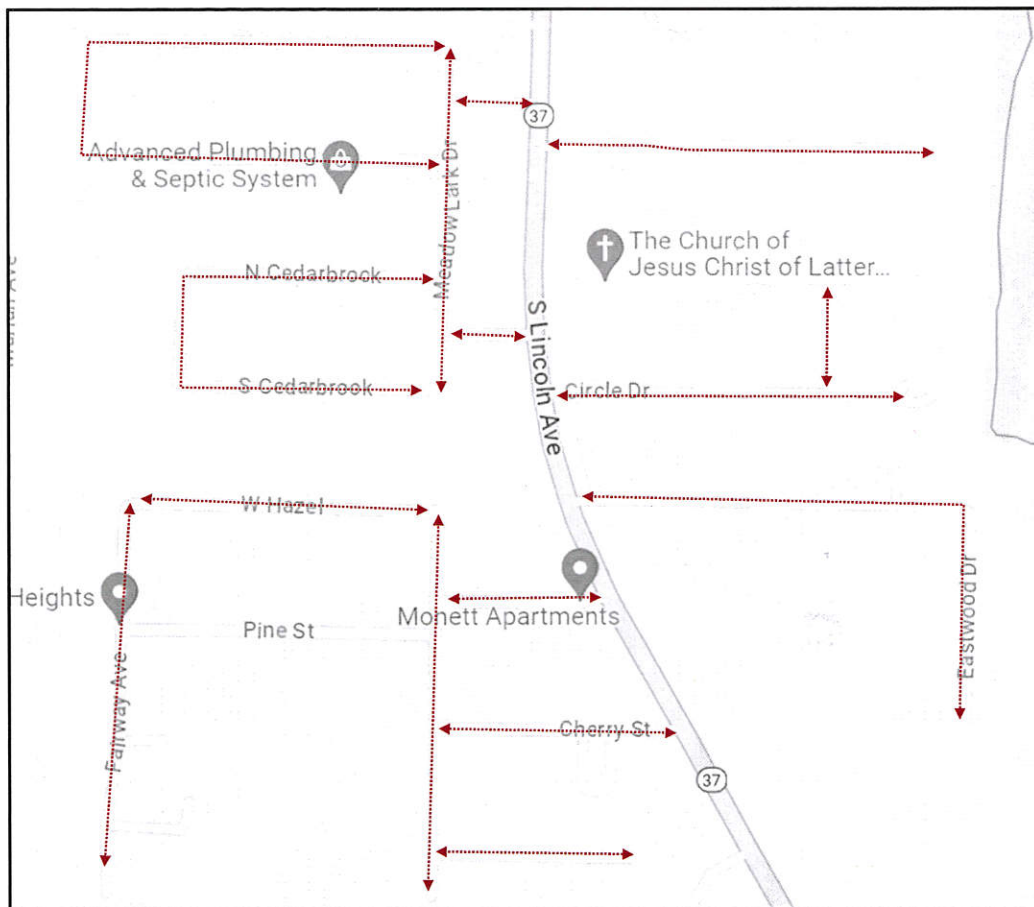
Plymouth Group

Street Name	From	To	Length	Width	SF	SY
N. Gate Ct	End	Northgate Ave	400	10	4,000	444
Northgate Ave	Hwy 60	N. Plymouth Hills	1,475	26	38,350	4,261
Aubree Ct	Northgate Ave	End	730	36	26,280	2,920
Miller Way	Hwy 60	Northgate Ave	1,400	25	35,000	3,889
Fairmeadow Cir	N. Plymouth Hills	End	300	25	7,500	833
Woodlawn Ln	N. Plymouth Hills	End	365	25	9,125	1,014
N. Plymouth Hills	N. Plymouth Hills	N. Plymouth Hills S	860	25	21,500	2,389
N. Plymouth Hills S & E	S. Eisenhower St	End	2,235	26	58,110	6,457
Greenridge Terrace	N. Plymouth Hills S	End	330	25	8,250	917
N Belaire Dr	S. Eisenhower St	Southgate Aly	1,126	38	42,788	4,754
Oak Grove Ave	N Belaire Dr	End	740	20	14,800	1,644
Ventura/S Cedarbrook	N Belaire Dr	Southgate Aly	1,725	22	37,950	4,217
S Cedarbrook	Hwy 60	Ventura Ave	330	18	5,940	660
Brandermil Rd	Hwy 61	Southgate Aly	976	27	26,352	2,928
Southgate Aly	N. Plymouth Hills E	Brandermil Rd	2,628	35	91,980	10,220
					0	0
Totals =			15,620		427,925	47,547



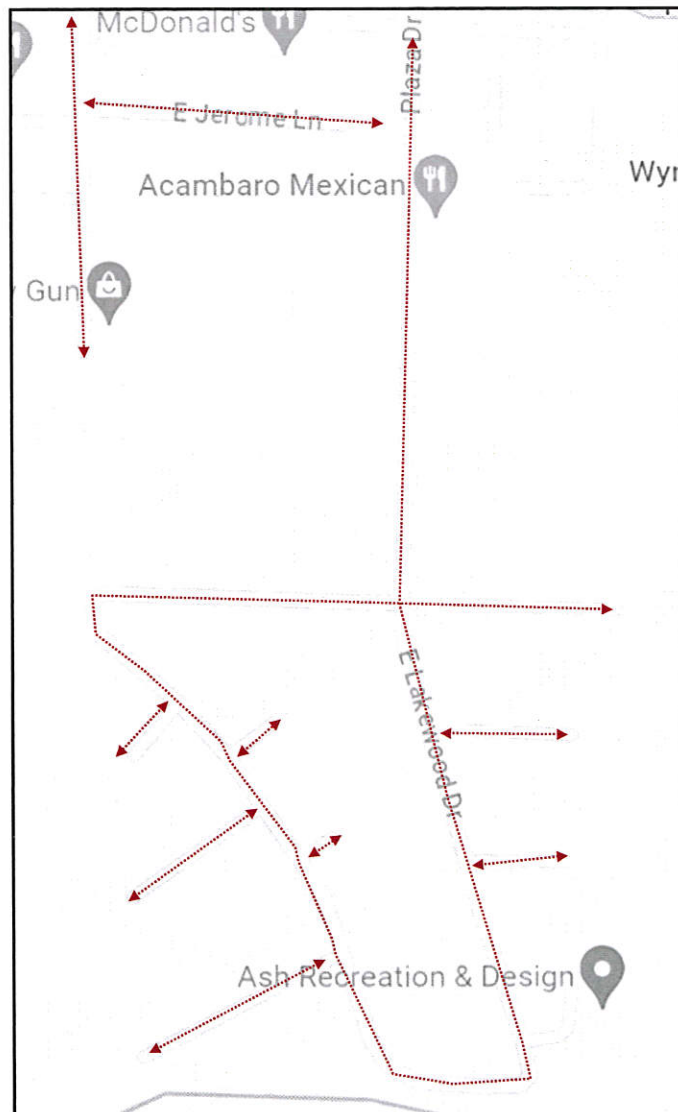
Pine Group

Street Name	From	To	Length	Width	SF	SY
N & S Belaire/West Ln	Meadowark Dr	Meadowark Dr	2,460	29	71,340	7,927
N Southern Heights	Meadowark Dr	Hwy 37	240	32	7,680	853
Meadowark Dr	N Belaire Dr	S. Cedarbrook	1,000	30	30,000	3,333
N & S Cedarbrook	Meadowark Dr	Meadowark Dr	1,900	35	66,500	7,389
S Southern Heights	Meadowark Dr	Hwy 37	240	35	8,400	933
W Hazel St	Fairway Ave	Washington	890	36	32,040	3,560
Pine St	Washington	W Hazel St	460	36	16,560	1,840
Fairway Ave	End	W Hazel St	1,160	28	32,480	3,609
Pine St	Fairway Ave	Washington	900	33	29,700	3,300
Washington	W Hazel St	End	1,140	31	35,340	3,927
Cherry St	Washington	Hwy 37	700	20	14,000	1,556
Chestnut	Washington	End	590	36	21,240	2,360
Edgewood Dr	Hwy 37	End	1,130	18	20,340	2,260
Palmer Dr	End	End	640	25	16,000	1,778
Circle Dr	Hwy 37	End	1,276	28	35,728	3,970
Palmer Dr	Circle Dr	Palmer Dr	325	26	8,450	939
E Hazel St	Hwy 37	End	1,750	36	63,000	7,000
					0	0
Totals =			16,801		508,798	56,533



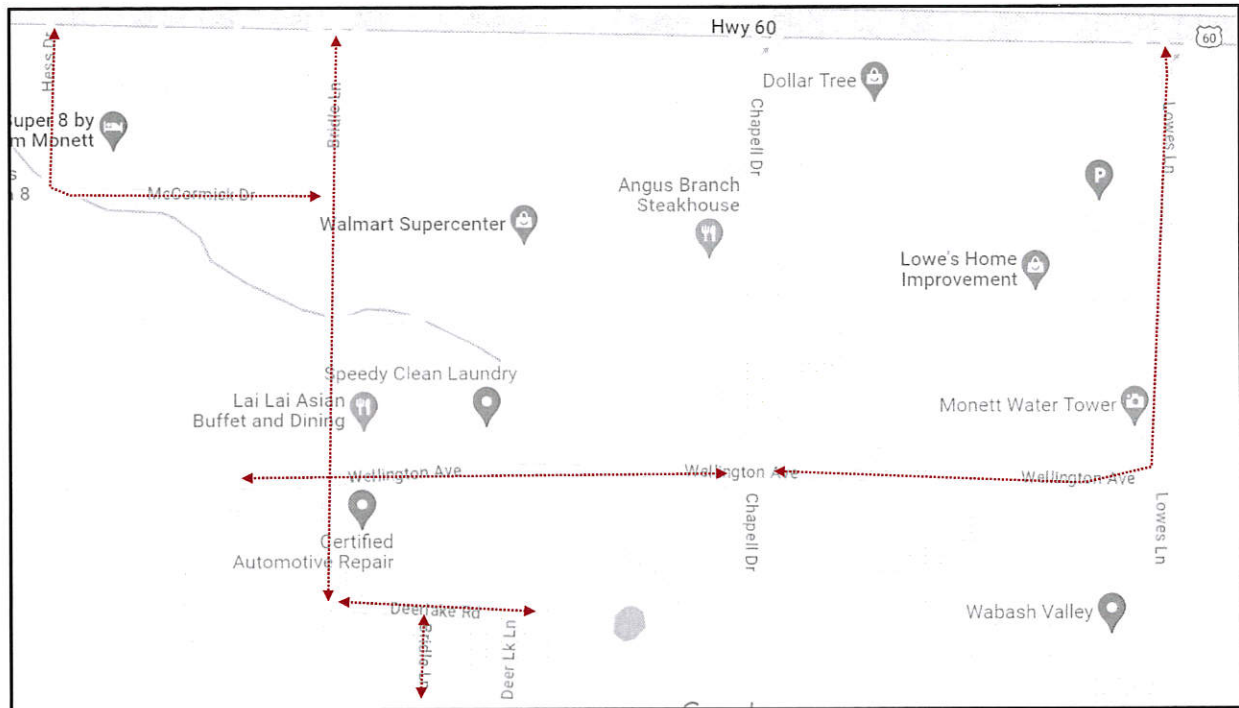
Plaza Group

Street Name	From	To	Length	Width	SF	SY
Kyler St	Hwy 60	End	900	42	37,800	4,200
E Jerome Ln	Kyler St	Plaza Drive	750	36	27,000	3,000
Plaza/Lakewood/Wellington	Hwy 60	End	5,600	35	196,000	21,778
Lometa Ct	W Lakewood Dr	End	255	24	6,120	680
Marriot Ct	W Lakewood Dr	End	180	24	4,320	480
Hampton Place Rd	W Lakewood Dr	End	450	24	10,800	1,200
Lexington Rd	W Lakewood Dr	End	615	24	14,760	1,640
Canebury Ct	W Lakewood Dr	End	175	24	4,200	467
E. Monteray Ct	E Lakewood Dr	End	420	24	10,080	1,120
E. Morgan Ave	E Lakewood Dr	End	300	24	7,200	800
E. Troy Ave	E Lakewood Dr	End	400	24	9,600	1,067
					0	0
Totals =			10,045		327,880	36,431



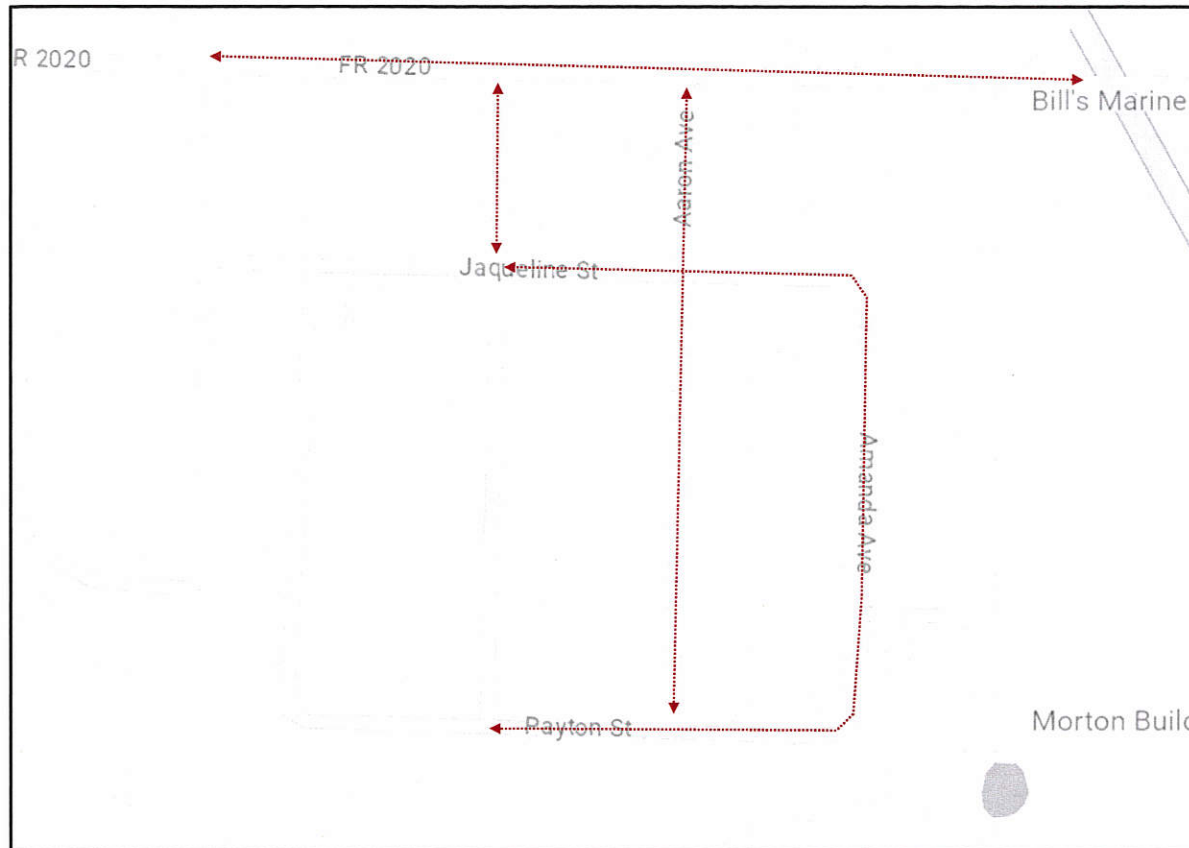
Wellington-Lowes Group

Street Name	From	To	Length	Width	SF	SY
Hess/McCormick	Hwy 60	Birdle Ln	1,460	36	52,560	5,840
Birdle Ln	Hwy 60	Deerlake Rd	1,830	36	65,880	7,320
Wellington Ave	End	Chapell Dr	1,700	36	61,200	6,800
Deerlake Rd	Birdle Ln	End	700	36	25,200	2,800
Birdle Ln	Deerlake Rd	End	275	36	9,900	1,100
Wellington/Lowes	Chapell Dr	Hwy 60	2,700	36	97,200	10,800
					0	0
Totals =			8,665		311,940	34,660

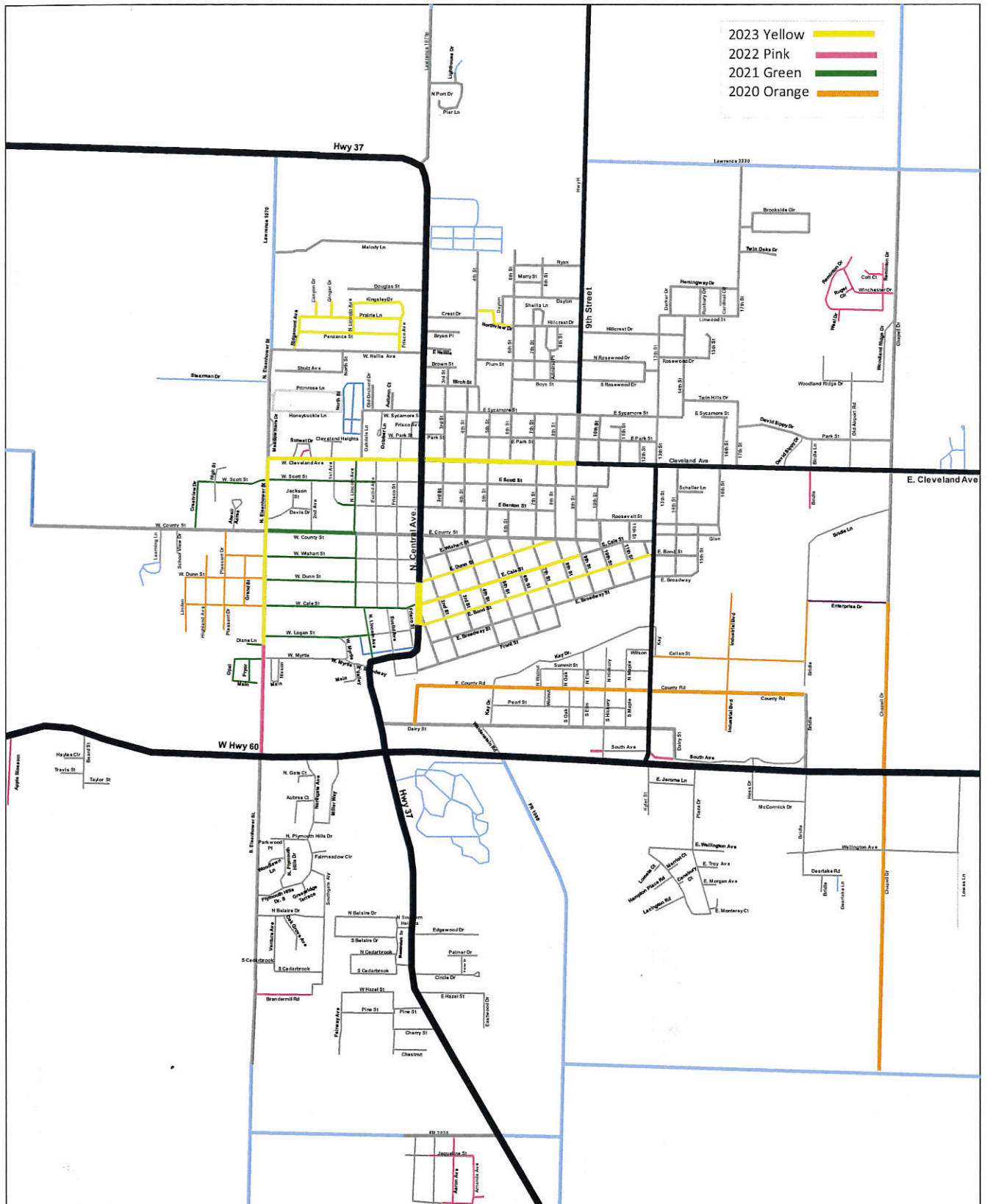


Payton Group

Street Name	From	To	Length	Width	SF	SY
FR 2020	Hwy 37	CL Line	1,600	36	57,600	6,400
Payton St	FR 2020	Jaqueline St	340	28	9,520	1,058
Aaron Ave	FR 2021	Payton St	1,300	28	36,400	4,044
Jaqueline/Amanda/Payton	Payton St	Payton St	2,200	28	61,600	6,844
					0	0
Totals =			5,440		165,120	18,347



Recent Chip and Seal Paving History



Treatment Table – Costs include a 2% inflation factor

Project Description	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost	Cost
Arterials and Collectors:											
E. Broadway Street			A \$462,000								
N. Eisenhower				A \$324,133							
S. Eisenhower				A \$442,000							
Chappel Dr. - north section		CF city crew			A \$349,067						
Chappel Dr. - south section		CF	city crew			\$176,800					
E. County Street		CF	city crew			\$179,822					
W. County Street				CF city crew			\$319,222				
Chapell Dr. - middle					CF city crew			\$311,516			
County Road		CF	city crew						\$221,000		
Eisenhower - middle		CF	city crew							\$196,444	
W. Cleveland				CF							\$623,333
Arterial/Collector Totals	\$0	\$0	\$462,000	\$766,133	\$349,067	\$356,622	\$319,222	\$311,516	\$221,000	\$196,444	\$623,333
Residential Streets:											
Rosewood Group	A \$459,342					CF city crew				CF city crew	C&S \$574,178
Glen Group	A \$388,026					CF city crew				CF city crew	C&S \$485,033
Dairy Group - except County Rd.	A \$960,480					CF city crew				CF city crew	C&S \$1,200,600
Pine Group	A \$1,017,594						CF city crew				
Myrtle Group	A \$138,312						CF city crew				
Plaza Group	A \$655,758						CF city crew				
Plum Group	CF	city crew	C&S \$282,697					CF city crew			
Benton Group				C&S \$125,411				CF city crew			
Plymouth Group				C&S \$130,754				CF city crew			
Wellington/Lowes Group									CF city crew		
Roxbury Group				CF city crew	C&S \$95,315					CF city crew	
Frisco Group		CF city crew		CF city crew	C&S \$193,788						
Euclid Group		CF city crew			CF city crew	C&S \$47,106				CF city crew	
Nellie Group		CF city crew			CF city crew	C&S \$75,762				CF city crew	
Beard Group		CF city crew			CF city crew	C&S \$42,516				CF city crew	
Sycamore Group		CF city crew			CF city crew	C&S \$25,656				CF city crew	
Woodland Group		CF city crew			CF city crew	C&S \$48,414				CF city crew	
Industrial Group		CF city crew			CF city crew	C&S \$81,985					
Port Group				CF city crew	C&S \$201,656						
Pleasant Group				CF city crew				C&S \$39,780			CF city crew
Dunn Group				CF city crew				C&S \$115,200			CF city crew
High Group				CF city crew				C&S \$82,527			CF city crew
Scott Group				CF city crew				C&S \$40,908			CF city crew
Payton Group					CF city crew			CF city crew	C&S \$63,245		
Winchester Group					CF city crew			CF city crew	C&S \$59,628		
Prairie Group					CF city crew			CF city crew	C&S \$46,966		
Cale Group					CF city crew			CF city crew	C&S \$78,809		
								CF city crew	C&S \$317,460		
Residential Totals	\$1,807,848	\$1,811,664	\$282,697	\$256,165	\$288,103	\$239,454	\$283,641	\$278,415	\$248,648	\$317,460	\$2,259,810
Overall Totals =	\$1,807,848	\$1,811,664	\$744,697	\$1,022,299	\$638,170	\$596,076	\$602,863	\$589,930	\$469,648	\$513,904	\$2,883,143

A - Mill/Overlay; CF - Street Dept. Crack Filling; STP - Federal Aid; C&S - Chip and Seal (Street Dept.); FD - Full Depth Pavement Replacement

5-Year - Pavement Resurfacing Schedule

