

**LEGISLATIVE REFERENCE BUREAU
RESEARCH REPORT**

Prepared for: Ald. Jim Bohl
By: Jeff Osterman, Legislative Reference Bureau
Date: May 10, 2005
Subject: PAVING PROGRAMS IN MILWAUKEE-AREA COMMUNITIES

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INTRODUCTION

Recently, you asked the Legislative Reference Bureau to investigate street and alley paving practices in various Milwaukee-area communities. In response to your request, I contacted public works officials in 10 suburban municipalities and posed the following questions:

1. What is your municipality's paving cost per lineal foot for residential street and alley reconstruction projects?
2. What percentage of this cost is cost is assessed to the abutting property owner (street and alley)?
3. What percentage of your community's total existing street and alley mileage is targeted for reconstruction/repaving each year?
4. Does your community ever reconstruct or repave its alleys with asphalt or some other non-concrete material?
5. Does your municipality have any special technique (e.g., sealcoating or slurry seal) for prolonging the life of a street or alley so that total reconstruction won't be necessary so often? If so, what is the cost per lineal foot for using this technique? How much additional "life" does it provide to streets, on average? Are abutting property owners assessed for this type of work?

As you will see, the survey responses often necessitated considerable deviation from these questions. This is because reconstruction and resurfacing practices and the associated cost recovery mechanisms vary widely among Milwaukee-area communities. The survey findings for individual municipalities may not address all of these questions because, in many cases, the questions were irrelevant or other questions were more appropriate.

The municipalities surveyed were:

Brookfield
Brown Deer
Glendale
Greenfield
New Berlin
Shorewood
South Milwaukee
Waukesha
Wauwatosa
West Allis

CITY OF MILWAUKEE

Before discussing paving programs in various suburban communities, an overview of the City of Milwaukee's paving practices is in order. According to Mary Dziejontkowski, Department of Public Works-Infrastructure Services Division, the City's assessment for concrete reconstruction of a 32-foot-wide street is \$50.85 per linear foot of frontage for 2005. This includes new curb and gutter. For an asphalt resurfacing, which adds about 25 years to the life of a street and typically includes about 50% new curb and gutter, the assessment is \$23.35 per frontage foot. (Note: the condition of the street to be repaired, based on testing by DPW staff, determines whether concrete reconstruction is necessary, or whether the less expensive asphalt resurfacing can be done.) For a standard 20-foot-wide alley, the assessment is \$55 per linear foot.

Section 115-43 of the Code of Ordinances states that the "recovery ratios" for reconstruction of streets and alleys shall be 60% and 90%, respectively. However, Ms. Dziejontkowski stated that these percentages are really "goals" for cost recovery on an overall, citywide basis. Individual property owners may pay more or less than these percentages based on special circumstances in each reconstruction project (e.g., on a corner lot, a property owner is assessed only for street work on the "short side" of the lot).

Ms. Dziejontkowski indicated that the City does not have a specific target or goal for street mileage to be reconstructed each year. The amount of reconstruction is based simply on budget appropriations and the number of projects that DPW can "get through the public hearing process." (DPW is researching the amount of street mileage that is resurfaced or reconstructed annually; I will forward this information to you when it becomes available). For alleys, DPW aims for 3 miles of reconstruction each year. But since Milwaukee has 400 miles of alleys, and alleys do not last 133 years (the amount of time it would take to replace all alleys at the rate of 3 miles per year), the City is clearly falling behind on its alley replacement program.

According to Ms. Dziejontkowski, the City has not pursued asphalt resurfacing or other techniques for repaving alleys. There are two

reasons for this. First, as the alley replacement rate suggests, by the time the City gets around to fixing an alley, it's in such bad condition that full reconstruction is necessary. Secondly, the City has found that it is difficult for asphalt contractors to maneuver their equipment (e.g., steam rollers) in the often-confined space of an alley.

According to Jeff Dellemann, streets and bridges service manager in the Infrastructure Services Division, the City has 3 main techniques for prolonging the life of streets, none of which are assessed to abutting property owners:

- 1) Crack filling - This technique prevents water from permeating the surface of a street, thereby prolonging its life. The City commences crack filling on a street pavement when it is still relatively new (5-7 years old) and then every 5 years or so thereafter. Crack filling is also performed prior to a slurry seal application.

- 2) Slurry seal - As with crack filling, the purpose of this technique is to prevent water from permeating and damaging a roadway. A slurry seal is a waterproof membrane that adds 5-8 years to the life expectancy of a street. According to Ralph Sorenson, field operations inspection specialist in the Infrastructure Service Division's Construction Unit, the City spends approximately \$250,000 on this program each year, which is sufficient funding to seal 10 to 20 miles of streets.

- 3) Nonassessable/maintenance overlay - According to Mr. Sorenson, this technique entails putting down only one layer of asphalt (instead of the 2 layers in a resurfacing project) on a street that is nearing the end of its life cycle. Also, there is no curb and gutter work with a maintenance overlay project. Often, the overlay is applied only to the driving lanes of the street. A nonassessable overlay adds 5 to 15 years to the life of the street and reduces maintenance costs during those last few years of the life cycle. The City expends about \$250,000 per year on the maintenance overlay program, which is sufficient funding for about 2 miles of overlay work. Most nonassessable overlays are applied to arterial streets, rather than local/residential streets.

DETAILED SURVEY FINDINGS

Brookfield

The City of Brookfield has 2 methods of repaving residential streets. The first involves pulverizing the street pavement and resurfacing it with asphalt. The second involves milling the surface and replacing it with asphalt. The method chosen for a particular street depends on how deteriorated that street is (pulverizing is performed for streets that are more seriously deteriorated). Brookfield does not do concrete reconstruction of residential streets. Brookfield has no alleys.

The city engineer did not have a paving cost per linear foot figure available. However, Brookfield does not assess property owners for any portion of street resurfacing costs. The city's paving program is funded through a combination of annual budget allocations and borrowing. The city engineer indicated that the no-assessment policy helps the city make sound decisions on which streets should be repaved each year, with such decisions being based on "science and engineering, rather than politics" (i.e., homeowners are much less likely to oppose and delay projects when they do not have to pay for them directly).

Brookfield does not target a specific percentage of its streets for resurfacing each year. However, the city uses an annually-updated 5-year plan to identify streets that, based on age, deterioration rate, pavement structure and classification, need to be resurfaced in the next 5 years. Also, current funding levels provide for the resurfacing of all residential streets every 22-25 years.

Brookfield uses no special surface or sealing treatments. The city engineer stated that Brookfield "skips" all the most cost-effective maintenance strategies, even though they are financially prudent. For example, residents have, in the past, objected to sealcoating because of the extra vehicle noise created by loose pea gravel and because of the rough texture of street surfaces. Part of the reason for this is that Brookfield has few sidewalks, so that streets are used much more for recreational purposes (e.g., walking and bike-riding) than they are in Milwaukee.

Brown Deer

All residential streets in Brown Deer are asphalt with an aggregate base. Brown Deer has no public alleys. Property owners are not assessed when their streets are resurfaced. Since the village does not assess, the superintendent was unable to provide a paving cost per lineal foot (i.e., bids for work are on a tonnage or yardage basis).

Brown Deer does not have a specific targeted percentage of street mileage to be repaved each year. Once every 5 years public works staff rates the condition of all streets and then prepares a 5-year

plan of streets that need to be repaved. But the amount of work that is actually done depends on how much the village board is willing to expend on street paving each year.

The only technique Brown Deer uses to prolong the life of its streets is crack sealing. The cost of this work is not assessed to abutting property owners, either.

Glendale

Glendale has both a capital program for street reconstruction and a street overlay program. Under the former, streets may be reconstructed with either an asphalt surface or a concrete one. According to the director of public works, if the bid for a concrete surface is "only a few thousand dollars more" than the bid for an asphalt surface, the city will go with concrete. Property owners are not assessed for either type of surface, although they do pay \$12.50 per linear foot of curb and gutter (this is not the full cost of the curb and gutter work). If reconstruction is being done using CDBG funds, property owners are not assessed for curb and gutter work.

Under the street overlay program, the old street surface is milled and the street is resurfaced in asphalt. Property owners are not assessed for this work, either.

The public works director stated that the cost of reconstruction or overlay per linear foot varies considerably, because some projects involve curb, gutter and/or storm sewer work and others do not.

Glendale has not reconstructed or resurfaced its alleys in many years. If alleys need work in the future, they will be reconstructed in concrete and property owners will be assessed 100% of the cost.

Glendale has about 61 miles of streets. While there is no target for an annual percentage to be reconstructed or resurfaced, the public works director stated that this year's scheduled work -- three-fourths of a mile of reconstruction and 2 miles of street overlays -- is typical.

Crack-sealing is Glendale's main weapon for prolonging street life. This work is not assessed to abutting property owners.

Greenfield

Greenfield does both concrete reconstruction and asphalt resurfacing, although the majority of projects fall in the latter category. For 2005, the assessment rate for all residential projects (concrete or asphalt, with or without curb and gutter) is \$25 per linear foot. The city engineer did not know what percentage of the total cost this assessment represents. The balance of the cost is paid from the city's general fund. The \$25 assessment rate has not changed in at

least 5 years, meaning that the percentage of costs recovered through assessments is undoubtedly going down.

For alleys, which are always resurfaced with concrete, the current assessment rate is \$10 per linear foot. This rate was reduced from \$21 per linear foot 2 years ago.

Rather than targeting a certain percentage of its streets and alleys for reconstruction or resurfacing each year, Greenfield uses a 5-year plan to identify paving projects. This plan provides for repaving on a neighborhood-by-neighborhood basis.

Greenfield uses no special techniques for prolonging street life other than an annual crack-sealing program.

New Berlin

All residential streets in New Berlin are paved with asphalt. In odd-numbered years, the engineering department inspects and rates all 230 miles of the city's streets using the PASER (Pavement Surface Evaluation and Rating) manual developed by the University of Wisconsin Transportation Information Center. Streets are rated on a scale of 1 to 10 (worst to best) on the basis of the condition of their pavement, curbs and gutters. Typically, the citywide average is between 5 and 6. Since the city strives to maintain all streets at a rating of 6 or better, those that are pulling down the average are designated for future repair.

New Berlin has 2 street repair programs, one for street resurfacing and the other for street reconstruction. The resurfacing program, which involves milling and asphalt repaving of streets, is supported by the city's operating budget. This year, the common council budgeted \$725,000 for resurfacing. The amount budgeted has been increasing by about 25% a year; the city engineer anticipates that it will top out at about \$1 million in 2 years. The \$725,000 will fund the resurfacing of about 9 miles of streets in 2005. The engineering department also uses the funding for this program to experiment with new road surface technologies, including "Glas Grid" (a flexible mesh designed to extend the life of a roadway, particularly in a swampy area) and "Flex Seal" (a paving material that contains the hardest aggregate available in North America).

New Berlin's second street paving program consists of any reconstruction projects that are funded through the capital improvements budget. These projects typically involve collector or arterial streets (local streets are more likely to be repaved as part of the resurfacing program). This year, New Berlin is doing its first major reconstruction project in 5 years. Reconstructing a one-mile stretch of Cold Spring Road (a collector street), with all new curb, gutter and storm sewer, will cost \$2.5 million (including contingencies). So, in one year, New Berlin is spending a total of \$3.25 million to repave or reconstruct 10 of its 260 miles of streets.

New Berlin does not assess property owners for any street paving or reconstruction projects. There are virtually no alleys in New Berlin.

Shorewood

For 2005, Shorewood's cost for residential street reconstruction projects is \$122.22 per linear foot. This includes a complete tear-out of the existing street, new curb and gutter, 8 inches of aggregate and a 4-inch asphalt surface. There are no property assessments; street projects are funded entirely by the property tax levy and state aids.

The village is not currently doing alley projects. In the past, they have simply milled the surface, patched the concrete and resurfaced with asphalt. But this only lasts about 5 years. The village is now looking at doing complete tear-outs and concrete replacement of alleys. The policy of the village has been to not assess abutting property owners for alley work, either.

Shorewood has 30 miles of streets. There is no targeted percentage of streets to be reconstructed each year. However, the village expects its new streets to last about 40 years. This year, Shorewood is reconstructing just over one mile of streets.

Shorewood tries to prolong the life of its streets with crack-filling and area patches (e.g., patching a 30-foot segment of a street). It tried using slurry seals in the past, but found that this technique delaminates the street surface and leaves one-inch-deep potholes.

South Milwaukee

Residential streets in South Milwaukee have a base of stone, rather than concrete. A typical street project involves milling and replacing the asphalt surface and installing new concrete curb and gutter as needed. There is no standard cost per linear foot -- it "varies by contract". Alleys are replaced with concrete only. Property owners are not assessed for any of this work. Street and alley reconstruction and resurfacing are part of the standard street maintenance program in the city budget.

South Milwaukee does not have a specific target for the length or percentage of streets to be resurfaced each year. The amount of work done each year varies with the amount of money available. However, the city uses a 5-year plan to identify, on a neighborhood basis, streets that it intends to resurface in the next 5 years. The city hopes to redo all its residential streets on a 20-year cycle. For 2005, about 3 miles of streets (out of a total of 70 miles) will be resurfaced.

Alleys are not included in the 5-year plan. Most are redone on an "emergency basis". No alleys are scheduled for replacement this year. Most of South Milwaukee's alleys were installed in the 1950s and 1960s and are still in pretty good condition.

The city does not use any "overlays" (e.g., slurry seal) on its streets. Public works crews perform routine crack-filling.

Waukesha

Like most other communities surveyed, Waukesha does not do concrete street reconstruction. Residential streets are either resurfaced in asphalt or reconstructed with an asphalt surface, with curb and gutter replacement as needed. The city does not currently repave alleys, since it carried out a citywide alley-paving program 15-20 years ago.

Waukesha does not assess for any street or alley work. The philosophy of the city is that "if you pay for your street or alley once, you never pay for it again". In the aforementioned alley-paving program, property owners were assessed, but that was because the alleys were previously unpaved. Under current city policy, if these alleys ever need to be repaved, property owners will not be assessed for the work.

Waukesha did not provide any data on the targeted or actual street mileage that is repaved or reconstructed each year. However, the city engineer noted that the city spends about \$500,000 on resurfacing each year, and a similar amount on reconstruction.

Waukesha also has a crack-filling program and does spot pavement repairs. Property owners are not assessed for this work.

Wauwatosa

To repair its residential streets, Wauwatosa typically performs a "hybrid" of reconstruction and resurfacing. The old asphalt is milled off, the underlying concrete base is repaired if necessary, all new curb and gutter are installed and a new 3.25-inch asphalt surface is laid. Abutting property owners are assessed \$26.40 per frontage foot for this work, which represents about 60% of total project cost. If full concrete reconstruction is necessary because there are too many problems with the street base, the assessment is \$33 per linear foot. If the street has a concrete surface (i.e., it has never been paved over with asphalt), it may be resurfaced with asphalt (with spot repairs to curb and gutter) at an assessment rate of \$13.20 per linear foot. The \$33 and \$13.20 figures also represent approximately 60% of project cost.

Property owners are assessed at 100% of cost for alley projects. Cost and assessment rate vary by project, however, since alleys are of varying width and because some property owners receive a discount (i.e., those whose primary garage access is from the street, rather

than the alley, pay only 50% of the full assessment rate). The city will resurface an alley in asphalt if it has a concrete surface and the base is still in decent shape. However, if an alley is in very poor condition or has already been resurfaced with asphalt, the city will replace it with a new concrete alley.

Wauwatosa strives to annually resurface 4 miles out of its total 160 miles of streets. The city uses a 5-year plan to identify streets that are to be redone in the near future. For alleys, the goal is one-half mile per year, out of a total of 11 miles. However, the city engineer indicated that the alley goal is "optimistic" -- alley projects are "hard sells" because property owners have to pay the full cost and often complain the projects are unnecessary.

To prolong the life of its streets, Wauwatosa has adopted a program under which it sealcoats all streets in the city on a 9-year cycle (i.e., one-ninth of the streets receive sealcoating each year). Crack-filling is performed the year before the sealcoating is applied. The only streets that don't receive this treatment are those that were built in the last 4 years or are on the 5-year replacement plan. In 2004, the city's cost for this program was \$0.90 per square yard. This cost is not assessed to abutting property owners, but comes out of the city's general street maintenance budget. The city engineer indicated that sealcoating adds about 10 years to the life of a street and also reduces maintenance costs.

West Allis

Attached you will find a copy of West Allis' "2005 STANDARD ASSESSMENT RATES". As you can see, there are about 20 different assessment rates for streets and alleys. The column labeled "STANDARD" applies to work on residential streets. For reconstruction with either concrete or asphalt (including all new curb and gutter and whatever sidewalks need to be replaced), the rate is \$34.63 per linear foot. For "major" asphalt resurfacing (base repairs and preparation, 3-4 inches of asphalt, new curb, gutter and sidewalk as necessary), the assessment is \$29.11 per linear foot. The rate for "minor" asphalt resurfacing (which involves less base preparation and less curb and gutter work), the rate is \$23.57 per linear foot. An "interim asphalt resurface" consists of simply milling down 2 inches and resurfacing with 2 inches of asphalt; the assessment is \$11.06 per linear foot. An even "cheaper" type of work is concrete pavement repair (\$5.53 per linear foot), where sections of concrete are replaced.

As you can see, most of the street paving rates include one rate labeled "w/Misc. Walk" (meaning sidewalk replacement as needed) and one without this notation. According to the city engineer's office, next year West Allis will have just one rate (probably the higher one, with sidewalk work included) for each type of work, since residents often complain about the sidewalk work, even though this is just a minor component of the total assessment.

According to the city engineer's office, assessment rates were established in the 1970s at levels intended to recover 100% of project cost. However, the common council has been unwilling to increase these rates sufficiently to keep pace with increases in street project costs. As a result, the city now recovers only 25-35% of project costs on a north-south street, 15-20% on an east-west street (lower because corner property owners receive a 60% discount along the long side of the lot), 40-50% for alley reconstruction and about 70% for alley resurfacing.

West Allis has 175 miles of local streets and 43 miles of alleys. Rather than targeting specific percentages for reconstruction or resurfacing each year, the city simply does as much street and alley work as can be funded through a combination of the annual budget appropriation for street/alley repair and the assessments that will be charged. For 2005, the budget provides \$2.1 million for street work and \$400,000 for alleys. When these funds are pooled with assessments, the city will be able to reconstruct or resurface 3.3 miles of local streets and replace 14 or 15 alleys (block-long segments). Clearly, with this amount of work undertaken annually, and given the total street and alley mileage in West Allis, the city will fall behind the rate of street and alley replacement necessary for keeping all its roadways in good repair (in fact the city engineer stated that this is already the case with alleys).

Although the assessment rate schedule provides rates for alley resurfacing, the city engineer stated that most alleys receive full concrete reconstruction. This is because property owners are often dissatisfied with the quality and durability of an asphalt-surface alley.

West Allis has no special techniques for adding life to its streets and alleys. A sealcoating program in 1998 generated a lot of complaints, and the city hasn't done any more sealcoating since. West Allis does have a crack-filling program, but, in the words of the city engineer, it is "not well directed" due to the facts that West Allis no longer has a public works director and the command structure of city government "does not facilitate good street maintenance practices" (i.e., there is poor supervision and coordination of the engineering and street maintenance departments).

SUMMARY OF FINDINGS

The results of this survey can be summarized by question, as follows:

1. What is your municipality's paving cost per lineal foot for residential street and alley reconstruction projects?

Since most of the municipalities surveyed do not assess for street and alley projects, they are unable to provide data on paving cost per linear foot. In these communities, costs are often monitored on a project-by-project basis, and cost per linear foot is not an issue.

Even communities that do assess for street and alley work often do not have cost figures readily available, since the nonassessable portion of project costs is covered by the general city budget. For example, Greenfield and West Allis provided assessment rates, but could not give precise percentages of total project costs recovered through those assessments. Only 2 communities provided cost-per-linear-foot data or proxies for that data. Shorewood's cost for reconstruction with an asphalt surface is \$122.22 per linear foot. Wauwatosa's cost for a "hybrid" of reconstruction and resurfacing is approximately \$44 per linear foot. For a complete reconstruction, it is about \$55 per linear foot. (These numbers were derived by assuming that the assessment rates recover 60% of project costs) For comparison purposes, when Milwaukee's assessment rates and 60% cost recovery ratio result in costs per linear foot of \$84.75 for concrete reconstruction and \$38.92 for asphalt resurfacing.

2. What percentage of this cost is cost is assessed to the abutting property owner (street and alley)?

Brookfield - 0%
Brown Deer - 0%
Glendale - 0%
Greenfield - less than 100% and declining
New Berlin - 0%
Shorewood - 0%
South Milwaukee - 0%
Waukesha - 0%
Wauwatosa - 60% for streets; 100% for alleys (50% if no direct alley access)
West Allis - 25-35% for north-south streets; 15-20% for east-west streets; 40%-50% for alley reconstruction; 70% for alley resurfacing

3. What percentage of your community's total existing street and alley mileage is targeted for reconstruction/repaving each year?

None of the communities surveyed plan street and alley projects on a percentage-of-total-mileage basis.

Brookfield - uses a 5-year plan; residential streets are resurfaced Every 22-25 years.
Brown Deer - uses a 5-year plan, but amount of work done depends on actual funding available.
Glendale - this year's work (4.5% of street mileage resurfaced or reconstructed) is typical; at this rate, all streets are resurfaced or reconstructed every 22 years.
New Berlin - this year, New Berlin is repaving or reconstructing 3.8% of its street mileage; at this rate, all streets will be redone every 26 years.
Shorewood - expects its reconstructed streets to last 40 years.
South Milwaukee - uses a 5-year plan and aims to resurface all of its

streets every 20 years.

Waukesha - no data.

Wauwatosa - uses a 5-year plan; strives to annual resurface 2.5% of its streets and to reconstruct 4-5% of its alleys; at these rates, streets will be redone every 40 years, alleys every 22 years.

West Allis - does as much work as funding will allow; this year, 1.9% of streets and about 4% of alleys are being redone; at these rates, streets will be redone every 53 years, alleys every 25 years.

4. Does your community ever reconstruct or repave its alleys with asphalt or some other non-concrete material?

Brookfield - no alleys.

Brown Deer - no alleys.

Glendale - no (uses concrete).

Greenfield - no (uses concrete).

New Berlin - no alleys.

Shorewood - have done asphalt resurfacing in the past; looking to do concrete reconstruction in the future.

South Milwaukee - no (uses concrete)

Waukesha - yes (all alleys paved in asphalt)

Wauwatosa - yes, will do asphalt resurfacing if concrete base is in decent condition.

West Allis - yes, some asphalt, but property owners tend to prefer concrete reconstruction.

5. Does your municipality have any special technique (e.g., sealcoating or slurry seal) for prolonging the life of a street or alley so that total reconstruction won't be necessary so often? If so, what is the cost per lineal foot for using this technique? How much additional "life" does it provide to streets, on average? Are abutting property owners assessed for this type of work?

Brookfield - no.

Brown Deer - crack sealing (not assessed).

Glendale - crack sealing (not assessed).

Greenfield - crack sealing (not assessed).

New Berlin - experimenting with new street paving technology as part of regular street paving program.

Shorewood - crack filling and area patches (not assessed).

South Milwaukee - crack filling (not assessed)

Waukesha - crack filling and spot repairs (not assessed)

Wauwatosa - sealcoating all streets on 9-year cycle; adds about 10 years to the life of a street (not assessed).

West Allis - crack filling (not assessed); sealcoating was used in the past but not popular with residents.

CITY OF WEST ALLIS
2005 STANDARD ASSESSMENT RATES - 10% Increase

<u>TYPE OF IMPROVEMENT</u>	<u>STANDARD</u> (100%)	<u>COMM.</u> (125%)	<u>MFG.</u> (150%)
Street Paving:			
New Construction-Conc. or Asphalt	\$55.28	\$69.10	\$82.92
New Construction w/Misc. Walk	58.74	70.93	85.11
Reconstruction-Conc. or Asphalt (80% of new rate)	33.17	41.46	49.78
Reconstruction w/Misc. Walk	34.83	43.29	51.95
Major Asphalt Resurface/ Rural Section-Asph., (50% of new rate)	27.64	34.55	41.48
Major Asphalt Resurface w/Misc. Walk	29.11	36.39	43.67
Minor Asphalt Resurface (40% of new street)	22.11	27.84	33.17
Minor Asphalt Resurface w/Misc. Walk	23.57	29.46	35.38
Interim Asphalt Resurface (20% of new construct)	11.08	13.83	16.59
Concrete Pavement Repair (10% of new construct)	5.53	6.91	8.30
Service Drive New (2/3 of new construct)	36.85	46.06	55.28
Service Drive - Resurface (2/3 of minor street resurf.) ..	14.74	18.43	22.11
Service Drive - Resurface w/Misc. Walk	16.20	20.25	24.30
Alleys (Concrete):			
..... 20' Wide	30.44	38.05	45.66
..... 18' Wide	28.72	35.90	43.08
..... 16' Wide	27.00	33.75	40.50
..... 15' Wide	28.14	32.68	39.21
..... 14' Wide	25.28	31.60	37.92
..... 12' Wide	23.56	29.45	35.34
..... 10' Wide	21.84	27.30	32.78
Alleys (Reconstruct):			
..... 20' Wide	21.31	26.84	31.97
(70% of new rate)	20.10	25.13	30.15
..... 17' Wide	19.50	24.38	29.25
..... 16' Wide	18.90	23.63	28.35
..... 15' Wide	18.30	22.88	27.45
..... 14' Wide	17.70	22.13	26.55
..... 12' Wide	16.49	20.81	24.74
..... 10' Wide	15.29	19.11	22.94
Alleys (Resurfacing):			
..... 20' Wide	10.65	13.31	15.98
(35% of new rate)	10.05	12.56	15.08
..... 18' Wide	9.45	11.81	14.18
..... 16' Wide	9.15	11.44	13.73
..... 14' Wide	8.85	11.08	13.28
..... 13' Wide	8.55	10.69	12.83
..... 12' Wide	8.25	10.31	12.38
Sidewalk:			
5" Concrete (per lin. ft.)	18.80	18.80	18.80
5" Concrete (per sq. ft.)	3.76	3.76	3.76
7" Concrete (per lin. ft.)	21.55	21.55	21.55
7" Concrete (per sq. ft.)	4.31	4.31	4.31
5" Concrete (per lin. ft.) (sidewalk program only)	18.80*x50%	18.80*x62.5%	18.80*x75%
7" Concrete (per lin. ft.) (sidewalk program only)	21.55*x50%	21.55*x62.5%	21.55*x75%
9" Concrete (per lin. ft.) (sidewalk program only)	26.95*x50%	26.95*x62.5%	26.95*x75%
Mudjacking (per lin. ft.) (sidewalk program only)	9.83*x50%	9.83*x62.5%	9.83*x75%
Carriage Walk (per sq. ft.) (sidewalk program only)	3.76*x50%	3.76*x62.5%	3.76*x75%
Service Walk (per sq. ft.)	3.78*x100%	3.78*x100%	3.78*x100%
*Based on typical short side of property.			
Driveway Approach:			
7" Concrete (per sq. ft.)	4.31	4.31	4.31
9" Concrete (per sq. ft.)	5.39	5.39	5.39
Misc. Asphalt: (per sq. ft.)			
Includes Walks, Driveways, etc.	2.31	2.31	2.31
Steps: (per lin. ft. of Riser)	33.84	33.84	33.84
Modular Block or Timber Walls: (per sq. ft.)	14.48	14.48	14.48
Brick/Stamped Concrete (per sq. ft.)	5.67	5.67	5.67
Water Main: (per lin. ft.)			
Sanitary Sewer Main: (per lin. ft.)	33.74	42.18	50.61
Storm Sewer Main: (per lin. ft.)	47.92	59.90	71.88
Storm Sewer Lateral, Each	389.00	892.00	Full Cost
Storm Sewer Lateral w/Extension, Each	697.00	Full Cost	Full Cost
Sanitary Sewer Lateral, Each	Full Cost	Full Cost	Full Cost
Water Lateral, Each	Full Cost	Full Cost	Full Cost