

Submitted to:

**Conewago Township Board of Supervisors
Adams County, Pennsylvania**

STREET MAINTENANCE PLAN 2016 ANNUAL SUPPLEMENT

Submitted by:



Gannett Fleming

*Excellence Delivered **As Promised***

November 21, 2016

Introduction

With the recent Street Committee work relative to the selection of streets both for the 2017 paving season and the subsequent years moving forward, this supplement is being provided to ensure that all efforts remain tied to the overall Street Maintenance Program (SMP). As was the premise of the previously prepared five (5) year SMP, the intent is that the Township maintains a “rolling” inventory of streets for inclusion in the program. This year (2016) is unique in that the Township has two more years of payback on the PIB Loan taken out previously and that the scope of the remaining projects is equating to considerably more cost than simple “mill and fill” type projects (where surface is milled off and new surface is laid). As such, a new approach has been discussed and generally agreed to by the members of the Township Street Committee. The following reflects adjustments and clarifications to the current SMP.

The SMP is hereby proposed to be altered as follows;

1. Our office has reviewed a total of five (5) street reconstruction projects based in part on the SMP and on multiple discussions and field reviews with both Gannett Fleming and Township staff. From these, we have assembled budget costs associated with each street segment. It is our recommendation from in-depth discussions with Township staff that the Township consider Blettner Avenue for the 2017 project (to be bid in March, 2017). This street was noted in the 2014 Supplement to be a candidate that would drop a maintenance category (making it more expensive in the future) if some preemptive effort was not taken to address cracking, base repair, etc. It remains a street that could be remediated with limited base repair, installation of pavement geotextile, placement of a “shim” course to restore street crown and construction of a HMA wearing course overlay. The original scope for this street extended from the Township line to South Jefferson Street. However, in order to stay within available funds, the length was shortened slightly to only extend from the municipal boundary to Deer Drive. A copy of the budget estimate can be found attached with this Supplement.
2. In conjunction with 2017 street project, in Spring, 2017, the Township will select a street or streets that are candidates for a surface treatment type remediation process. This would involve either a chip seal with a fog seal (to bind the surface) or a “micro-surface” type application (cold laid polymer based material). The specific type of application will be determined prior to the work based on adjacent areas (land use), desired surface condition, etc. The estimated budget per year for this work is approximately \$ 40,000 in order to try and cover about 2 miles of roadway (per year). The work relative to this process will occur in 2018 (in lieu of a larger scale reconstruction project). This will have two benefits to the Township. This will allow the Township to “revenue build”, because the nature of the work is less expensive. Given that the Township is still paying on the PIB loan (approximately \$105,000 each year for 2017 and 2018), there is limited budget to do more expensive street work. By saving a portion of the Liquid Fuels funds (as allocated) in one year, that money can be brought into the following year to augment the available budget to commit to a reconstruction project. Secondly, this approach allows for a greater “visibility” to the public of street work being performed (beyond just isolated shorter section of street per year).
3. For subsequent years, the process will alternate large scale reconstruction and surface treatment type projects. A draft schedule of streets has been assembled for both types of work and can be found attached with this Supplement. The advantages to the proposed projection of street work is as follows;

- a. The projection avoids the Township taking out a large loan to fund the program. However, it may become necessary to revisit this each year to determine if a loan would help to increase the program scope (in a fiscally sound method).
 - b. The projected projects do not have stormwater costs in them (staying consistent with the concept of those improvements being funded through a future stormwater user fee program).
 - c. The projection includes completion of the residual portion of Blettner Avenue that is not done in 2017. As such, in the next major project year (2019) the Township will do two projects, Oxford Avenue Phase II and Blettner Avenue (residual).
 - d. The amount of the Surfacing budget has been set to ensure that at a minimum, 2 miles is completed in any given year. In addition, the budget amount better balances the carryover (avoiding large unused funds) and it allows the Township in some years to be more aggressive on road surfacing.
 - e. The projection proposed that the Township carry larger (unused) funds in 2023 and 2024, ramping up for a major project in 2025 (Poplar Street, entire length). It was determined in the course of field review that the deteriorated condition of Poplar allows it to be delayed as we are not in a “save” mode where we are realizing cost savings by doing it sooner rather than later. The condition will be monitored annually to ensure that its condition does not drastically deteriorate (perhaps due to hard winter or flooding event) causing it to be reprioritized.
 - f. The Surface budgets can be used to provide flexibility in the overall budget for street programming. If the Township spends less on a major project, the unused funds could be carried in to augment the Surface budget. If a project has unexpected increases, the budget for Surfacing can be reduced. The projects for surface treatment will be bid with unit pricing so that the length of street completed can be adjusted as appropriate.
 - g. The project puts Oxford Phase II and Blettner Avenue earlier in the sequence because they are in decent shape and can be preserved with less effort than a “rebuild”. Sunday Drive was then put immediately after those because it starts a trend of projects that are full rebuild type projects.
 - h. This scenario gives our “teaming partners” (CEI and Vulcan) time to budget and/or consider how they will help with the Oxford Phase I portion, to be done in 2021 (allowing 5 years).
4. The program will continue in the manner outlined above each year, with a new project added to the tail end of the program annually such that it always has at least a 5 year projection on reconstruction projects. The evaluation of street projects will occur in the spring of each year, to ensure that adequate time is available for inclusion in that year’s budget and to ensure that conditions still warrant the anticipated type of remediation. This part remains unchanged from the original SMP but will be more rigorously upheld so that the plan remains dynamic and reflective of current street conditions.

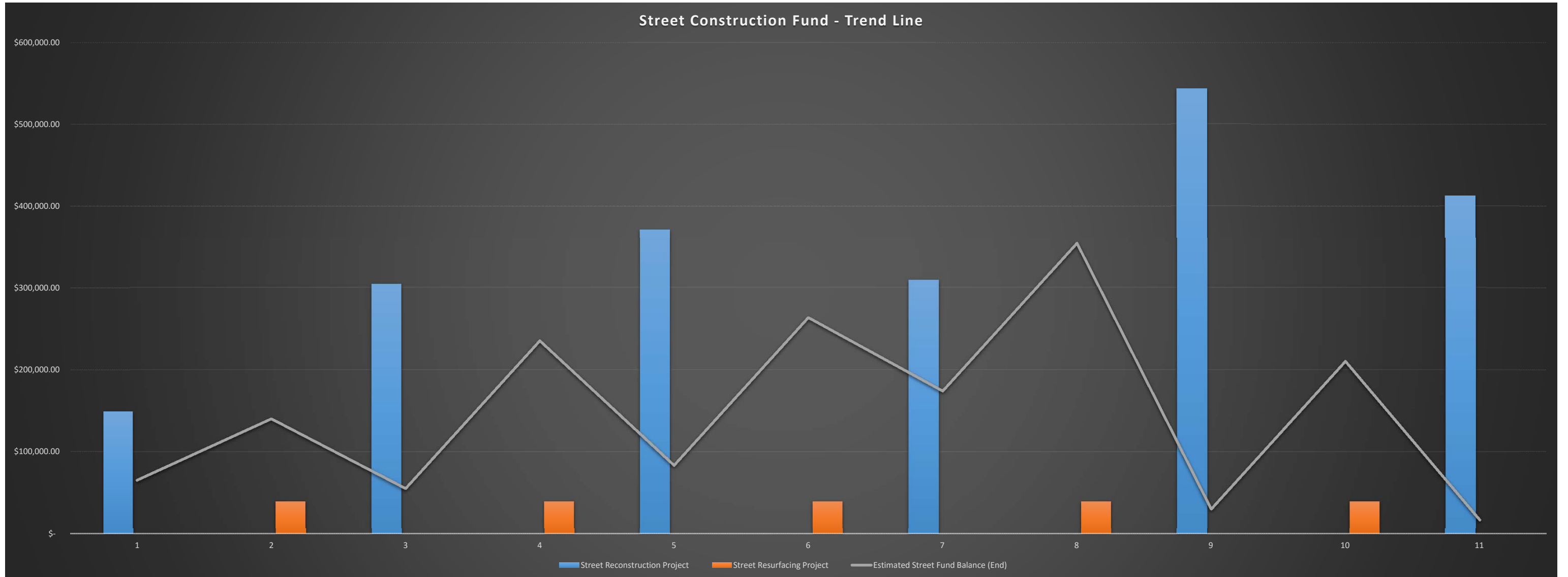
5. In review of the overall costs, “soft” costs are always a consideration in the overall project cost estimate. These costs include preparation of bidding documents, bid phase services and construction assistance (after the Contract is awarded). These have historically been in the range of 8% of the project (bid) cost. One means by which to reduce them is to alter the form of contract documents. Currently, a comprehensive set of documents is assembled and used for the project. The Township could utilize forms as provided by PennDOT (MS-944 Forms). They lack some of the legal and technical depth, but are more concise and require less effort to assemble. It is estimated that project soft costs for this effort would drop to 6% if the PennDOT forms were used. A risk assessment should be conducted by the Township, Engineer and Solicitor to make sure the brevity of those documents would suffice for the nature of the work. In “off” years, where the nature of the work is just a surface treatment, the PennDOT documents will be sufficient.

6. The Street Maintenance Program is built on the use of Street Assessment forms, as developed by the Asphalt Pavement Institute. This data then allows decisions to be made based on the overall pavement conditions as existing in the field. Currently, data is collected on paper forms, then manually input into a spreadsheet, then imported into the GIS platform for processing. Our office is in the process of developing a mobile (GIS) based application that would allow direct input of data into the GIS database (using an iPad). It will enable more rapid collection of data, a higher degree of accuracy (less user input points) and potentially allow for the collection of a larger volume of data (increasing the available view of current street conditions). We anticipate a draft version of the program will be operable by the end of this year.

Implementation of the above items, into a modified Street Maintenance Program, will ensure that the program remains dynamic, effective (as a tool for both maintenance and budget purposes) and shows the residents that tax dollars are being spent effectively.

Year	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>
Projected Balance (Begin)	\$ 100,000.00	\$ 65,466.16	\$ 140,276.32	\$ 55,427.78	\$ 235,164.94	\$ 83,653.46	\$ 263,390.62	\$ 174,003.18	\$ 353,740.34	\$ 30,315.34	\$ 210,052.50
Liquid Fuels	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16	\$ 219,737.16
PIBB Loan Payment	\$ 104,927.00	\$ 104,927.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	<u>Blettner Avenue</u>	<u>Oxford Phase II / Blettner</u>	<u>Oxford Phase I</u>	<u>Sunday Drive</u>	<u>Poplar</u>	<u>Ram Drive</u>					
Street Reconstruction Project	\$ 149,344.00	\$ 304,585.70	\$ -	\$ 371,248.64	\$ -	\$ 309,124.60	\$ -	\$ 543,162.16	\$ -	\$ 412,604.40	\$ -
Street Resurfacing Project	\$ -	\$ 40,000.00	\$ -	\$ 40,000.00	\$ -	\$ 40,000.00	\$ -	\$ 40,000.00	\$ -	\$ 40,000.00	\$ -
Estimated Street Fund Balance (End)	\$ 65,466.16	\$ 140,276.32	\$ 55,427.78	\$ 235,164.94	\$ 83,653.46	\$ 263,390.62	\$ 174,003.18	\$ 353,740.34	\$ 30,315.34	\$ 210,052.50	\$ 17,185.26
Annual 3% Inflation Factor (for 2016 values):		0.06		0.12		0.18		0.24		0.3	

Note: Engineering Costs and Stormwater Related Costs are both excluded from the budgets above. They are proposed to be funded through other sources.



Opinion of Probable Cost - 5 Year Street Project Scope
Conewago Township (Adams County)
Blettner Avenue - Hillside/Panther to Deer Drive
Estimate Prepared: 08/29/2016 (EM) - Revised 10/17/2016

Description of Work

Demolition Work

15" CMP

18" CMP

28"x20" CMPA

Catch Basin Removal

Quantity	Unit	Unit Price	Cost
40	LF	\$ 10.00	\$ 400.00
330	LF	\$ 12.00	\$ 3,960.00
40	LF	\$ 14.00	\$ 560.00
1	Each	\$ 500.00	\$ 500.00

Pavement Reconstruction (between Hillside/Panther Drive to Deer Drive)

Mill Existing Pavement (2" Depth)

Full Depth Base Repair (@ 5.0% of street surface area)

Glass Grid (Pavement Geotextile)

Shim / Leveling Course (at 90# per sq.yd.)

2" Superpave Wearing 9.5mm HMA

6,200	Sq.Yd.	\$ 4.00	\$ 24,800.00
310	Sq.Yd.	\$ 68.00	\$ 21,080.00
620	Sq.Yd.	\$ 6.00	\$ 3,720.00
279	Tons	\$ 136.00	\$ 37,944.00
6,200	Sq.Yd.	\$ 9.00	\$ 55,800.00

Other

Utility Adjustments (assume)

12	Ea.	\$ 500.00	\$ 6,000.00
----	-----	-----------	-------------

Storm Sewer

Precast Drainage Inlet Box

15" CMP

18" SLCPP

28"x20" CMPA

Connection (to existing)

2	Each	\$ 1,200.00	\$ 2,400.00
40	LF	\$ 30.00	\$ 1,200.00
330	LF	\$ 35.00	\$ 11,550.00
40	LF	\$ 48.00	\$ 1,920.00
2	Each	\$ 750.00	\$ 1,500.00

Anticipated Construction Cost (without stormwater)

\$ 149,344.00

Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 7%

\$ 10,454.08

Estimated Project Total

\$ 159,798.08

Estimated Stormwater Construction Items Budget

\$ 23,990.00



Opinion of Probable Cost - 5 Year Street Project Scope
Conewago Township (Adams County)
Oxford Avenue (Phase II) - Hemlock Drive to Black Lane
Estimate Prepared: 08/29/2016 (EM) - Revised 10/5/2016

Description of Work

Quantity	Unit	Unit Price	Cost
----------	------	------------	------

Demolition Work

24" CMP

44	LF	\$ 12.00	\$ 528.00
42	LF	\$ 14.00	\$ 588.00

36" CMP

Pavement Reconstruction

Full Depth Base Repair (@ 7.5% of street surface area)

626	Sq.Yd.	\$ 68.00	\$ 42,568.00
1,251	Sq.Yd.	\$ 6.00	\$ 7,506.00
375	Tons	\$ 136.00	\$ 51,000.00
8,340	Sq.Yd.	\$ 9.00	\$ 75,060.00

Glass Grid (Pavement Geotextile)

Shim / Leveling Course

2.0" Superpave Wearing 12.5mm HMA

Storm Sewer

24" CMP

44	LF	\$ 40.00	\$ 1,760.00
42	LF	\$ 55.00	\$ 2,310.00

36" SLCPP

Anticipated Construction Cost

\$ 181,320.00

Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 8%

\$ 14,505.60

Estimated Project Total

\$ 195,825.60

Estimated Stormwater Construction Items Budget

\$ 5,186.00

Opinion of Probable Cost - 5 Year Street Project Scope

Conewago Township (Adams County)

Blettner Avenue - Deer Drive to South Jefferson Street

Estimate Prepared: 11/03/2016 (EM)

Description of Work	Quantity	Unit	Unit Price	Cost
Pavement Reconstruction (between Deer Drive to South Jefferson Street)				
Mill Existing Pavement (2" Depth)	4,325	Sq.Yd.	\$ 4.00	\$ 17,300.00
Full Depth Base Repair (@ 5.0% of street surface area)	216	Sq.Yd.	\$ 68.00	\$ 14,688.00
Glass Grid (Pavement Geotextile)	432	Sq.Yd.	\$ 6.00	\$ 2,592.00
Shim / Leveling Course (at 90# per sq.yd.)	195	Tons	\$ 136.00	\$ 26,520.00
2" Superpave Wearing 9.5mm HMA	4,325	Sq.Yd.	\$ 9.00	\$ 38,925.00
Other				
Utility Adjustments (assume)	12	Ea.	\$ 500.00	\$ 6,000.00

Anticipated Construction Cost	\$ 106,025.00
Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 7%	\$ 7,421.75
Estimated Project Total	\$ 113,446.75

Opinion of Probable Cost - 5 Year Street Project Scope
Conewago Township (Adams County)
Oxford Avenue (Phase I) - Edgegrove Road to Hemlock Drive
Estimate Prepared: 08/29/2016 (EM) - Revised 10/5/2016

Description of Work

Quantity	Unit	Unit Price	Cost
----------	------	------------	------

Demolition Work

Catch Basin Removal
 15" CMP

2	Each	\$ 500.00	\$ 1,000.00
112	LF	\$ 10.00	\$ 1,120.00

Pavement Reconstruction

Geotechnical Testing (Evaluation/Mix Design)
 Cold-In-Place (CIP) Recycling
 Full Depth Base Repair (@ 5.0% of street surface area)
 Shim / Leveling Course
 1 1/2" Superpave Wearing 12.5mm HMA

1	LS	\$ 5,000.00	\$ 5,000.00
12,483	Sq.Yd.	\$ 8.00	\$ 99,864.00
624	Sq.Yd.	\$ 68.00	\$ 42,432.00
562	Tons	\$ 136.00	\$ 76,432.00
12,483	Sq.Yd.	\$ 8.00	\$ 99,864.00

Storm Sewer

Precast Drainage Inlet Box
 15" CMP

2	Each	\$ 1,200.00	\$ 2,400.00
112	LF	\$ 30.00	\$ 3,360.00

Anticipated Construction Cost

\$ 331,472.00

Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 8%

\$ 26,517.76

Estimated Project Total

\$ 357,989.76

Estimated Stormwater Construction Items Budget

\$ 7,880.00

Opinion of Probable Cost - 5 Year Street Project Scope
Conewago Township (Adams County)
Sunday Drive - S.R. 0116 to Centennial Road
Estimate Prepared: 08/29/2016 (EM) - Revised 10/5/2016

Description of Work	Quantity	Unit	Unit Price	Cost
Demolition Work				
18" CMP	50	LF	\$ 12.00	\$ 600.00

Pavement Reconstruction

Excavation (10" depth) - Road Widening	72	Cu.Yd.	\$ 50.00	\$ 3,600.00
2A Stone Subbase (6" depth) - Road Widening	258	Sq.Yd.	\$ 16.00	\$ 4,128.00
4" Superpave Base (19.0 mm) HMA - Road Widening	258	Sq.Yd.	\$ 52.00	\$ 13,416.00
Mill Existing Pavement (2" Depth)	9,681	Sq.Yd.	\$ 4.00	\$ 38,724.00
Full Depth Base Repair (@ 7.5% of street surface area)	726	Sq.Yd.	\$ 68.00	\$ 49,368.00
Glass Grid (Pavement Geotextile)	1,452	Sq.Yd.	\$ 6.00	\$ 8,712.00
Shim / Leveling Course	435	Tons	\$ 136.00	\$ 59,160.00
1.5" Superpave Wearing 9.5mm HMA	9,939	Sq.Yd.	\$ 8.00	\$ 79,512.00

Other

Utility Adjustments (assume)	6	Ea.	\$ 500.00	\$ 3,000.00
------------------------------	---	-----	-----------	-------------

Storm Sewer

18" CMP	50	LF	\$ 35.00	\$ 1,750.00
---------	----	----	----------	-------------

Anticipated Construction Cost	\$ 261,970.00
Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 8%	\$ 20,957.60
Estimated Project Total	\$ 282,927.60

Estimated Stormwater Construction Items Budget	\$ 2,350.00
--	-------------

Opinion of Probable Cost - 5 Year Street Project Scope
Conewago Township (Adams County)
Poplar Street - South Jefferson Street to Filbert Street
Estimate Prepared: 08/29/2016 (EM) - Revised 10/5/2016

Description of Work

Demolition Work

12" CMP
 15" CMP
 18" CMP
 24" CMP
 30" CMP
 28"x20" CMPA
 42"x29" CMPA
 Catch Basin Removal
 Curb Removal
 Sidewalk Removal*

Quantity	Unit	Unit Price	Cost
40	LF	\$ 10.00	\$ 400.00
150	LF	\$ 10.00	\$ 1,500.00
190	LF	\$ 12.00	\$ 2,280.00
40	LF	\$ 12.00	\$ 480.00
50	LF	\$ 14.00	\$ 700.00
90	LF	\$ 14.00	\$ 1,260.00
970	LF	\$ 16.00	\$ 15,520.00
1	Each	\$ 500.00	\$ 500.00
480	LF	\$ 3.50	\$ 1,680.00
367	Sq.Yd.	\$ 12.00	\$ 4,404.00

Pavement Reconstruction

Geotechnical Testing (Evaluation/Mix Design)
 Cold-In-Place (CIP) Recycling
 Full Depth Base Repair (@ 5% of street surface area)
 Shim / Leveling Course
 1 1/2" Superpave Wearing 9.5mm HMA

1	LS	\$ 5,000.00	\$ 5,000.00
11,000	Sq.Yd.	\$ 8.00	\$ 88,000.00
550	Sq.Yd.	\$ 68.00	\$ 37,400.00
495	Tons	\$ 136.00	\$ 67,320.00
11,000	Sq.Yd.	\$ 8.00	\$ 88,000.00

Other

ADA Ramps
 Curb
 Utility Adjustments (assume)

18	Each	\$ 1,350.00	\$ 24,300.00
480	LF	\$ 15.00	\$ 7,200.00
12	Ea.	\$ 500.00	\$ 6,000.00

Storm Sewer

Precast Drainage Inlet Box
 12" CMP
 15" CMP
 18" CMP
 24" CMP
 30" CMP
 28"x20" CMPA
 42"x29" CMPA
 Connection (to existing)

1	Each	\$ 1,200.00	\$ 1,200.00
40	LF	\$ 28.00	\$ 1,120.00
150	LF	\$ 30.00	\$ 4,500.00
190	LF	\$ 35.00	\$ 6,650.00
40	LF	\$ 40.00	\$ 1,600.00
50	LF	\$ 50.00	\$ 2,500.00
90	LF	\$ 48.00	\$ 4,320.00
970	LF	\$ 60.00	\$ 58,200.00
8	Each	\$ 750.00	\$ 6,000.00

Anticipated Construction Cost

\$ 438,034.00

Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 8%

\$ 35,042.72

Estimated Project Total

\$ 473,076.72

Estimated Stormwater Construction Items Budget

\$ 108,730.00

Opinion of Probable Cost - 5 Year Street Project Scope
Conewago Township (Adams County)
Ram Drive - North Blettner Avenue to terminal end
Estimate Prepared: 08/29/2016 (EM) - Revised 10/5/2016

Description of Work	Quantity	Unit	Unit Price	Cost
Demolition Work				
18" CMP	520	LF	\$ 10.00	\$ 5,200.00
Catch Basin Removal	1	Each	\$ 500.00	\$ 500.00
Curb Removal	310	LF	\$ 3.50	\$ 1,085.00
Sidewalk Removal*	22	Sq.Yd.	\$ 12.00	\$ 264.00
Pavement Reconstruction				
Mill Existing Pavement (2" Depth)	11,111	Sq.Yd.	\$ 4.00	\$ 44,444.00
Full Depth Base Repair (@ 7.5% of street surface area)	833	Sq.Yd.	\$ 68.00	\$ 56,644.00
Glass Grid (Pavement Geotextile)	1,667	Sq.Yd.	\$ 6.00	\$ 10,002.00
Shim / Leveling Course	500	Tons	\$ 136.00	\$ 68,000.00
2" Superpave Wearing 12.5mm HMA	11,111	Sq.Yd.	\$ 9.00	\$ 99,999.00
Other				
ADA Ramps	2	Each	\$ 1,350.00	\$ 2,700.00
Curb	310	Ft	\$ 15.00	\$ 4,650.00
Utility Adjustments (assume)	6	Ea.	\$ 500.00	\$ 3,000.00
Storm Sewer				
Precast Drainage Inlet Box	1	Each	\$ 1,200.00	\$ 1,200.00
18" SLCPP	520	Ft	\$ 35.00	\$ 18,200.00
Connection (to existing)	2	Each	\$ 750.00	\$ 1,500.00
Anticipated Construction Cost				\$ 317,388.00
Soft Cost (Engineering, Contract Documents, Bid Assistance & Construction Admin.) @ 8%				\$ 25,391.04
Estimated Project Total				\$ 342,779.04
Estimated Stormwater Construction Items Budget				\$ 26,600.00