



October 30, 2017

Mr. Michael Gallagher, P.E.
Director of Public Works
Town of Vienna
127 Center Street South
Vienna, VA 22180

Re: Task #1 – Route 123 and Route 243 Traffic Signal Upgrades (Phase 1)

Mr. Gallagher:

Whitman, Requardt and Associates, LLP is pleased to provide you with our proposal to perform engineering services for the referenced project. The purpose of this task is to perform an assessment of the Town's existing signal equipment along the Route 123 (Maple Avenue) and Route 243 (Nutley Street) corridors and make recommendations regarding a phased approach to implementing traffic signal equipment upgrades. This task will be the first step toward achieving the Town's overall plan to interconnect and upgrade all traffic signal controllers and cabinets along Route 123 and Route 243 within the Town of Vienna and to allow the Town to manage their signals from a singular point using the McCain Transparency TMS Software and Server. WRA understands that the Town of Vienna has been awarded funds in response to their FY 2018 SmartScale application and that the project must comply with the scope and schedule outlined in the SmartScale application including all federal and state requirements.

1. SCOPE OF WORK

Task 1: Signal Equipment Inventory

WRA will perform a detailed inventory of the existing signal system including the following intersections:

1. Tapawingo Road and Nutley Street
2. Courthouse Road and Nutley Street
3. Nutley Street and Maple Avenue
4. Courthouse Road and Maple Avenue
5. Center Street and Maple Avenue
6. W&OD Trail and Maple Avenue
7. Park Street and Maple Avenue
8. Glyndon Street and Maple Avenue
9. Branch Road and Maple Avenue
10. Beulah Road and Maple Avenue
11. East Street and Maple Avenue
12. Follin Lane and Maple Avenue
13. Follin Lane and Echols Street
14. Beulah Road and Church Street
15. Electric Avenue and Navy Federal Credit Union (future signal)

The inventory will document the operations of the existing signal and communications equipment. This will also include observations of the corridor regarding the ability to add communications where needed and the likely selection of communications type, and potential right-of-way or utilities impacts. The inventory will be performed using a corridor-specific form (see attached sample) to be tailored to the project needs and will document the condition and type of all devices. Specific items to be inventoried include, but are not limited to the following:

- MUTCD compliance (signal heads and signs)

- Signal poles
- Signal heads
- Pedestrian signal heads
- Pedestrian push buttons
- Controller type and other equipment (conflict monitor, load switches, video detection, UPS, etc.)
- Power source
- Preemption equipment
- Detection equipment
- Communications

An assessment of ADA compliance will also be performed for the existing facilities. WRA assumes that Town staff will participate in the inventory and will provide available as-build information for the existing signals.

Task 2: Signal Equipment Needs Assessment and Recommendations

WRA understands that the Town desires to upgrade their existing signal system so that it can be controlled at a centralized location and ultimately operate as an adaptive system. The Town intends to utilize the Transparity TMS (Traffic Management System) manufactured by McCain and ultimately the McCain Adaptive system. The Town operates and maintains a combination of older Peek and new McCain controllers and desires to upgrade all controllers to be compatible with the Transparity TMS (a McCain product). In addition, the Town desires for all signals to be interconnected to a centralized location with three signals to be interconnected using wireless technology (locations 13 through 15 noted in Task 1). In addition, WRA understands that the Town desires to provide video detection on all approaches and perform upgrades to pedestrian signalization, where needed. Consideration should be given to providing a system that is capable of providing transit signal priority in the future.

WRA will prepare a needs assessment report including recommendations which defines the planned performance of the system and required system components. WRA will assess the state of the practice and emerging technologies in order to ensure that the system developed will maintain long-term viability and can be expanded over time as new technology and approaches become available. In addition to recommendations for the overall system performance, the assessment will define equipment needs at each signalized intersection.

Task 3: Cost Estimate / Implementation Plan

WRA will prepare a preliminary cost estimate for the identified improvements and development a phased implementation plan. The estimate will include costs to design, construct, inspect, and administer the project. The costs estimates will be prepared based upon sight-specific factors from the field views and the need to replace existing equipment which is not functioning as well as the needs for expansion to accommodate new technology, specifically equipment needed to implement the McCain TMS software.

The final deliverable of this task will be a cost estimate and implementation plan in order to implement the signal upgrades in logical functional and funding phases based on the available budgeted project funds (\$2,092,110).

Task 4: – Project Management

WRA will provide status updates on schedule, budget and deliverables to the Town. WRA assumes two meetings with the Town in addition to the field inventory.

II. ESTIMATED FEE

The fee for this task order is based on the payroll factor and direct expense rates contained in our Contract Agreement. The staff hours to perform this work are detailed in the proposal worksheet, [Attachment A](#). The total Task Order budget is **\$35,196**. This budget will not be exceeded without the Town of Vienna's prior approval.



III. SUMMARY OF DELIVERABLES:

The following is a summary of deliverables anticipated for this project:

- Inventory for each signalized intersection
- Equipment needs assessment and recommendations
- Cost estimate based upon the signal and communications inventory and recommendations
- Implementation and phasing recommendations

IV. ASSUMPTIONS/EXCLUSIONS

1. Town of Vienna will provide available signal plans.
2. Town of Vienna will provide available information regarding underground conduit/infrastructure that may be available for signal interconnect.
3. Traffic signal plan preparation will not be performed.
4. Development of traffic signal timings will not be performed.
5. Utility and right of way designations will not be performed.

V. SCHEDULE

The project will be initiated immediately upon authorization. WRA anticipates the following submission schedule:

- November 2017 – Equipment inventory
- December 2017/January 2018 – Needs assessment and recommendations
- February/March 2018 – Cost estimate/implementation plan

We are prepared to begin immediately upon your notice to proceed. If this proposal is acceptable, please sign at the appropriate location below and return one copy for our files. It is a great pleasure to work for the Town of Vienna and we look forward to the successful completion of this project.

Whitman, Requardt and Associates, LLP



Dana Trone
Vice President

Enclosures
cc: Tyler Long, WRA

Signature

Printed Name & Title

Date



Town of Vienna On-Call Task Order Contract
Task #1 - Route 123 and Route 243 Traffic Signal Upgrades (Phase 1)

COST PLUS BILLABLE HOURLY RATES CONTRACT

A.	DIRECT LABOR, ESCALATION, PAYROLL BURDEN, FEE Est. Man-hours X Fixed Billable Hourly Rates	\$	34,240.28
B.	NONSALARY DIRECT COSTS, ESTIMATE	\$	956.00
C.	SUB-CONSULTANT FEES	\$	-
D.	TOTAL ESTIMATED COST PLUS FIXED FEE (A+B+C)	\$	35,196.28
E.	CONTINGENCY 0% (D)	\$	-
F.	LIMITING FEE (MAXIMUM TOTAL COMPENSATION) (D+E)	\$	35,196.28

COMPUTATION OF SALARY, PAYROLL BURDEN AND FEE

	<u>HOURS</u>	<u>RATE</u>	<u>AMOUNT</u>
SENIOR MANAGER	14	\$187.46	\$2,624
PROJECT MANAGER/SENIOR PROJECT ENGINEER	64	\$155.96	\$9,981
PROJECT ENGINEER	120	\$127.94	\$15,353
ENGINEER	64	\$98.15	\$6,282
TOTAL	<u>262</u>	<u>NA</u>	<u>\$34,240</u>

Town of Vienna On-Call Task Order Contract
Task #1 - Route 123 and Route 243 Traffic Signal Upgrades (Phase 1)

Distribution of Manhours

TASK	SENIOR MANAGER		PROJECT MANAGER/SENIOR PROJECT ENGINEER		PROJECT ENGINEER		ENGINEER		TOTAL	
	\$187.46		\$155.96		\$127.94		\$98.15			
	HOURS	DOLLARS	HOURS	DOLLARS	HOURS	DOLLARS	HOURS	DOLLARS	HOURS	DOLLARS
Route 123 and Route 243 Traffic Signal Upgrades (Phase 1)	14	\$2,624	64	\$9,981	120	\$15,353	64	\$6,282	262	\$34,240.28
PERCENT	5.34%	7.66%	24.43%	29.15%	45.80%	44.84%	24.43%	18.35%	100%	100%
TOTALS	14	\$2,624.44	64	\$9,981.44	120	\$15,352.80	64	\$6,281.60	262	\$34,240.28

Town of Vienna On-Call Task Order Contract
Task #1 - Route 123 and Route 243 Traffic Signal Upgrades (Phase 1)

LABOR ESTIMATE

	Staff-Hours by Classification				
Task	SENIOR MANAGER	PROJECT MANAGER/SENIOR PROJECT ENGINEER	PROJECT ENGINEER	ENGINEER	Total
Signal equipment inventory		16.0	24.0	24.0	64.0
recommendations	4.0	8.0	40.0	16.0	68.0
Cost estimate	2.0	8.0	24.0	16.0	50.0
Implementation plan	4.0	16.0	24.0	8.0	52.0
Project management	4.0	16.0	8.0		28.0
Task Subtotal	14.0	64.0	120.0	64.0	262.0

ATTACHMENT A

**COST PLUS FIXED BILLABLE HOURLY RATES CONTRACT
COMPUTATION OF FEE**

**COMPUTATION OF REIMBURSABLE COSTS
NON-SALARY DIRECT COSTS - DERIVATION**

- **TRAVEL**
Travel for design meetings (preliminary, field, etc.) and site visits

Anticipate 6 round trips @ 220 miles 1320 miles @ 0.535 /mi \$706.00
- **POSTAGE/OVERNIGHT MAIL** \$50.00
Allowance for shipment of plans, reports, brochures, etc.
- **REPRODUCTION** \$200.00
Includes printing meeting materials and roll plans
- **PUBLIC MEETINGS DISPLAYS**
We will prepare display boards, typical sections, plans for use in information meetings, public hearings and various other presentations. We will have all displays mounted for each public meeting.
We estimate SF @ \$5.00 /SF \$0.00
- **MATERIALS & SUPPLY** \$0.00
Includes film, developing and enlargements of photographs for inventory of existing conditions
- **IN-HOUSE PLOTTING**
Plotting charges will only be billed for color plots for stakeholder meetings.
We estimate SF @ \$5.00 /SF \$0.00

TOTAL \$956.00



**Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Summary)**

Date: mm/dd/yyyy

Intersection #: 1

Corridor Name: -

Int. Street Name: -

Int. Street Name: -

Signal Permit and Contact Information:

Consultant Observer(s): _____

Observation Date(s): _____

Signal Permit #: _____

Municipality: _____

Permit Approval Date: _____

County: _____

Latest Revision Date: _____

County Code (1 - 67): _____

Primary Contact / Phone: _____

Signal Maintainer Contact / Phone: _____

Intersection Street Names and Numbers:

Approach	Street Name	SR #	CO #	TR #
1 - Northbound				
2 - Southbound				
3 - Eastbound				
4 - Westbound				
5 -				
6 -				

Summary of Potential Scope:



Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Equipment Log)

Date: mm/dd/yyyy

Intersection #: 1

Corridor Name: -

Int. Street Name: -

Int. Street Name: -

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB			TOTAL	"X" All that Apply	
Vehicular Signal Qty (1-Section)	8"							0	Type & Number of Wood Strain Pole	
	12"							0		Signal Supports: Metal Strain Pole
Vehicular Signal Qty (2-Section)	8"							0	Mast Arm	
	12"							0		Pedestal
Vehicular Signal Qty (3-Section ALL SOLID)	8"							0	w/ Luminaire	
	12"							0		Condition of Good Poor
Vehicular Signal Qty (3-Section RED SOLID)	8"							0	Signal Supports: Remarks:	
	12"							0		
Vehicular Signal Qty (3-Section ALL ARROWS)	8"							0		
	12"							0		Strain Pole Bottom Present Not Present
Vehicular Signal Qty (4-Section)	8"							0	Tether Wire: Remarks:	
	12"							0		
Vehicular Signal Qty (5-Section)	8"							0		
	12"							0		Vehicular Good Poor
"X" if LED									Signal Heads: Remarks:	
(Qty) of Opt Programmed								0		
(Qty) of Visors								0		
(Qty) of Signal Backplates								0		
(Qty) of Louvers								0		
(Qty) of Signal Strobes								0		
Pedestrian Signal Qty (1-Section)	9"							0	Pedestrian Good Poor	
	12"							0		Signal Heads: Remarks:
	16"							0		
Pedestrian Signal Qty (2-Section)	9"							0		
	12"							0		Type & Number of Strain Pole / Mast Arm
	16"							0		
"X" if LED									Supports: Stub Pole	
"X" if Countdown										Remarks:
"X" if APS										
(Qty) of Tunnel Visors								0	Preemption Emergency Vehicle	
(Qty) of Louvers								0		Purpose: Railroad
Pedestrian Push Button Qty								0		
"X" if 2 Inch Diameter Button									Signing & PM: Remarks:	
Preemption								0		
"X" if Optical										
"X" if Audible										
"X" if Radio										Truncated Domes at all corners?
"X" if GPS										
"X" if Confirmation Light										
Damaged/Faded Sign Qty								0		
(Qty) of Internally Illuminated								0		
(Qty) of LED Blank-Out Signs								0		
(Qty) of Flashing Warning Signs								0		
Faded Pav't Markings Qty								0		
"X" if Curb Ramps Present										
"X" if Truncated Domes Present										
Overhead Pole or Mast Arm Mounted Equipment										
"X" if Video Detectors										
"X" if Radar Detectors										
"X" if Communication Ant.										



Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Equipment Log)

Date: mm/dd/yyyy

Intersection #: 1

Corridor Name: -

Int. Street Name: -

Int. Street Name: -

Controller Type:

☐ NEMA
☐ Type 170
☐ Electromechanical
☐ Flasher

Type of Operation:

☐ Pre-Timed
☐ Semi-Actuated
☐ Fully-Actuated

Type of Coordination:

☐ None
☐ TBC w/o GPS
☐ TBC w/ GPS
☐ Hardwire Twisted Pair
☐ Fiber Optic Cable
☐ Spread Spectrum Radio

Cabinet Maintenance:

☐ Filter Present
☐ Permit Plan Present
☐ Moisture Issues

Cabinet Details:

☐ Location (Quadrant)
☐ Capacity (% Full)
☐ Overall Condition (Good / Poor)
☐ Bottom Condition (Rusted ?)
☐ Boot / Conduit Elbow (Rusted ?)

Type of Mounting

☐ Type I (Base)
☐ Type II (Pole)
☐ Pedestal

Power Source

☐ Underground
☐ Overhead
☐ w/ Meter
☐ Disconnect Enclosure
☐ Condition (Rusted ?)

Accessories

☐ Police Access Panel
☐ Manual Cord
☐ Generator Adaptor Kit

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (Rack, Shelf, Condition, Software Version, etc.)
Local Controller			
Master Controller			Master ID #:
			Local ID #s:
Equipment	Qty	Remarks (Rack, Shelf, Condition, etc.)	
Conflict Monitor / MMU			
Load Switch / Switch Pack			
Loop Detector Amplifier			
Radar Detector Module			
Video Detector Module			
Preemption Module			
UPS / Battery Backup			
GPS Unit / Clock			
Radio Transceiver			
Fiber Modem			
Phone Drop / Telephone Modem		Phone #: ###-###-#### or Unknown	
Interconnect			
Other: _____			

Operational and Permit Plan Checks ("Yes", "No", or "N/A")

☐ Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
☐ Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
☐ Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
☐ Does installation and operation conform with the permit plan?



Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Photograph Log)

Date: mm/dd/yyyy

Intersection #: 1

Corridor Name: -

Int. Street Name: -

Int. Street Name: -

Description: Street Name
Intersection Approach (NB)

Description: Street Name
Intersection Approach (SB)

Description: Street Name
Intersection Approach (EB)

Description: Street Name
Intersection Approach (WB)

Description: Traffic Signal Cabinet (CLOSED)
and Police Access Panel

Description: Traffic Signal Cabinet (OPEN)



Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Photograph Log)

Date: mm/dd/yyyy

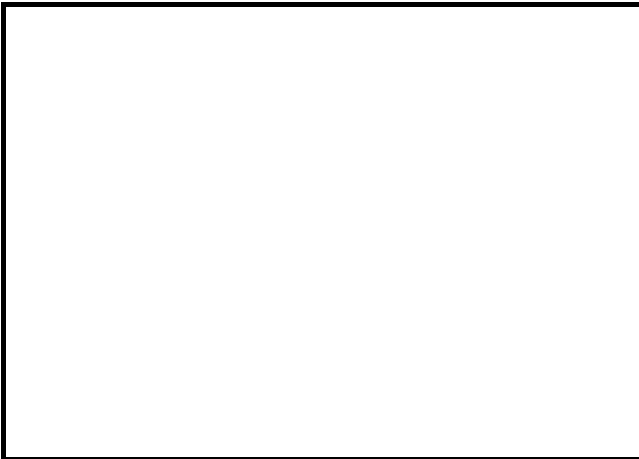
Intersection #: 1

Corridor Name: -

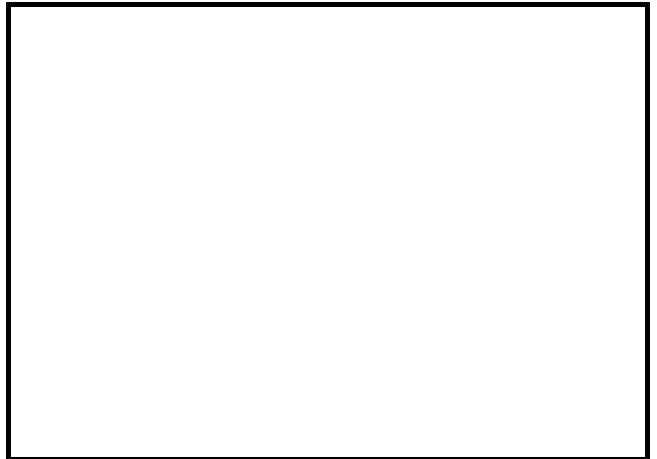
Int. Street Name: -

Int. Street Name: -

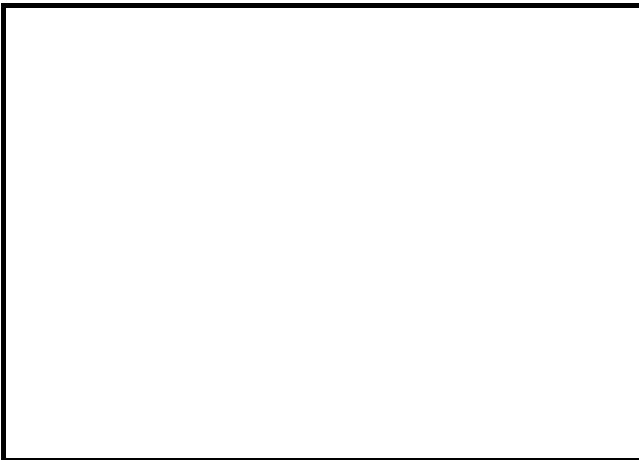
Description: Cabinet Conduit Elbow



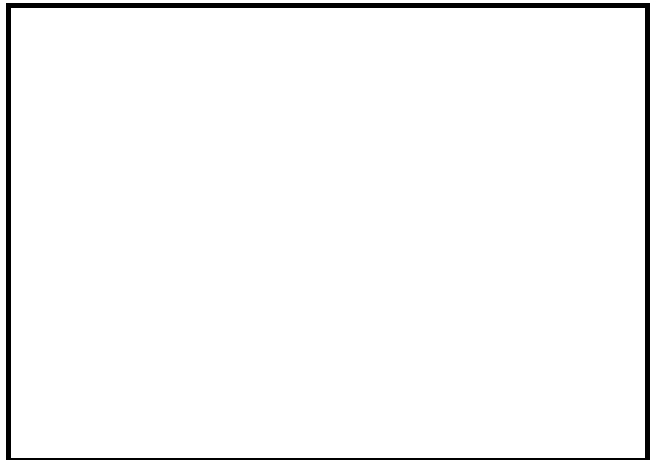
Description: Electrical Service Disconnect



Description: Faded Pavement Markings



Description: Faded Signing



Description:



Description:

