

**Appendix D – Engineer’s Conceptual Opinion of Cost for
Capital Projects with Conceptual Plans**

Municipality: East Goshen Township, Chester County, PA
Project Name: Paoli Pike Corridor Master Plan
Project Number: 816646.11

Plan Title: Paoli Pike Corridor Master Plan Concepts 1 - 7
Roadway(s): Paoli Pike (SR 2014)
Project Description: Refer to Destination Paoli Pike - Paoli Pike Corridor Master Plan Report

Unit Costs Last Revised: 8/3/2017
Source: ECMS Bid Price History and Similar Project Experience

Disclaimer: McMahon Associates, Inc. has provided this opinion of cost as requested by the client. Please note that opinions of cost are subject to change based on plan/design revisions, fluctuations in unit costs, field conditions, and differences in locale. Opinions of cost are provided for use in budgeting, but in no way intended to be construed as a final cost for the project. Final costs are contingent only on actual bids from contractors. McMahon Associates, Inc. will not be held responsible for differences between this opinion of cost and contractor bid costs.

Estimate No.	Description	Project Overview Page Number	Conceptual Plan Figure Number	Cost
1	Traffic Calming between Airport Road and Ellis Lane	4-5	4.3	\$983,800.00
2	Traffic Calming at Township Park Entrance (East)	4-6	4.4	\$660,280.00
3	Traffic Calming at Line Road	4-6	4.5	\$412,000.00
4	Boot Road Path	3-8	3.7	\$550,190.00
5	Reservoir Road Path	3-10	3.8	\$237,940.00
6	Reservoir Road Shared Lane	3-11	3.9	\$30,200.00
7	Goshenville Streetscape Enhancements	5-4	5.3	\$3,804,030.00
	Total Cost			\$6,678,440.00

General Notes:

1. Refer to the intersection spreadsheet details relating to cost calculations and individual intersection assumptions.
2. Contingency and inspection percentages are based on PennDOT Pub. 352. Inflation is not included; costs provided are in 2017 dollars.
3. Further evaluation of the existing signalized intersections within the project limits is required during the preliminary engineering of the project. This evaluation may result in the identification of other improvements and costs not identified within this Engineer's Conceptual Opinion of Cost.
4. The Engineer's Conceptual Opinion of Cost does not include relocating or resetting existing underground utilities within the limits of the project or the provision of any future utilities. Impacts to existing underground utilities will need to be determined during the preliminary engineering of the project through subsurface utility engineering. **Due to visible evidence of subsurface utilities within the project area (underground electric, water, sewer, gas and telecommunication) it is recommended (and likely required by law) that utility test pits be performed during the preliminary engineering of the project.**
5. The Utility Relocations cost is a rough estimate based on relocating existing surface utilities (poles, hydrants, etc.) identified through aerial imagery and limited field views. **Underground utility relocations are not included in this estimate.** These costs are subject to change through the development of the project and based on the Utility owner's rights.
6. Estimates of existing and required right of way were developed based on GIS data obtained from Chester County. Existing legal right-of-way lines or property lines have not been independently verified through field survey or deed research. Existing legal rights-of-way and existing property lines, as well as the size and location of any required rights-of-way (temporary or permanent), will need to be determined during the preliminary engineering of the project.
7. The following costs are rough estimates for budgeting purposes only: Engineering and Permitting, Utility Relocations, and Right of Way. The costs associated with these items will need to be determined through the development of the project.

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	1	\$5,000.00	\$5,000.00
2	Class 1 Excavation		CY	650	\$65.00	\$42,250.00
3	Foreign Borrow		CY	236	\$75.00	\$17,700.00
4	Grading (includes topsoil and seeding)		SY	0	\$15.00	\$0.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	500	\$125.00	\$62,500.00
6	Driveway Adjustments		SY	0	\$60.00	\$0.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	526	\$45.00	\$23,670.00
9	Plain Cement Mountable Curb		LF	1,450	\$50.00	\$72,500.00
10	Drainage Upgrades	New Drainage Structures/Pipe	LS	1	\$105,000.00	\$105,000.00
11	6" Base Drain		LF	530	\$13.00	\$6,890.00
12	Guide Rail		LF	38	\$55.00	\$2,090.00
13	Construction Surveying, Schedule, Equipment Package		LS	1	\$7,500.00	\$7,500.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	1,460	\$1.50	\$2,190.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	2,200	\$1.50	\$3,300.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	945	\$8.00	\$7,560.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	90	\$8.00	\$720.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	3	\$160.00	\$480.00
21	Marking Legend, "Shared Lane"		EA	0	\$450.00	\$0.00
22	Signage		EA	6	\$150.00	\$900.00
23	Overhead Lane Use Control		EA	1	\$15,000.00	\$15,000.00
24	Pervious Pavement Path		SY	0	\$90.00	\$0.00
25	Cement Concrete Sidewalk		SY	0	\$100.00	\$0.00
26	ADA Accessible Curb Ramp		EA	5	\$6,500.00	\$32,500.00
27	Traffic Signal Upgrades		LS	1	\$65,000.00	\$65,000.00
28	Rapid Rectangular Flashing Beacon		LS	0	\$30,000.00	\$0.00
Special Items						
29	Post Construction Stormwater Management		LS	1	\$50,000.00	\$50,000.00
30	Split Rail Fence		LF	0	\$22.00	\$0.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	0	\$184.00	\$0.00
32	Landscape Restoration		SF	0	\$35.00	\$0.00
33	Miscellaneous Relocations		LS	0	\$0.00	\$0.00
34	Grade Separating Wall		SF	0	\$60.00	\$0.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	0	\$160.00	\$0.00
36	Landscape Median Area		SF	2,400	\$8.50	\$20,400.00
37	Hardscape Median Area		SF	1,350	\$19.00	\$25,650.00
38	Street Trees		EA	0	\$800.00	\$0.00
39	Pedestrian Scale Street Light		EA	0	\$14,300.00	\$0.00
40	Vertical Banner		EA	0	\$425.00	\$0.00
41	Subtotal Construction Cost	Items 1 - 40				\$568,800.00
42	Maintenance and Protection of Traffic	Approx. 8% of Item 41				\$46,000.00
43	Erosion and Sediment Control	Approx. 2.5% of Item 41				\$15,000.00
44	Mobilization	Approx. 5% of Item 41				\$29,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$66,000.00
46	Total Construction Cost	Items 41 - 45				\$724,800.00
47	Construction Inspection	15% of Item 46				\$109,000.00
48	Total Construction + Inspection	Items 46 - 47				\$833,800.00
49	Engineering and Permitting	Approx. 20% of Item 46				\$145,000.00
50	Utilities		LS	0	\$0.00	\$0.00
51	Right-of-Way	Rough Estimate	LS	1	\$5,000.00	\$5,000.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$983,800.00

Assumptions & Notes:

1. Necessary drainage upgrades subject to stormwater analysis during preliminary engineering

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	1	\$5,000.00	\$5,000.00
2	Class 1 Excavation		CY	850	\$65.00	\$55,250.00
3	Foreign Borrow		CY	100	\$75.00	\$7,500.00
4	Grading (includes topsoil and seeding)		SY	100	\$15.00	\$1,500.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	1,226	\$125.00	\$153,250.00
6	Driveway Adjustments		SY	0	\$60.00	\$0.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	456	\$45.00	\$20,520.00
9	Plain Cement Mountable Curb		LF	800	\$50.00	\$40,000.00
10	Drainage Upgrades		LS	0	\$0.00	\$0.00
11	6" Base Drain		LF	0	\$13.00	\$0.00
12	Guide Rail		LF	0	\$55.00	\$0.00
13	Construction Surveying, Schedule, Equipment Package		LS	1	\$5,000.00	\$5,000.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	1,360	\$1.50	\$2,040.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	1,160	\$1.50	\$1,740.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	250	\$8.00	\$2,000.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	40	\$8.00	\$320.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
21	Marking Legend, "Shared Lane"		EA	0	\$450.00	\$0.00
22	Signage		EA	6	\$150.00	\$900.00
23	Overhead Lane Use Control		EA	0	\$15,000.00	\$0.00
24	Pervious Pavement Path		SY	0	\$90.00	\$0.00
25	Cement Concrete Sidewalk		SY	0	\$100.00	\$0.00
26	ADA Accessible Curb Ramp		EA	2	\$6,500.00	\$13,000.00
27	Traffic Signal Upgrades		LS	1	\$30,000.00	\$30,000.00
28	Rapid Rectangular Flashing Beacon		LS	0	\$30,000.00	\$0.00
Special Items						
29	Post Construction Stormwater Management	Infiltration Trench	LS	1	\$30,000.00	\$30,000.00
30	Split Rail Fence		LF	0	\$22.00	\$0.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	0	\$184.00	\$0.00
32	Landscape Restoration		SF	0	\$35.00	\$0.00
33	Miscellaneous Relocations		LS	0	\$0.00	\$0.00
34	Grade Separating Wall		SF	0	\$60.00	\$0.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	0	\$160.00	\$0.00
36	Landscape Median Area		SF	1,230	\$8.50	\$10,460.00
37	Hardscape Median Area		SF	200	\$19.00	\$3,800.00
38	Street Trees		EA	0	\$800.00	\$0.00
39	Pedestrian Scale Street Light		EA	0	\$14,300.00	\$0.00
40	Vertical Banner		EA	0	\$425.00	\$0.00
41	Subtotal Construction Cost	Items 1 - 40				\$382,280.00
42	Maintenance and Protection of Traffic	Approx. 8% of Item 41				\$31,000.00
43	Erosion and Sediment Control	Approx. 2.5% of Item 41				\$10,000.00
44	Mobilization	Approx. 5% of Item 41				\$20,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$45,000.00
46	Total Construction Cost	Items 41 - 45				\$488,280.00
47	Construction Inspection	15% of Item 46				\$74,000.00
48	Total Construction + Inspection	Items 46 - 47				\$562,280.00
49	Engineering and Permitting	Approx. 20% of Item 46				\$98,000.00
50	Utilities		LS	0	\$0.00	\$0.00
51	Right-of-Way		LS	0	\$0.00	\$0.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$660,280.00

Assumptions & Notes:

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	1	\$5,000.00	\$5,000.00
2	Class 1 Excavation		CY	425	\$65.00	\$27,625.00
3	Foreign Borrow		CY	225	\$75.00	\$16,875.00
4	Grading (includes topsoil and seeding)		SY	376	\$15.00	\$5,640.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	650	\$125.00	\$81,250.00
6	Driveway Adjustments		SY	0	\$60.00	\$0.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	0	\$45.00	\$0.00
9	Plain Cement Mountable Curb		LF	825	\$50.00	\$41,250.00
10	Drainage Upgrades		LS	0	\$0.00	\$0.00
11	6" Base Drain		LF	0	\$13.00	\$0.00
12	Guide Rail		LF	0	\$55.00	\$0.00
13	Construction Surveying, Schedule, Equipment Package		LS	1	\$5,000.00	\$5,000.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	680	\$1.50	\$1,020.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	120	\$1.50	\$180.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	280	\$8.00	\$2,240.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	50	\$8.00	\$400.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
21	Marking Legend, "Shared Lane"		EA	0	\$450.00	\$0.00
22	Signage		EA	6	\$150.00	\$900.00
23	Overhead Lane Use Control		EA	0	\$15,000.00	\$0.00
24	Pervious Pavement Path		SY	0	\$90.00	\$0.00
25	Cement Concrete Sidewalk		SY	0	\$100.00	\$0.00
26	ADA Accessible Curb Ramp		EA	0	\$6,500.00	\$0.00
27	Traffic Signal Upgrades		LS	0	\$0.00	\$0.00
28	Rapid Rectangular Flashing Beacon		LS	0	\$30,000.00	\$0.00
Special Items						
29	Post Construction Stormwater Management		LS	1	\$30,000.00	\$30,000.00
30	Split Rail Fence		LF	0	\$22.00	\$0.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	0	\$184.00	\$0.00
32	Landscape Restoration		SF	0	\$35.00	\$0.00
33	Miscellaneous Relocations		LS	0	\$0.00	\$0.00
34	Grade Separating Wall		SF	0	\$60.00	\$0.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	0	\$160.00	\$0.00
36	Landscape Median Area		SF	1,850	\$8.50	\$15,730.00
37	Hardscape Median Area		SF	310	\$19.00	\$5,890.00
38	Street Trees		EA	0	\$800.00	\$0.00
39	Pedestrian Scale Street Light		EA	0	\$14,300.00	\$0.00
40	Vertical Banner		EA	0	\$425.00	\$0.00
41	Subtotal Construction Cost	Items 1 - 40				\$239,000.00
42	Maintenance and Protection of Traffic	Approx. 8% of Item 41				\$20,000.00
43	Erosion and Sediment Control	Approx. 2.5% of Item 41				\$6,000.00
44	Mobilization	Approx. 5% of Item 41				\$12,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$28,000.00
46	Total Construction Cost	Items 41 - 45				\$305,000.00
47	Construction Inspection	15% of Item 46				\$46,000.00
48	Total Construction + Inspection	Items 46 - 47				\$351,000.00
49	Engineering and Permitting	Approx. 20% of Item 46				\$61,000.00
50	Utilities		LS	0	\$0.00	\$0.00
51	Right-of-Way		LS	0	\$0.00	\$0.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$412,000.00

Assumptions & Notes:

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	1	\$20,000.00	\$20,000.00
2	Class 1 Excavation		CY	250	\$120.00	\$30,000.00
3	Foreign Borrow		CY	50	\$75.00	\$3,750.00
4	Grading (includes topsoil and seeding)		SY	610	\$15.00	\$9,150.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	26	\$125.00	\$3,250.00
6	Driveway Adjustments		SY	0	\$60.00	\$0.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	50	\$45.00	\$2,250.00
9	Plain Cement Mountable Curb		LF	0	\$50.00	\$0.00
10	Drainage Upgrades		LS	0	\$0.00	\$0.00
11	6" Base Drain		LF	0	\$13.00	\$0.00
12	Guide Rail		LF	0	\$55.00	\$0.00
13	Construction Surveying, Schedule, Equipment Package		LS	1	\$5,000.00	\$5,000.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	280	\$8.00	\$2,240.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$8.00	\$0.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
21	Marking Legend, "Shared Lane"		EA	0	\$450.00	\$0.00
22	Signage		EA	7	\$150.00	\$1,050.00
23	Overhead Lane Use Control		EA	0	\$15,000.00	\$0.00
24	Pervious Pavement Path		SY	765	\$120.00	\$91,800.00
25	Cement Concrete Sidewalk		SY	0	\$100.00	\$0.00
26	ADA Accessible Curb Ramp		EA	7	\$6,500.00	\$45,500.00
27	Traffic Signal Upgrades		LS	0	\$0.00	\$0.00
28	Rapid Rectangular Flashing Beacon	Includes 2 push buttons	LS	1	\$30,000.00	\$30,000.00
Special Items						
29	Post Construction Stormwater Management	Approx. 10% of Total Construction	LS	1	\$30,000.00	\$30,000.00
30	Split Rail Fence		LF	350	\$22.00	\$7,700.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	0	\$184.00	\$0.00
32	Landscape Restoration		SF	100	\$35.00	\$3,500.00
33	Miscellaneous Relocations		LS	0	\$0.00	\$0.00
34	Grade Separating Wall		SF	0	\$60.00	\$0.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	0	\$160.00	\$0.00
36	Landscape Median Area		SF	0	\$8.50	\$0.00
37	Hardscape Median Area		SF	0	\$19.00	\$0.00
38	Street Trees		EA	0	\$800.00	\$0.00
39	Pedestrian Scale Street Light		EA	0	\$14,300.00	\$0.00
40	Vertical Banner		EA	0	\$425.00	\$0.00
41	Subtotal Construction Cost	Items 1 - 40				\$285,190.00
42	Maintenance and Protection of Traffic	Approx. 5% of Item 41				\$15,000.00
43	Erosion and Sediment Control	Approx. 2.5% of Item 41				\$8,000.00
44	Mobilization	Approx. 5% of Item 41				\$15,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$33,000.00
46	Total Construction Cost	Items 41 - 45				\$356,190.00
47	Construction Inspection	15% of Item 46				\$54,000.00
48	Total Construction + Inspection	Items 46 - 47				\$410,190.00
49	Engineering and Permitting	Approx. 25% of Item 46				\$90,000.00
50	Utilities		LS	0	\$0.00	\$0.00
51	Right-of-Way	Rough Estimate	LS	1	\$50,000.00	\$50,000.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$550,190.00

Assumptions & Notes:

- Assumes 2' of ground restoration (grading) on backside of proposed trail alignment.

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	1	\$5,000.00	\$5,000.00
2	Class 1 Excavation		CY	230	\$120.00	\$27,600.00
3	Foreign Borrow		CY	0	\$75.00	\$0.00
4	Grading (includes topsoil and seeding)		SY	426	\$15.00	\$6,390.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	0	\$125.00	\$0.00
6	Driveway Adjustments		SY	0	\$60.00	\$0.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	0	\$45.00	\$0.00
9	Plain Cement Mountable Curb		LF	0	\$50.00	\$0.00
10	Drainage Upgrades		LS	0	\$0.00	\$0.00
11	6" Base Drain		LF	0	\$13.00	\$0.00
12	Guide Rail		LF	0	\$55.00	\$0.00
13	Construction Surveying, Schedule, Equipment Package		LS	1	\$5,000.00	\$5,000.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$8.00	\$0.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$8.00	\$0.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
21	Marking Legend, "Shared Lane"		EA	0	\$450.00	\$0.00
22	Signage		EA	0	\$150.00	\$0.00
23	Overhead Lane Use Control		EA	0	\$15,000.00	\$0.00
24	Pervious Pavement Path		SY	405	\$120.00	\$48,600.00
25	Cement Concrete Sidewalk		SY	0	\$100.00	\$0.00
26	ADA Accessible Curb Ramp		EA	1	\$6,500.00	\$6,500.00
27	Traffic Signal Upgrades		LS	0	\$0.00	\$0.00
28	Rapid Rectangular Flashing Beacon		LS	0	\$30,000.00	\$0.00
Special Items						
29	Post Construction Stormwater Management	Approx. 10% of Total Construction	LS	1	\$15,000.00	\$15,000.00
30	Split Rail Fence		LF	0	\$22.00	\$0.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	0	\$184.00	\$0.00
32	Landscape Restoration	Includes Tree Replacement	SF	110	\$35.00	\$3,850.00
33	Miscellaneous Relocations		LS	0	\$0.00	\$0.00
34	Grade Separating Wall		SF	0	\$60.00	\$0.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	0	\$160.00	\$0.00
36	Landscape Median Area		SF	0	\$8.50	\$0.00
37	Hardscape Median Area		SF	0	\$19.00	\$0.00
38	Street Trees		EA	0	\$800.00	\$0.00
39	Pedestrian Scale Street Light		EA	0	\$14,300.00	\$0.00
40	Vertical Banner		EA	0	\$425.00	\$0.00
41	Subtotal Construction Cost	Items 1 - 40				\$117,940.00
42	Maintenance and Protection of Traffic	Approx. 8% of Item 41				\$10,000.00
43	Erosion and Sediment Control	Approx. 2.5% of Item 41				\$3,000.00
44	Mobilization	Approx. 5% of Item 41				\$6,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$14,000.00
46	Total Construction Cost	Items 41 - 45				\$150,940.00
47	Construction Inspection	15% of Item 46				\$23,000.00
48	Total Construction + Inspection	Items 46 - 47				\$173,940.00
49	Engineering and Permitting	Approx. 25% of Item 46				\$38,000.00
50	Utilities		LS	0	\$0.00	\$0.00
51	Right-of-Way	Rough Estimate	LS	1	\$26,000.00	\$26,000.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$237,940.00

Assumptions & Notes:

1. Assumes 2' of ground restoration (grading) on backside of proposed trail alignment.

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	0	\$0.00	\$0.00
2	Class 1 Excavation		CY	0	\$65.00	\$0.00
3	Foreign Borrow		CY	0	\$75.00	\$0.00
4	Grading (includes topsoil and seeding)		SY	0	\$15.00	\$0.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	0	\$125.00	\$0.00
6	Driveway Adjustments		SY	0	\$60.00	\$0.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	0	\$45.00	\$0.00
9	Plain Cement Mountable Curb		LF	0	\$50.00	\$0.00
10	Drainage Upgrades		LS	0	\$0.00	\$0.00
11	6" Base Drain		LF	0	\$13.00	\$0.00
12	Guide Rail		LF	0	\$55.00	\$0.00
13	Construction Surveying, Schedule, Equipment Package		LS	0	\$7,500.00	\$0.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$8.00	\$0.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$8.00	\$0.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
21	Marking Legend, "Shared Lane"		EA	30	\$450.00	\$13,500.00
22	Signage		EA	18	\$150.00	\$2,700.00
23	Overhead Lane Use Control		EA	0	\$15,000.00	\$0.00
24	Pervious Pavement Path		SY	0	\$90.00	\$0.00
25	Cement Concrete Sidewalk		SY	0	\$100.00	\$0.00
26	ADA Accessible Curb Ramp		EA	0	\$6,500.00	\$0.00
27	Traffic Signal Upgrades		LS	0	\$0.00	\$0.00
28	Rapid Rectangular Flashing Beacon		LS	0	\$30,000.00	\$0.00
Special Items						
29	Post Construction Stormwater Management		LS	0	\$0.00	\$0.00
30	Split Rail Fence		LF	0	\$22.00	\$0.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	0	\$184.00	\$0.00
32	Landscape Restoration		SF	0	\$35.00	\$0.00
33	Miscellaneous Relocations		LS	0	\$0.00	\$0.00
34	Grade Separating Wall		SF	0	\$60.00	\$0.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	0	\$160.00	\$0.00
36	Landscape Median Area		SF	0	\$8.50	\$0.00
37	Hardscape Median Area		SF	0	\$19.00	\$0.00
38	Street Trees		EA	0	\$800.00	\$0.00
39	Pedestrian Scale Street Light		EA	0	\$14,300.00	\$0.00
40	Vertical Banner		EA	0	\$425.00	\$0.00
41	Subtotal Construction Cost	Items 1 - 40				\$16,200.00
42	Maintenance and Protection of Traffic	Approx. 8% of Item 41				\$2,000.00
43	Erosion and Sediment Control					\$0.00
44	Mobilization	Approx. 5% of Item 41				\$1,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$2,000.00
46	Total Construction Cost	Items 41 - 45				\$21,200.00
47	Construction Inspection	15% of Item 46				\$4,000.00
48	Total Construction + Inspection	Items 46 - 47				\$25,200.00
49	Engineering and Permitting	Approx. 20% of Item 46				\$5,000.00
50	Utilities		LS	0	\$0.00	\$0.00
51	Right-of-Way		LS	0	\$0.00	\$0.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$30,200.00

Assumptions & Notes:

1. Assumes routine clearing and trimming of vegetation and street sweeping, part of township routine maintenance
2. Does not include speed enforcement or educational material

Item No.	Description	Comment	Unit	Quantity	Unit Cost	Cost
Standard Items						
1	Clearing and Grubbing		LS	1	\$25,000.00	\$25,000.00
2	Class 1 Excavation		CY	1,480	\$65.00	\$96,200.00
3	Foreign Borrow		CY	296	\$75.00	\$22,200.00
4	Grading (includes topsoil and seeding)		SY	1,280	\$15.00	\$19,200.00
5	Full Depth Bituminous Pavement + Wearing Course (8" Bituminous Base Course & 8" Subbase)		SY	626	\$125.00	\$78,250.00
6	Driveway Adjustments		SY	120	\$60.00	\$7,200.00
7	Milling and Bituminous Overlay (including Tack Coat)		SY	0	\$25.00	\$0.00
8	Plain Cement Concrete Curb		LF	2,510	\$45.00	\$112,950.00
9	Plain Cement Mountable Curb		LF	0	\$50.00	\$0.00
10	Drainage Upgrades	New Drainage Structures/Pipe	LS	1	\$120,000.00	\$120,000.00
11	6" Base Drain		LF	2,510	\$13.00	\$32,630.00
12	Guide Rail		LF	200	\$55.00	\$11,000.00
13	Construction Surveying, Schedule, Equipment Package		LS	1	\$7,500.00	\$7,500.00
14	4" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$1.50	\$0.00
15	4" White Pavement Markings, Hot Thermoplastic Paint		LF	1,860	\$1.50	\$2,790.00
16	6" White Pavement Markings, Hot Thermoplastic Paint		LF	0	\$2.00	\$0.00
17	24" White Pavement Markings, Hot Thermoplastic Paint		LF	400	\$8.00	\$3,200.00
18	24" Yellow Pavement Markings, Hot Thermoplastic Paint		LF	0	\$8.00	\$0.00
19	Marking Legend, "ONLY", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
20	Marking Legend, "ARROW", Hot Thermoplastic Paint		EA	0	\$160.00	\$0.00
21	Marking Legend, "Shared Lane"		EA	0	\$450.00	\$0.00
22	Signage		EA	18	\$150.00	\$2,700.00
23	Overhead Lane Use Control		EA	0	\$15,000.00	\$0.00
24	Pervious Pavement Path		SY	1,500	\$90.00	\$135,000.00
25	Cement Concrete Sidewalk		SY	80	\$100.00	\$8,000.00
26	ADA Accessible Curb Ramp		EA	15	\$6,500.00	\$97,500.00
27	Traffic Signal Upgrades		LS	1	\$20,000.00	\$20,000.00
28	Rapid Rectangular Flashing Beacon		LS	0	\$30,000.00	\$0.00
Special Items						
29	Post Construction Stormwater Management	Approx. 10% of Total Construction	LS	1	\$280,000.00	\$280,000.00
30	Split Rail Fence	Resetting Existing Fence	LF	250	\$22.00	\$5,500.00
31	Sidewalk Protective Fence, Vinyl-Coated Steel		LF	50	\$184.00	\$9,200.00
32	Landscape Restoration	Includes Trees/Shrubs	SF	2,326	\$35.00	\$81,410.00
33	Miscellaneous Relocations		LS	1	\$25,000.00	\$25,000.00
34	Grade Separating Wall		SF	225	\$60.00	\$13,500.00
Streetscaping Items						
35	Flush Stamped Asphalt Median		SY	800	\$170.00	\$136,000.00
36	Landscape Median Area		SF	0	\$8.50	\$0.00
37	Hardscape Median Area		SF	0	\$19.00	\$0.00
38	Street Trees		EA	15	\$800.00	\$12,000.00
39	Pedestrian Scale Street Light	Includes Conduit & Wiring	EA	56	\$14,300.00	\$800,800.00
40	Vertical Banner		EA	56	\$425.00	\$23,800.00
41	Subtotal Construction Cost	Items 1 - 40				\$2,188,530.00
42	Maintenance and Protection of Traffic	Approx. 8% of Item 41				\$176,000.00
43	Erosion and Sediment Control	Approx. 2.5% of Item 41				\$55,000.00
44	Mobilization	Approx. 5% of Item 41				\$110,000.00
45	Contingency	Approx. 10% of Items 41 - 44				\$253,000.00
46	Total Construction Cost	Items 41 - 45				\$2,782,530.00
47	Construction Inspection	12% of Item 46				\$334,000.00
48	Total Construction + Inspection	Items 46 - 47				\$3,116,530.00
49	Engineering and Permitting	Approx. 20% of Item 46				\$557,000.00
50	Utilities	Rough Estimate	LS	1	\$40,500.00	\$40,500.00
51	Right-of-Way	Rough Estimate	LS	1	\$90,000.00	\$90,000.00
52	Total Project Cost (2017 Dollars)	Items 48 - 51				\$3,804,030.00

Assumptions & Notes:

1. Drainage upgrades subject to stormwater analysis during preliminary engineering