

MAR 22 2023

TOWN OF YORKTOWN

MEMORANDUM

Date: March 21, 2023 **TG:** 1.21025.04

To: Robyn Steinberg; John Tegeder

Subject: NYS Rt. 118 and Underhill Ave. Alternatives – Cost Estimate Analysis

Background

The Town of Yorktown requested that Transpo Group USA, Inc. (Transpo) provide a third-party review of construction cost estimates prepared by Colliers (professionals for the Underhill Farms applicant) for two potential improvement alternatives to the NYS Route 118 (Saw Mill River Road) and Underhill Avenue intersection, as shown in Attachment A. Alternative 1 proposes to add dedicated left turn lanes on the east and west intersection legs and a dedicated right turn lane on the north intersection leg; Alternative 2 proposes to add dedicated left turn lanes on all intersection legs.

The cost estimates for each of the two alternatives prepared by Colliers is included in Attachment B. In Transpo's analysis, we focused on four questions, as further described below. Note that we (Transpo) did not undertake a detailed design review for the improvement alternatives.

Throughout the remainder of this memorandum, specific requests for clarification are **highlighted in yellow**.

Cost Estimate Analysis

Question 1: Are pay items missing from the cost estimates?

Alternatives 1 and 2 – The following pay items may be missing from both cost estimates:

- Removal of existing retaining wall and the construction of a new retaining wall for the property on northwest intersection corner.
- Concrete stairs for pedestrian crossing of Underhill Avenue intersection (west of the intersection).
- Improvements to utilities that may be impacted by the Project.
- Improvements to stormwater facilities that may be impacted/needed by the Project.
- Traffic signal controller cabinet – The costs for this item may be included within the "Traffic Signal Upgrades" pay item included within each cost estimate; however, it is not clear what the "Traffic Signal Upgrades" pay item includes.

Alternative 2 – The following pay items may be missing from the cost estimate:

- Removal of existing guide rail and installation of new guide rail on the east side of the south leg of the roadway.

We would like to request that the applicant please clarify if any of these items are included in other line items.

Question 2: Are appropriate “below the line” items included in the cost estimates?

Alternatives 1 and 2 – The following “below the line” items appear to not be included in the cost estimates:

- Contingency – given the conceptual level of the proposed improvements, we recommend including a 20-25% contingency of the sub-total, consistent with NYSDOT guidance for projects at the scoping phase.
- Inflation – we recommend including an inflation factor contingency of 2% annually of the sub-total to account for changing material and labor prices between year-of-estimate (which is based on construction costs incurred in 2022) and year-of-construction.
- Final Design – we recommend including a 12.5% factor of the sub-total to cover development of plans, specifications, estimates, environmental documentation, and permitting (12.5% is the midpoint of the 10-15% range per NYSDOT guidance for intersection reconstruction).
- QC and Administration of Final Design and Contract – we recommend including a 3% factor of the sub-total to cover contract administration during construction, per NYSDOT guidance.

Question 3: Do reported quantities appear reasonable for the anticipated work shown based on the conceptual layouts?

The reported quantities appear to be reasonable for the anticipated work shown in the conceptual layouts, with the following caveats:

- Neither of the Alt 1 and Alt 2 layouts delineate between new pavement, grind/overlay pavement, and existing pavement to remain, thus it is not possible to confirm the applicant’s estimate of pavement quantities.
- Roadway typical sections noting pavement layer and bases thicknesses were not provided, and it is thus not possible to confirm reported pavement and underlying subbase quantities.
- The conceptual layout for Alternative 2 shows roadway widening on the south leg of NYS Route 118 (Saw Mill River Road) extending beyond the limits of the viewport on the figure. As such, we cannot confirm the full limits of proposed work.

Despite not being able to confirm the applicant’s estimates of quantities as listed above, in our judgment the order of magnitude appears reasonable. We would like to request that the applicant please provide clarification in view of the three bulleted comments above.

Question 4: Are the bid item unit costs reasonable as compared to New York State Department of Transportation’s (NYSDOT) latest unit-costs?

The following bid item unit costs appear to be inconsistent from unit costs reported by NYSDOT’s Preliminary Cost Estimating Tool (PCET) Worksheet (version dated Oct 2022)¹:

¹ https://www.dot.ny.gov/divisions/engineering/design/dqab/hdm/hdm-repository/PIN_est_prelim_rev0.xlsm



Table 1. Major cost items with unit-cost differences

Item Number (sorted low to high)	Description	Colliers Estimate	NYSDOT PCET tool (last rev. Oct 2022)	Impact on Total Cost (Alt 1)	Impact on Total Cost (Alt 2)
203.02	Unclassified Excavation and Disposal	\$63.25 / CY	\$168.00 / CY	(+) \$55,936.50	(+) \$127,061.75
304.11000008	Subbase Course (Modified)	\$109.25 / CY	\$195.68 / CY	(+) \$26,706.87	(+) \$56,179.50
402.126104	12.5 F1 Top Course HMA, 60 Series Compaction	\$184.00 / Ton	\$122.00 / Ton	(-) \$29,946.00	(-) \$35,216.00
402.376904	37.5 F9 Base Course HMA, 60 Series Compaction	\$241.50 / Ton	\$126.00 / Ton	(-) \$41,926.50	(-) \$95,056.50
554.40	Fill Type Retaining Wall (0 – 6FT)	\$201.25 / SF	\$106.00 / SF	N/A	(-) \$139,065.00
608.0101	Concrete Sidewalks and Driveways	\$1,035.00 / CY	\$1,888.00 / CY	(+) \$23,884.00	(+) \$23,884.00
608.01050109	Curb Ramp Configuration Type I	\$9,775.00 / Ea.	\$6,123.00 / Ea.	(-) \$21,912.00	(-) \$32,784.00
609.0401	Cast-in-Place Concrete Curb Type VF150	\$46.00 / LF	\$59.00 / LF	(+) \$11,401.00	(+) \$11,401.00
680.5001	Pole Excavation and Concrete Foundation	\$2,070.00 / CY	\$2,452.00 / CY	(+) \$3,820.00	(+) \$3,820.00
680.600730	Traffic Signal Pole - Span Wire 7,000 Pound Load, 30 Feet Long	\$8,625.00 / Ea.	\$12,657.00 / Ea.	(+) \$8,064.00	(+) \$8,064.00

We would like to request that the applicant please provide clarification.

Conclusion

Pending the clarifications requested above, we have evaluated costs for each alternative as shown in Attachment C and summarized below. Our analysis includes items noted above as potentially missing, as well as updated unit costs. Costs were prepared for each alternative using both a 20% contingency and a 25% contingency, for sensitivity-analysis purposes.

Table 2. Cost with 20% and 25% Contingency/Risk allowances

	Alternative 1	Alternative 2
Construction	\$936,696	\$1,436,945
Contingency/Risk (@ 20%)	\$162,904	\$249,904
Contingency/Risk (@ 25%)	\$203,630	\$312,379
Design and Admin	\$138,468	\$212,419
Total with 20% contingency	\$1,238,068	\$1,899,267
Total with 25% contingency	\$1,278,794	\$1,961,743
Rounded up, @25% contingency	\$1.3M	\$2.0M



We note that these cost estimates are based on the most-recent (year 2022) published data compiled by NYSDOT for public roads projects, and that costs have been changing rapidly over the last 2-3 years. Given recent rapid cost escalation for road construction projects², these estimates should be reevaluated nearer to the date of construction if this is anticipated to occur later than 2024.

² <https://www.fhwa.dot.gov/policy/otps/nhcci/>



Attachment A: Conceptual Level Layouts

Attachment B: Colliers Opinions of Potential Construction Costs

E-2a
 PRELIMINARY ENGINEER'S COST ESTIMATE - ROADWORK
 UNDERHILL FARM
 NYS ROUTE 118 & UNDERHILL AVENUE (ALTERNATE 1)
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK

ITEM NUMBER	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	\$ 63.25	534	\$ 33,775.50
206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	LF	\$ 57.50	15	\$ 862.50
304.1100008	SUBBASE COURSE (MODIFIED)	CY	\$ 109.25	309	\$ 33,758.25
402.126104	12.5 F1 TOP COURSE HMA, 60 SERIES COMPACTION	TON	\$ 184.00	483	\$ 88,872.00
402.256904	25 F9 BINDER COURSE HMA, 60 SERIES COMPACTION	TON	\$ 161.00	113	\$ 18,193.00
402.376904	37.5 F9 BASE COURSE HMA, 60 SERIES COMPACTION	TON	\$ 241.50	363	\$ 87,664.50
407.0103	STRAIGHT TACK COAT	GAL	\$ 8.05	330	\$ 2,656.50
490.10	PRODUCTION COLD MILLING OF BITUMINOUS CONCRETE	SY	\$ 8.05	4934	\$ 39,718.70
608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	CY	\$ 1,035.00	28	\$ 28,980.00
608.01050109	CURB RAMP CONFIGURATION TYPE 1	EA	\$ 9,775.00	6	\$ 58,650.00
608.01050409	CURB RAMP CONFIGURATION TYPE 4	EA	\$ 7,762.50	1	\$ 7,762.50
609.0401	CAST-IN-PLACE CONCRETE CURB TYPE VF150	LF	\$ 46.00	877	\$ 40,342.00
610.1402	TOPSOIL - ROADSIDE	CY	\$ 109.25	19	\$ 2,075.75
610.1601	TURF ESTABLISHMENT - ROADSIDE	SY	\$ 3.45	219	\$ 755.55
625.01000108	SURVEY AND STAKEOUT (TRAFFIC SIGNALS)	EA	\$ 7,475.00	2	\$ 14,950.00
627.50140008	CUTTING PAVEMENT	LF	\$ 6.90	1370	\$ 9,453.00
680.05010007	360 DIGITAL CAMERA VIDEO DETECTION SYSTEM	EA	\$ 31,050.00	1	\$ 31,050.00
680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	CY	\$ 2,070.00	10	\$ 20,700.00
680.510501	PULLBOX - RECTANGULAR, 26" X 18", REINFORCED CONCRETE	EA	\$ 1,725.00	2	\$ 3,450.00
680.520108	CONDUIT, METAL STEEL, ZINC COATED, 3"	LF	\$ 57.50	15	\$ 862.50
680.600730	TRAFFIC SIGNAL POLE - SPAN WIRE 7,000 POUND LOAD, 30 FEET LONG	EA	\$ 8,625.00	2	\$ 17,250.00
680.6808	TRAFFIC SIGNAL POLE-BRACKET MOUNT 8 FEET MOUNTING HEIGHT	EA	\$ 2,070.00	4	\$ 8,280.00
680.730514	SIGNAL CABLE, 5 CONDUCTORS, 14 AWG	LF	\$ 9.20	94	\$ 864.80
680.80324515	INSTALL MICROCOMPUTER CABINET	EA	\$ 3,450.00	1	\$ 3,450.00
680.810101	TRAFFIC SIGNAL MODULE - 12 INCH, RED BALL, LED	EA	\$ 172.50	8	\$ 1,380.00
680.810103	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW BALL, LED	EA	\$ 172.50	8	\$ 1,380.00
680.810104	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW ARROW, LED	EA	\$ 172.50	1	\$ 172.50
680.810105	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN BALL, LED	EA	\$ 172.50	7	\$ 1,207.50
680.810106	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN ARROW, LED	EA	\$ 172.50	2	\$ 345.00
680.810107	TRAFFIC SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	26	\$ 5,980.00
680.8111	TRAFFIC SIGNAL BRACKET ASSEMBLY - 1 WAY	EA	\$ 431.25	1	\$ 431.25
680.8112	TRAFFIC SIGNAL BRACKET ASSEMBLY - 2 WAY	EA	\$ 632.50	2	\$ 1,265.00
680.8113	TRAFFIC SIGNAL BRACKET ASSEMBLY - 3 WAY	EA	\$ 661.25	1	\$ 661.25
680.81310109	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE	EA	\$ 2,645.00	4	\$ 10,580.00
680.81310209	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITHOUT POLE	EA	\$ 1,610.00	1	\$ 1,610.00
680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	12	\$ 2,760.00
680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	EA	\$ 316.25	6	\$ 1,897.50
680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	EA	\$ 345.00	6	\$ 2,070.00
680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	EA	\$ 316.25	6	\$ 1,897.50
680.81990008	TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE	EA	\$ 258.75	8	\$ 2,070.00
680.8201	OVERHEAD SIGN ASSEMBLY, TYPE A	EA	\$ 747.50	2	\$ 1,495.00
680.94997008	FURNISH AND INSTALL ELECTRICAL DISCONNECT GENERATOR TRANSFER SWITCH	EA	\$ 1,725.00	1	\$ 1,725.00
683.08020104	3G/4G LTE GATEWAY MODEM W/ ANTENNA	EA	\$ 3,565.00	1	\$ 3,565.00
685.11	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 2.30	4145	\$ 9,533.50
685.12	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 1.15	2802	\$ 3,222.30
685.13	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 20 MILS	EA	\$ 115.00	12	\$ 1,380.00
685.14	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 20 MILS	EA	\$ 172.50	10	\$ 1,725.00
VARIOUS	TRAFFIC SIGNAL UPGRADES				\$ 64,600.00
				SUB TOTAL	\$ 677,330.35
619.01	BASIC WORK ZONE TRAFFIC CONTROL	LS	3.5% OF SUBTOTAL		\$ 23,706.56
MISC	MOBILIZATION	LS	4.5% OF SUBTOTAL		\$ 30,479.87
MISC	ESTIMATED DESIGN SUPPORT COST	LS	1.5% OF SUBTOTAL		\$ 10,159.96
				TOTAL	\$ 741,676.73

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PRELIMINARY ENGINEER'S COST ESTIMATE - ROADWORK
UNDERHILL FARM
NYS ROUTE 118 & UNDERHILL AVENUE (ALTERNATE 2)
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK

ITEM NUMBER	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	\$ 63.25	1213	\$ 76,722.25
206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	LF	\$ 57.50	15	\$ 862.50
304.11000008	SUBBASE COURSE (MODIFIED)	CY	\$ 109.25	650	\$ 71,012.50
402.126104	12.5 F1 TOP COURSE HMA, 60 SERIES COMPACTION	TON	\$ 184.00	568	\$ 104,512.00
402.256904	25 F9 BINDER COURSE HMA, 60 SERIES COMPACTION	TON	\$ 161.00	255	\$ 41,055.00
402.376904	37.5 F9 BASE COURSE HMA, 60 SERIES COMPACTION	TON	\$ 241.50	823	\$ 198,754.50
407.0103	STRAIGHT TACK COAT	GAL	\$ 8.05	490	\$ 3,944.50
490.10	PRODUCTION COLD MILLING OF BITUMINOUS CONCRETE	SY	\$ 8.05	4934	\$ 39,718.70
554.40	FILL TYPE RETAINING WALL (0 - 6FT.)	SF	\$ 201.25	1460	\$ 293,825.00
608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	CY	\$ 1,035.00	28	\$ 28,980.00
608.01050109	CURB RAMP CONFIGURATION TYPE 1	EA	\$ 7,935.00	6	\$ 47,610.00
608.01050409	CURB RAMP CONFIGURATION TYPE 4	EA	\$ 6,670.00	1	\$ 6,670.00
608.01050109	CURB RAMP CONFIGURATION TYPE I	EA	\$ 9,775.00	6	\$ 58,650.00
608.01050409	CURB RAMP CONFIGURATION TYPE 4	EA	\$ 7,762.50	1	\$ 7,762.50
609.0401	CAST-IN-PLACE CONCRETE CURB TYPE VF150	LF	\$ 46.00	877	\$ 40,342.00
610.1402	TOPSOIL - ROADSIDE	CY	\$ 109.25	19	\$ 2,075.75
610.1601	TURF ESTABLISHMENT - ROADSIDE	SY	\$ 3.45	219	\$ 755.55
625.01000108	SURVEY AND STAKEOUT (TRAFFIC SIGNALS)	EA	\$ 7,475.00	2	\$ 14,950.00
627.50140008	CUTTING PAVEMENT	LF	\$ 6.90	1370	\$ 9,453.00
680.05010007	360 DIGITAL CAMERA VIDEO DETECTION SYSTEM	EA	\$ 31,050.00	1	\$ 31,050.00
680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	CY	\$ 2,070.00	10	\$ 20,700.00
680.510501	PULLBOX - RECTANGULAR, 26" X 18", REINFORCED CONCRETE	EA	\$ 1,725.00	2	\$ 3,450.00
680.520108	CONDUIT, METAL STEEL, ZINC COATED, 3"	LF	\$ 57.50	15	\$ 862.50
680.600730	TRAFFIC SIGNAL POLE - SPAN WIRE 7,000 POUND LOAD, 30 FEET LONG	EA	\$ 8,625.00	2	\$ 17,250.00
680.6808	TRAFFIC SIGNAL POLE-BRACKET MOUNT 8 FEET MOUNTING HEIGHT	EA	\$ 2,070.00	4	\$ 8,280.00
680.730514	SIGNAL CABLE, 5 CONDUCTORS, 14 AWG	LF	\$ 9.20	70	\$ 644.00
680.731014	SIGNAL CABLE, 10 CONDUCTORS, 14 AWG	LF	\$ 11.50	108	\$ 1,242.00
680.731514	SIGNAL CABLE, 15 CONDUCTORS, 14 AWG	LF	\$ 13.80	180	\$ 2,484.00
680.80324515	INSTALL MICROCOMPUTER CABINET	EA	\$ 3,450.00	1	\$ 3,450.00
680.810101	TRAFFIC SIGNAL MODULE - 12 INCH, RED BALL, LED	EA	\$ 172.50	8	\$ 1,380.00
680.810103	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW BALL, LED	EA	\$ 172.50	8	\$ 1,380.00
680.810104	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW ARROW, LED	EA	\$ 172.50	3	\$ 517.50
680.810105	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN BALL, LED	EA	\$ 172.50	7	\$ 1,207.50
680.810106	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN ARROW, LED	EA	\$ 172.50	4	\$ 690.00
680.810107	TRAFFIC SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	30	\$ 6,900.00
680.8111	TRAFFIC SIGNAL BRACKET ASSEMBLY - 1 WAY	EA	\$ 431.25	1	\$ 431.25
680.8112	TRAFFIC SIGNAL BRACKET ASSEMBLY - 2 WAY	EA	\$ 632.50	1	\$ 632.50
680.8113	TRAFFIC SIGNAL BRACKET ASSEMBLY - 3 WAY	EA	\$ 661.25	2	\$ 1,322.50
680.81310109	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE	EA	\$ 2,645.00	4	\$ 10,580.00
680.81310209	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITHOUT POLE	EA	\$ 1,610.00	1	\$ 1,610.00
680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	12	\$ 2,760.00
680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	EA	\$ 316.25	6	\$ 1,897.50
680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	EA	\$ 345.00	6	\$ 2,070.00
680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	EA	\$ 316.25	6	\$ 1,897.50
680.81990008	TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE	EA	\$ 258.75	9	\$ 2,328.75
680.8201	OVERHEAD SIGN ASSEMBLY, TYPE A	EA	\$ 747.50	4	\$ 2,990.00
680.94997008	FURNISH AND INSTALL ELECTRICAL DISCONNECT GENERATOR TRANSFER SWITCH	EA	\$ 1,725.00	1	\$ 1,725.00
683.08020104	3G/4G LTE GATEWAY MODEM W/ ANTENNA	EA	\$ 3,565.00	1	\$ 3,565.00
685.11	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 2.30	5562	\$ 12,792.60
685.12	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 1.15	7081	\$ 8,143.15
685.13	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 20 MILS	EA	\$ 115.00	20	\$ 2,300.00
685.14	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 20 MILS	EA	\$ 172.50	8	\$ 1,380.00
				SUB TOTAL	\$ 1,207,569.00
619.01	BASIC WORK ZONE TRAFFIC CONTROL	LS	3.5% OF SUBTOTAL		\$ 42,264.92
MISC	MOBILIZATION	LS	4.5% OF SUBTOTAL		\$ 54,340.61
MISC	ESTIMATED DESIGN SUPPORT COST	LS	1.5% OF SUBTOTAL		\$ 18,113.54
				TOTAL	\$ 1,322,288.06

Attachment C: Transpo Opinion of Potential Construction Costs

Alternative 1

Cost Estimate (Conceptual)

Underhill Farm

NYS Route 118 & Underhill Avenue

Town of Yorktown, Westchester County, New York

Prepared by: Transpo Group

March 20, 2023

	Unit	Unit Price	Quantity	Amount
Retaining Wall	SF	\$ 106.00	660	\$ 69,960.00
Concrete Stairs	EA	\$ 5,600.00	2	\$ 11,200.00
Traffic Signal Cabinet	EA	\$ 20,000.00	1	\$ 20,000.00
Remove Guardrail	LF	\$ 15.00	0	\$ -
Install Guardrail	LF	\$ 35.00	0	\$ -
All other items (see next page)				\$ 713,358.22
			Subtotal:	\$ 814,518.22
CONSTRUCTION COSTS				
Basic work zone traffic control	1.5%			\$ 12,217.77
Mobilization	4.5%			\$ 36,653.32
Utility impacts	2.0%			\$ 16,290.36
Stormwater improvements	5.0%			\$ 40,725.91
Inflation	2.0%			\$ 16,290.36
			Subtotal:	\$ 936,695.95
CONTINGENCY				
Contingency	20.0%			\$ 162,903.64
Contingency	25.0%			\$ 203,629.56
DESIGN AND ADMIN				
Estimated design support	1.5%			\$ 12,217.77
Final design	12.5%			\$ 101,814.78
QC and admin of final design and contract	3.0%			\$ 24,435.55
			Subtotal:	\$ 138,468.10
TOTAL COST				
20% Contingency				\$ 1,238,067.69
25% Contingency				\$ 1,278,793.61

E-2a
PRELIMINARY ENGINEER'S COST ESTIMATE - ROADWORK
UNDERHILL FARM
NYS ROUTE 118 & UNDERHILL AVENUE (ALTERNATE 1)
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK

ITEM NUMBER	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT	DELTA	
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	\$ 168.00	534	\$ 89,712.00	+ 55,936.50	
206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	LF	\$ 57.50	15	\$ 862.50		
304.11000008	SUBBASE COURSE (MODIFIED)	CY	\$ 195.68	309	\$ 60,465.12	+ 26,706.87	
402.126104	12.5 F1 TOP COURSE HMA, 60 SERIES COMPACTION	TON	\$ 122.00	483	\$ 58,926.00	- 29,946.00	
402.256904	25 F9 BINDER COURSE HMA, 60 SERIES COMPACTION	TON	\$ 161.00	113	\$ 18,193.00		
402.376904	37.5 F9 BASE COURSE HMA, 60 SERIES COMPACTION	TON	\$ 126.00	363	\$ 45,738.00	- 41,926.50	
407.0103	STRAIGHT TACK COAT	GAL	\$ 8.05	330	\$ 2,656.50		
490.10	PRODUCTION COLD MILLING OF BITUMINOUS CONCRETE	SY	\$ 8.05	4934	\$ 39,718.70		
608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	CY	\$ 1,888.00	28	\$ 52,864.00	+ 23,884.00	
608.01050109	CURB RAMP CONFIGURATION TYPE I	EA	\$ 6,123.00	6	\$ 36,738.00	- 21,912.00	
608.01050409	CURB RAMP CONFIGURATION TYPE 4	EA	\$ 7,762.50	1	\$ 7,762.50		
609.0401	CAST-IN-PLACE CONCRETE CURB TYPE VF150	LF	\$ 59.00	877	\$ 51,743.00	+ 11,401.00	
610.1402	TOPSOIL - ROADSIDE	CY	\$ 109.25	19	\$ 2,075.75		
610.1601	TURF ESTABLISHMENT - ROADSIDE	SY	\$ 3.45	219	\$ 755.55		
625.01000108	SURVEY AND STAKEOUT (TRAFFIC SIGNALS)	EA	\$ 7,475.00	2	\$ 14,950.00		
627.50140008	CUTTING PAVEMENT	LF	\$ 6.90	1370	\$ 9,453.00		
680.05010007	360 DIGITAL CAMERA VIDEO DETECTION SYSTEM	EA	\$ 31,050.00	1	\$ 31,050.00		
680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	CY	\$ 2,452.00	10	\$ 24,520.00	+ 3,820.00	
680.510501	PULLBOX - RECTANGULAR, 26" X 18", REINFORCED CONCRETE	EA	\$ 1,725.00	2	\$ 3,450.00		
680.520108	CONDUIT, METAL STEEL, ZINC COATED, 3"	LF	\$ 57.50	15	\$ 862.50		
680.600730	TRAFFIC SIGNAL POLE - SPAN WIRE 7,000 POUND LOAD, 30 FEET LONG	EA	\$ 12,657.00	2	\$ 25,314.00	+ 8,064.00	
680.6808	TRAFFIC SIGNAL POLE-BRACKET MOUNT 8 FEET MOUNTING HEIGHT	EA	\$ 2,070.00	4	\$ 8,280.00		
680.730514	SIGNAL CABLE, 5 CONDUCTORS, 14 AWG	LF	\$ 9.20	94	\$ 864.80		
680.80324515	INSTALL MICROCOMPUTER CABINET	EA	\$ 3,450.00	1	\$ 3,450.00		
680.810101	TRAFFIC SIGNAL MODULE - 12 INCH, RED BALL, LED	EA	\$ 172.50	8	\$ 1,380.00		
680.810103	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW BALL, LED	EA	\$ 172.50	8	\$ 1,380.00		
680.810104	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW ARROW, LED	EA	\$ 172.50	1	\$ 172.50		
680.810105	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN BALL, LED	EA	\$ 172.50	7	\$ 1,207.50		
680.810106	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN ARROW, LED	EA	\$ 172.50	2	\$ 345.00		
680.810107	TRAFFIC SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	26	\$ 5,980.00		
680.8111	TRAFFIC SIGNAL BRACKET ASSEMBLY - 1 WAY	EA	\$ 431.25	1	\$ 431.25		
680.8112	TRAFFIC SIGNAL BRACKET ASSEMBLY - 2 WAY	EA	\$ 632.50	2	\$ 1,265.00		
680.8113	TRAFFIC SIGNAL BRACKET ASSEMBLY - 3 WAY	EA	\$ 661.25	1	\$ 661.25		
680.81310109	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE	EA	\$ 2,645.00	4	\$ 10,580.00		
680.81310209	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITHOUT POLE	EA	\$ 1,610.00	1	\$ 1,610.00		
680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	12	\$ 2,760.00		
680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	EA	\$ 316.25	6	\$ 1,897.50		
680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	EA	\$ 345.00	6	\$ 2,070.00		
680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	EA	\$ 316.25	6	\$ 1,897.50		
680.81990008	TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE	EA	\$ 258.75	8	\$ 2,070.00		
680.8201	OVERHEAD SIGN ASSEMBLY, TYPE A	EA	\$ 747.50	2	\$ 1,495.00		
680.94997008	FURNISH AND INSTALL ELECTRICAL DISCONNECT GENERATOR TRANSFER SWITCH	EA	\$ 1,725.00	1	\$ 1,725.00		
683.08020104	3G/4G LTE GATEWAY MODEM W/ ANTENNA	EA	\$ 3,565.00	1	\$ 3,565.00		
685.11	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 2.30	4145	\$ 9,533.50		
685.12	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 1.15	2802	\$ 3,222.30		
685.13	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 20 MILS	EA	\$ 115.00	12	\$ 1,380.00		
685.14	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 20 MILS	EA	\$ 172.50	10	\$ 1,725.00		
VARIOUS	TRAFFIC SIGNAL UPGRADES				\$ 64,600.00		
					SUB TOTAL	\$ 713,358.22	+ 36,027.87
619.01	BASIC WORK ZONE TRAFFIC CONTROL	LS	3.5% OF SUBTOTAL		\$ 25,706.56		
MISC	MOBILIZATION	LS	4.5% OF SUBTOTAL		\$ 32,101.12		
MISC	ESTIMATED DESIGN SUPPORT COST	LS	1.5% OF SUBTOTAL		\$ 10,700.34		
					TOTAL	\$ 781,860.24	

SEE EXCEL WORKSHEET ON PREVIOUS PAGE FOR BELOW THE LINE ITEMS AND TOTAL

Alternative 2

Cost Estimate (Conceptual)

Underhill Farm

NYS Route 118 & Underhill Avenue

Town of Yorktown, Westchester County, New York

Prepared by: Transpo Group

March 20, 2023

	Unit	Unit Price	Quantity	Amount
Retaining Wall	SF	\$ 106.00	660	\$ 69,960.00
Concrete Stairs	EA	\$ 5,600.00	2	\$ 11,200.00
Traffic Signal Cabinet	EA	\$ 20,000.00	1	\$ 20,000.00
Remove Guardrail	LF	\$ 15.00	250	\$ 3,750.00
Install Guardrail	LF	\$ 35.00	250	\$ 8,750.00
All other items (see next page)				\$ 1,135,857.75
			Subtotal:	\$ 1,249,517.75
CONSTRUCTION COSTS				
Basic work zone traffic control	1.5%			\$ 18,742.77
Mobilization	4.5%			\$ 56,228.30
Utility impacts	2.0%			\$ 24,990.36
Stormwater improvements	5.0%			\$ 62,475.89
Inflation	2.0%			\$ 24,990.36
			Subtotal:	\$ 1,436,945.41
CONTINGENCY				
Contingency	20.0%			\$ 249,903.55
Contingency	25.0%			\$ 312,379.44
DESIGN AND ADMIN				
Estimated design support	1.5%			\$ 18,742.77
Final design	12.5%			\$ 156,189.72
QC and admin of final design and contract	3.0%			\$ 37,485.53
			Subtotal:	\$ 212,418.02
TOTAL COST				
20% Contingency				\$ 1,899,266.98
25% Contingency				\$ 1,961,742.87

E-2b
 PRELIMINARY ENGINEER'S COST ESTIMATE - ROADWORK
 UNDERHILL FARM
 NYS ROUTE 118 & UNDERHILL AVENUE (ALTERNATE 2)
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK

ITEM NUMBER	DESCRIPTION	UNIT	UNIT PRICE	QUANTITY	AMOUNT	DELTA
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL	CY	\$ 168.00	1213	\$ 203,784.00	+ 127,061.75
206.03	CONDUIT EXCAVATION AND BACKFILL INCLUDING SURFACE RESTORATION	LF	\$ 57.50	15	\$ 862.50	
304.1100008	SUBBASE COURSE (MODIFIED)	CY	\$ 195.68	650	\$ 127,192.00	+ 56,179.50
402.126104	12.5 F1 TOP COURSE HMA, 60 SERIES COMPACTION	TON	\$ 122.00	568	\$ 69,296.00	- 35,216.00
402.256904	25 F9 BINDER COURSE HMA, 60 SERIES COMPACTION	TON	\$ 161.00	255	\$ 41,055.00	
402.376904	37.5 F9 BASE COURSE HMA, 60 SERIES COMPACTION	TON	\$ 126.00	823	\$ 103,698.00	- 95,056.50
407.0103	STRAIGHT TACK COAT	GAL	\$ 8.05	490	\$ 3,944.50	
490.10	PRODUCTION COLD MILLING OF BITUMINOUS CONCRETE	SY	\$ 8.05	4934	\$ 39,718.70	
554.40	FILL TYPE RETAINING WALL (0 - 6FT.)	SF	\$ 106.00	1460	\$ 154,760.00	- 139,065.00
608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS	CY	\$ 1,888.00	28	\$ 52,864.00	+ 23,884.00
608.01050109	CURB RAMP CONFIGURATION TYPE 1	EA	\$ 6,123.00	6	\$ 36,738.00	- 10,872.00
608.01050409	CURB RAMP CONFIGURATION TYPE 4	EA	\$ 6,670.00	1	\$ 6,670.00	
608.01050109	CURB RAMP CONFIGURATION TYPE 1	EA	\$ 6,123.00	6	\$ 36,738.00	- 21,912.00
608.01050409	CURB RAMP CONFIGURATION TYPE 4	EA	\$ 7,762.50	1	\$ 7,762.50	
609.0401	CAST-IN-PLACE CONCRETE CURB TYPE VF150	LF	\$ 59.00	877	\$ 51,743.00	+ 11,401.00
610.1402	TOPSOIL - ROADSIDE	CY	\$ 109.25	19	\$ 2,075.75	
610.1601	TURF ESTABLISHMENT - ROADSIDE	SY	\$ 3.45	219	\$ 755.55	
625.01000108	SURVEY AND STAKEOUT (TRAFFIC SIGNALS)	EA	\$ 7,475.00	2	\$ 14,950.00	
627.50140008	CUTTING PAVEMENT	LF	\$ 6.90	1370	\$ 9,453.00	
680.05010007	360 DIGITAL CAMERA VIDEO DETECTION SYSTEM	EA	\$ 31,050.00	1	\$ 31,050.00	
680.5001	POLE EXCAVATION AND CONCRETE FOUNDATION	CY	\$ 2,452.00	10	\$ 24,520.00	+ 3,820.00
680.510501	PULLBOX - RECTANGULAR, 26" X 18", REINFORCED CONCRETE	EA	\$ 1,725.00	2	\$ 3,450.00	
680.520108	CONDUIT, METAL STEEL, ZINC COATED, 3"	LF	\$ 57.50	15	\$ 862.50	
680.600730	TRAFFIC SIGNAL POLE - SPAN WIRE 7,000 POUND LOAD, 30 FEET LONG	EA	\$ 12,657.00	2	\$ 25,314.00	+ 8,064.00
680.6808	TRAFFIC SIGNAL POLE-BRACKET MOUNT 8 FEET MOUNTING HEIGHT	EA	\$ 2,070.00	4	\$ 8,280.00	
680.730514	SIGNAL CABLE, 5 CONDUCTORS, 14 AWG	LF	\$ 9.20	70	\$ 644.00	
680.731014	SIGNAL CABLE, 10 CONDUCTORS, 14 AWG	LF	\$ 11.50	108	\$ 1,242.00	
680.731514	SIGNAL CABLE, 15 CONDUCTORS, 14 AWG	LF	\$ 13.80	180	\$ 2,484.00	
680.80324515	INSTALL MICROCOMPUTER CABINET	EA	\$ 3,450.00	1	\$ 3,450.00	
680.810101	TRAFFIC SIGNAL MODULE - 12 INCH, RED BALL, LED	EA	\$ 172.50	8	\$ 1,380.00	
680.810103	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW BALL, LED	EA	\$ 172.50	8	\$ 1,380.00	
680.810104	TRAFFIC SIGNAL MODULE - 12 INCH, YELLOW ARROW, LED	EA	\$ 172.50	3	\$ 517.50	
680.810105	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN BALL, LED	EA	\$ 172.50	7	\$ 1,207.50	
680.810106	TRAFFIC SIGNAL MODULE - 12 INCH, GREEN ARROW, LED	EA	\$ 172.50	4	\$ 690.00	
680.810107	TRAFFIC SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	30	\$ 6,900.00	
680.8111	TRAFFIC SIGNAL BRACKET ASSEMBLY - 1 WAY	EA	\$ 431.25	1	\$ 431.25	
680.8112	TRAFFIC SIGNAL BRACKET ASSEMBLY - 2 WAY	EA	\$ 632.50	1	\$ 632.50	
680.8113	TRAFFIC SIGNAL BRACKET ASSEMBLY - 3 WAY	EA	\$ 661.25	2	\$ 1,322.50	
680.81310109	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITH POLE	EA	\$ 2,645.00	4	\$ 10,580.00	
680.81310209	ACCESSIBLE PEDESTRIAN SIGNAL (APS) WITHOUT POLE	EA	\$ 1,610.00	1	\$ 1,610.00	
680.813103	PEDESTRIAN SIGNAL SECTION - TYPE I, 12 INCH	EA	\$ 230.00	12	\$ 2,760.00	
680.813105	PEDESTRIAN SIGNAL MODULE - 12 INCH BI-MODAL, HAND/MAN SYMBOLS LED	EA	\$ 316.25	6	\$ 1,897.50	
680.8141	PEDESTRIAN SIGNAL BRACKET MOUNT ASSEMBLY	EA	\$ 345.00	6	\$ 2,070.00	
680.81500010	PEDESTRIAN COUNT-DOWN TIMER MODULE	EA	\$ 316.25	6	\$ 1,897.50	
680.81990008	TRAFFIC SIGNAL BACK PLATES WITH YELLOW REFLECTIVE TAPE	EA	\$ 258.75	9	\$ 2,328.75	
680.8201	OVERHEAD SIGN ASSEMBLY, TYPE A	EA	\$ 747.50	4	\$ 2,990.00	
680.94997008	FURNISH AND INSTALL ELECTRICAL DISCONNECT GENERATOR TRANSFER SWITCH	EA	\$ 1,725.00	1	\$ 1,725.00	
683.08020104	3G/4G LTE GATEWAY MODEM W/ ANTENNA	EA	\$ 3,565.00	1	\$ 3,565.00	
685.11	WHITE EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 2.30	5562	\$ 12,792.60	
685.12	YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPES - 20 MILS	LF	\$ 1.15	7081	\$ 8,143.15	
685.13	WHITE EPOXY REFLECTORIZED PAVEMENT LETTERS - 20 MILS	EA	\$ 115.00	20	\$ 2,300.00	
685.14	WHITE EPOXY REFLECTORIZED PAVEMENT SYMBOLS - 20 MILS	EA	\$ 172.50	8	\$ 1,380.00	
				SUB TOTAL	\$ 1,135,857.75	- 71,711.25
619.01	BASIC WORK ZONE TRAFFIC CONTROL	LS	3.5% OF SUBTOTAL		\$ 40,264.82	
MISC	MOBILIZATION	LS	4.5% OF SUBTOTAL		\$ 51,213.61	
MISC	ESTIMATED DESIGN SUPPORT COST	LS	1.5% OF SUBTOTAL		\$ 17,037.87	
				TOTAL	\$ 1,027,351.05	

SEE EXCEL WORKSHEET ON PREVIOUS PAGE FOR BELOW THE LINE ITEMS AND TOTAL