Traffic Signal Equipment Inventory and Needs Assessment

FINAL REPORT

Town of Vienna On-Call Task Order Contract

Task #1 – Route 123 and Route 243 Traffic Signal Upgrades (Phase 1)
Purchase Order Number: 20180413-00
December 21, 2018

TOWN OF
VIENNA
since 1890

This page intentionally left blank

Table of Contents

CONTENTS

List of Figures

List of Tables

List of Appendices

INTRODUCTION

Project Description

The purpose of this project is to perform an assessment of the Town of Vienna's existing signal system along the Route 123 (Maple Avenue) and Route 243 (Nutley Street) corridors (**Figure 1**) and make recommendations regarding a phased approach to implementing traffic signal equipment upgrades. The project included a detailed inventory of the existing signal system at the following intersections:

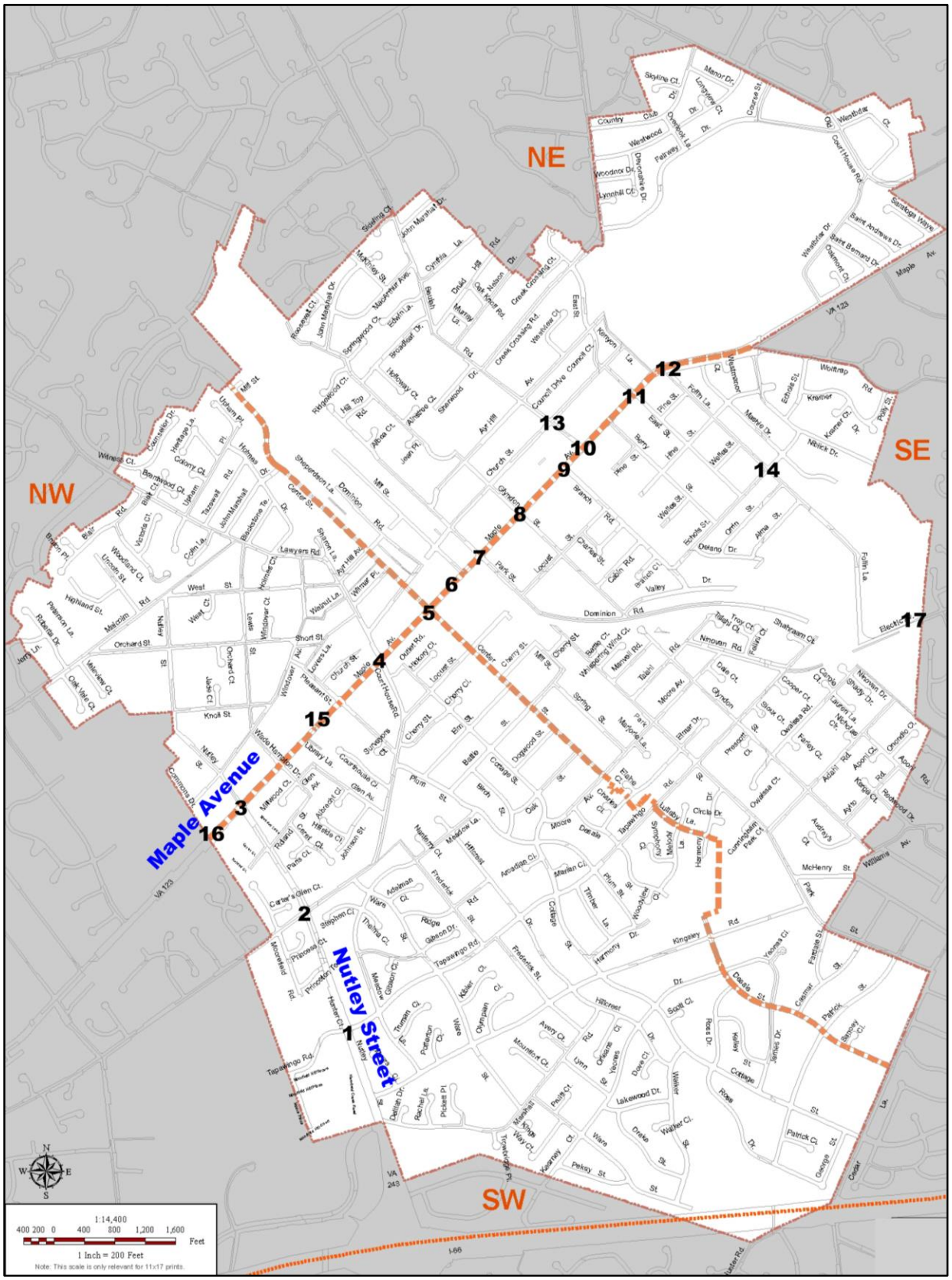
1. Route 243 (Nutley Street) and Tapawingo Road
2. Route 243 (Nutley Street) and Courthouse Road
3. Route 123 (Maple Avenue) and Route 243 (Nutley Street)
4. Route 123 (Maple Avenue) and Courthouse Road/Lawyers Road
5. Route 123 (Maple Avenue) and Center Street
6. Route 123 (Maple Avenue) and Washington & Old Dominion Trail
7. Route 123 (Maple Avenue) and Park Street
8. Route 123 (Maple Avenue) and Glyndon Street
9. Route 123 (Maple Avenue) and Branch Road/Office Driveway
10. Route 123 (Maple Avenue) and Beulah Road/Shopping Plaza Driveway
11. Route 123 (Maple Avenue) and East Street
12. Route 123 (Maple Avenue) and Follin Lane
13. Beulah Road and Church Street
14. Follin Lane and Echols Street
15. Route 123 (Maple Avenue) and Vienna Plaza HAWK Signal
16. Route 123 (Maple Avenue) and James Madison Drive HAWK Signal (Under Construction)
17. Electric Avenue and Navy Federal Credit Union Entrance

This initial purchase order is the first step toward achieving the Town's overall plans 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 Transparity TMS Software and Server. This project was undertaken with the knowledge that the Town of Vienna was 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.

Specific tasks within this purchase order included:

- Task 1: Signal Equipment Inventory
- Task 2: Signal Equipment Needs Assessment and Recommendations
- Task 3: Cost Estimate / Implementation Plan

Figure 1: - Project Location Map



TASK 1: SIGNAL EQUIPMENT INVENTORY

Task 1 involved completing a comprehensive traffic signal equipment inventory of all 17 traffic signals within the Town of Vienna (**Appendix A**). The inventories were performed using a project-specific form tailored to this project's needs and the condition and type of all devices present were documented including a photograph log.

If a signal permit plan was available, the information presented on the permit plan was compared to the actual equipment and operations in the field and any inconsistencies were noted. Specific items that were inventoried include, but are not limited to the following:

- MUTCD compliance (signal heads and signs)
- Signal poles
- Vehicular signal heads
- Pedestrian signal heads
- Pedestrian push buttons
- Controller type and other cabinet equipment (conflict monitor, load switches, UPS, etc.)
- Detection equipment
- Power source
- Communications

A visual assessment of ADA compliance was also performed for the existing facilities. This included documenting the presence of a detectable warning surface and level landing at each ramp location; however, ramp slopes were not measured as part of this task.

TASK 2: SIGNAL EQUIPMENT NEEDS ASSESSMENT AND RECOMMENDATIONS

Following completion of the traffic signal inventories, the information was analyzed to assess equipment needs and recommend equipment upgrades to achieve the Town of Vienna's ultimate goal of controlling their signal system from a centralized location and potentially operating it as an adaptive system.

To accomplish this goal, the Town intends to utilize the Transparity Traffic Management System (TMS) software manufactured by McCain and potentially utilize the McCain Adaptive signal control strategies built into the Transparity TMS software. The McCain TMS software is a centralized signal software that enables the Town to actively manage its traffic signal system and operations, collect real-time traffic data, and implement timing changes remotely. The software has built-in alarms to notify the Town of hardware issues (i.e. signals in flash, stuck push buttons, etc.) and built-in performance metrics to further optimize traffic operations.

The signal equipment recommendations were separated into three categories:

- Primary recommendations
- Secondary recommendations
- Maintenance recommendations

Primary recommendations are the upgrades required to modernize all signals to a consistent platform and to obtain communications between signals and from a centralized location. These

upgrades include but are not limited to new ATC controller cabinets, Ethernet switches, aerial/underground fiber optic cable, installing APS push buttons, upgrading all pedestrian signals to countdown pedestrian signals (SP-8), upgrading all detection to Autoscope Vision video detection cameras, and installing the McCain Transparity TMS software at the Town Hall.

Secondary recommendations are additional upgrades the Town should consider, if sufficient budget is available, that will further modernize the signals and bring all signals up to current design standards. These upgrades include but are not limited to installing an electronic security lock on each controller cabinet, upgrading each signal electrical service to a metered service, and installing emergency vehicle preemption.

Maintenance recommendations are upgrades the Town should consider as part of routine signal maintenance. These upgrades include but are not limited to replacing faded pavement markings, replacing malfunctioning pedestrian push buttons, installing yellow retroreflective tape on all vehicular signal backplates or installing new high visibility backplates on all signals, and upgrading existing protected/permitted five-section signal heads with four-section flashing yellow arrow (FYA) signal heads.

In addition to the recommendations described above, there are four full signal replacements recommended if sufficient budget is available.

- Route 243 (Nutley Street) and Tapawingo Road
- Route 123 (Maple Avenue) and Follin Lane
- Beulah Road and Church Street
- Follin Lane and Echols Street

These full signal replacements could supplement or replace other secondary recommendations as noted in the cost estimate summary depending on the Town of Vienna's priorities.

TASK 3: COST ESTIMATE / IMPLEMENTATION PLAN

The final task of this purchase order was to prepare a preliminary cost estimate for the identified improvements and develop a phased implementation plan. Cost estimates were developed for the first two tiers of improvements: primary recommendations and secondary recommendations. A cost estimate was not prepared for maintenance recommendations since these improvements will be completed by the Town's maintenance staff.

The cost estimates were prepared based upon sight-specific factors from the field views and the signal equipment needs previously identified and include costs to design, construct, inspect, and administer the project. A meeting was held on November 7, 2018 with the Town of Vienna to determine the equipment recommendations at each intersection and confirm the Town's priorities.

The total estimated costs for each tiers of improvements (primary recommendations and secondary recommendations) are as follows:

- Primary recommendations = $1,779,219
- Secondary recommendations = $1,082616

A summary of costs by intersection is provided in **Table 1** and the detailed cost estimate calculations are provided in **Appendix B**.

Table 1: Cost Estimate Summary By Intersection

Intersection	Cost	
	Primary Recommendations	Secondary Recommendations
1 - Nutley St @ Tapawingo Rd	$350,000 (1)	$19,622
2 - Nutley St @ Courthouse Rd	$130,947	$19,622
3 - Maple Ave @ Nutley St	$92,090	$24,995
4 - Maple Ave @ Courthouse Rd	$68,470	$19,622
5 - Maple Ave @ Center St	$70,482 (4)	$19,622
6 - Maple Ave @ W&OD Trail	$73,986	$32,703
7 - Maple Ave @ Park St	$21,239	$19,622
8 - Maple Ave @ Glyndon St	$104,481	$24,294
9 - Maple Ave @ Branch Rd	$78,879	$16,819
10 - Maple Ave @ Beulah Rd	$140,826	$16,819
11 - Maple Ave @ East St	$128,020	$16,819
12 - Maple Ave @ Follin Ln	$350,000 (1)	$19,622
13 - Beulah Rd @ Church St	$67,113	$350,000 (2)
14 - Follin Ln @ Echols St	$0	$375,000 (3)
15 - Maple Ave @ Vienna Plaza HAWK Signal	$58,174	$934
16 - Maple Ave @ James Madison HAWK Signal	$14,510	$934
17 - Electric Ave @ NFCU Drwy	$0	$91,569
McCain Transparity Traffic Management System (TMS)	$30,000	$0
Total	**$1,779,219**	**$1,082,616**

(1) Cost represents complete signal replacement. These two complete signal replacements will be bid separately from the other primary recommendations.
(2) Cost represents complete signal replacement and is in addition to Primary Recommendations. Note cost is slightly higher to include potential overhead utility work.
(3) Cost represents complete signal replacement and is slightly higher to account for installation of fiber optic cable over a long distance.
(4) This cost includes installing aerial fiber optic cable to the Town Hall.

APPENDIX A

Traffic Signal Equipment Inventory and Needs Assessment Forms

TOWN OF
VIENNA
since 1890

Intersection 1

Route 243 (Nutley St) and Tapawingo Rd

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

Date: *12/4/2018*

Intersection #: *1*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Tapawingo Rd*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/20/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Nutley St (SW)	243	35
2 - Southbound	Nutley St (SW)	243	35
3 - Eastbound	Tapawingo Rd (SW)	6642	25
4 - Westbound	Tapawingo Rd (SW)	6642	25
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

The controller has a manual command programmed to run free operations.

Note that the Nutley St. SW Mixed Use Trail project currently in design overlaps this intersection in the SW quadrant. Any upgrades at this intersection should be coordinated with the trail project as it proceeds through design.

Primary Recommendations:
- Rebuild the entire signal including new signal poles, mast arms, controller cabinet, battery backup system, vehicular signal heads, pedestrian signal heads, APS push buttons, video detection, signs, conduit, junction boxes, and wiring.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Nutley St. at Courthouse Rd.
- Install CCTV camera with PTZ capabilities.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- None.

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

Date: *12/4/2018*

Intersection #: *1*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Tapawingo Rd*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	2	2	2	2			8
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"	1	1					2
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		11	11	6	6			34
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	2	2	2	2			8
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty		2	2	2	2			8
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 4 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 4 Hand Hole on Pole (Yes or No)
- Date Tag on Pole (Yes or No)
- Pedestal

Condition of Signal Supports: Good / X Poor
Remarks: Painted green, chipping

Strain Pole Bottom Tether Wire: Present / Not Present
Remarks: N/A

Vehicular Signal Heads: X Good / Poor
Remarks: N/A

Pedestrian Signal Heads: X Good / Poor
Remarks: N/A

Type & Number of Push Button Supports:
- 8 Strain Pole / Mast Arm
- Pedestal
- Stub Pole

Remarks: N/A

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM: *Remarks: High visibility x-walks EB & WB*

Curb Ramp: *Remarks: All new*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *1*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Tapawingo Rd*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

NE	Location (Quadrant)
40%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)

Power Source

X	Underground
	Overhead
	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)
SE-3 Type A (Overhead)	VDOT Standard (SE-1 thru SE-11)

Accessories

X	Police Access Panel
	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	11	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite autoscope terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

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

Intersection #: *1*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Tapawingo Rd*
Int. Street Name: *-*

Description: Route 243 (Nutley St) Intersection Approach (NB)

Description: Route 243 (Nutley St) Intersection Approach (SB)

Description: Tapawingo Rd Intersection Approach (EB)

Description: Tapawingo Rd 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: 12/4/2018

Intersection #: 1

Corridor Name: Route 243 (Nutley St)
Int. Street Name: Tapawingo Rd
Int. Street Name: -

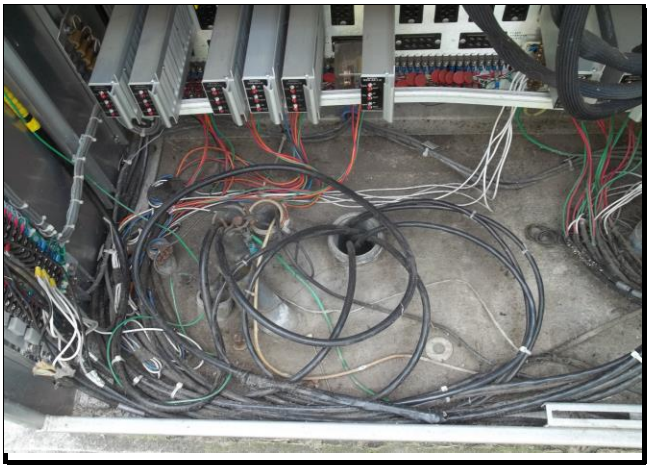
Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (CLOSED)

Description: Uninterruptible Power Supply Cabinet (OPEN)

Description: Traffic Signal Cabinet (OPEN)



Description:

Intersection 2

Route 243 (Nutley St) and Courthouse Rd

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

Date: *12/4/2018*

Intersection #: *2*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/20/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Nutley St (SW)	243	35
2 - Southbound	Nutley St (SW)	243	35
3 - Eastbound	Courthouse Rd (SW)	6648	25
4 - Westbound	Courthouse Rd (SW)	6648	25
5 -			
6 -			

Summary of Potential Scope:

The signal is in compliance with the permit plan.

The controller has a manual command programmed to run free operations.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Nutley St at Maple Ave.
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Replace upraised hand on pedestrian signal in NE quadrant NB crosswalk.
- Install 3" retroreflective tape on all vehicular signal backplates.

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

Date: *12/4/2018*

Intersection #: *2*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"	1	1	1	1			4
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		8	8	8	8			32
(Qty) of Backplates, Black		2	2	2	2			8
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	2	2	2	2			8
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers								0
Pedestrian Push Button Qty								0
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS		X	X	X	X			-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 4 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 4 Hand Hole on Pole (Yes or No)
- 4 Date Tag on Pole (Yes or No)
- 4 Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: All new painted green
All slightly discolored in spots

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good ___ Poor
Remarks: Ped head NE quad
NB x-walk upraised hand doesn't work

Type & Number of Push Button Supports:
- ___ Strain Pole / Mast Arm
- 8 Pedestal
- ___ Stub Pole

Remarks: N/A

Preemption Purpose:
- ___ Emergency Vehicle
- ___ Railroad
- ___ Transit

Signing & PM: *Remarks: All high visibility x-walks*

Curb Ramp: *Remarks: All new.*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *2*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SW	Location (Quadrant)
40%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)

Power Source

X	Underground
	Overhead
X	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)
SE-5	VDOT Standard (SE-1 thru SE-11)

Accessories

X	Police Access Panel
X	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	EDI
Load Switch / Switch Pack	11	Econolite
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite autoscope terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

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

Intersection #: *2*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *-*

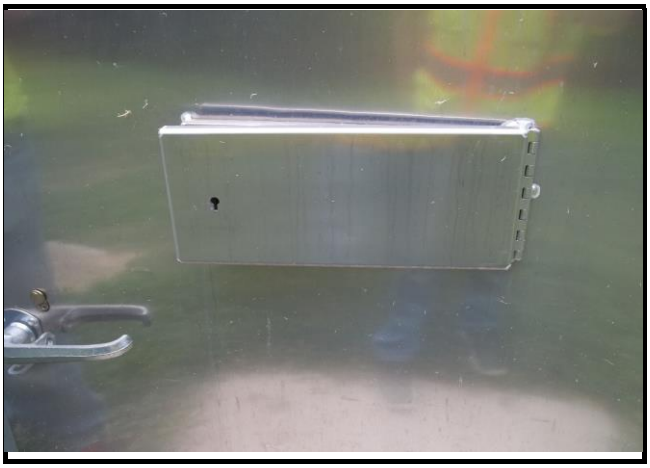
Description: Route 243 (Nutley St) Intersection Approach (NB)

Description: Route 243 (Nutley St) Intersection Approach (SB)

Description: Courthouse Rd Intersection Approach (EB)

Description: Courthouse Rd Intersection Approach (WB)

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



Description: Traffic Signal Cabinet (OPEN)

Intersection #: *2*

Corridor Name: *Route 243 (Nutley St)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *-*

Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (OPEN)

Description: Uninterruptible Power Supply Cabinet

Description:

Description:

Intersection 3

Route 123 (Maple Ave) and Route 243 (Nutley St)

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

Date: *12/20/2018*

Intersection #: *3*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Route 243 (Nutley St)*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/20/2018 (Updated on 9/20/2018)

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Nutley St (SW)	243	35
2 - Southbound	Nutley St (NW)	243	35
3 - Eastbound	Maple Ave (W)	123	30
4 - Westbound	Maple Ave (W)	123	30
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Town of Vienna public works indicated that the controller cabinet at this intersection was a temporary cabinet.
- During a follow up meeting on 11/7/2018, the Town of Vienna indicated that they had replaced the temporary controller cabinet with a permanent cabinet.

During the initial field view, it was noted that display of a circular red concurrently with a straight-through green arrow occurs on the NB Nutley Street approach when the pedestrian button is actuated which violates MUTCD Section 4D.05. To address this, three options that will continue to allow right turns on red when pedestrians are not present or when the pushbutton is not actuated were discussed during a follow up meeting on 11/7/2018.
- ◦ Install a "Right Turn Signal" (R10-10) sign in accordance with the MUTCD.
- ◦ Remove the right turn signal indication and existing "No Turn on Red When Pedestrians are Present" sign, and install an LED "No Turn on Red" blank-out sign that prohibits right turns on red upon pedestrian actuation.
- ◦ Remove the right turn signal indication and existing "No Turn on Red When Pedestrians are Present" sign, and install a 5-section right turn overlap signal head for the right turn lane along with a "Turning Vehicles Yield to Pedestrians" (R10-15) sign.

The Town of Vienna noted during a follow up meeting on 11/7/2018 that any changes to right turn and pedestrian operations on the northbound Maple Avenue approach will be coordinated with the proposed site work on the corner of this intersection.

Primary Recommendations:
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and HAWK signal at Vienna Plaza.
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.
- Install CCTV camera with PTZ capabilities.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Retrofit SB (Nutley St) left turn signal red solid and yellow solid indications with red arrow and yellow arrow indications.
- Retrofit NB (Nutley St) left turn signal red solid indication with red arrow indication.
- Replace existing electrical service.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Verify all APS push buttons are operating properly and repair the ones that are not. Some emitted incorrect sound or no sound at all.
- Install 3" retroreflective tape on NB, SB, and WB vehicular signal backplates.
- Replace existing 5-section vehicular signal heads EB & WB (Maple Ave) with 4-section flashing yellow arrow signals, install "Left Turn Yield On Flashing Yellow Arrow" sign, and reprogram controller.

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

Date: *12/20/2018*

Intersection #: *3*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Route 243 (Nutley St)*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"		2	2	2			6
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"	2						2
Vehicular Signal Qty (3-Sect, 2 SOLID & G ARROW)	*8"*							0
	12"		1					1
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 2 SOLID & 2 ARROWS)	*8"*							0
	12"	1						1
Vehicular Signal Qty (5-Section)	*8"*							0
	12"			1	1			2
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		10	9	11	11			41
(Qty) of Backplates, Black		3	3		3			9
(Qty) of Backplates, High Visibility				3				3
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	2	2	2	2			8
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty		2	2	2	2			8
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS		X	X	X	X			-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs		1	1	1	1			4
(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	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- ___ VDOT Std. Mast Arms
- ___ VDOT Std. Strain Poles
- 4 Decorative Mast Arms
- ___ Decorative Strain Pole
- 4 Hand Hole on Pole (Yes or No)
- ___ Date Tag on Pole (Yes or No)
- 3 Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Painted green

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good ___ Poor
Remarks: N/A

Type & Number of Push Button Supports:
- 2 Strain Pole / Mast Arm
- 6 Pedestal
- ___ Stub Pole

Remarks: Some push buttons emitting incorrect sound or no sound during walk indication

Preemption Purpose:
- ___ Emergency Vehicle
- ___ Railroad
- ___ Transit

Signing & PM: *Remarks: All high visibility x-walks*

Curb Ramp: *Remarks: All new*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/20/2018*

Intersection #: *3*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Route 243 (Nutley St)*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SE	Location (Quadrant)
40%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)

Power Source

X	Underground
	Overhead
	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)
SE-4 Type A (Overhead)	VDOT Standard (SE-1 thru SE-11)

Accessories

X	Police Access Panel
	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.; temporary cabinet
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	12	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite autoscope terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, date 6/17
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

Yes	Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
No	Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
N/A	Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
N/A	Does installation and operation conform with the permit plan?

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

Date: 12/20/2018

Intersection #: 3

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Route 243 (Nutley St)
Int. Street Name: -

Description: Route 243 (Nutley St) Intersection Approach (NB)

Description: Route 243 (Nutley St) Intersection Approach (SB)

Description: Route 123 (Maple Ave) Intersection Approach (EB)

Description: Route 123 (Maple Ave) Intersection Approach (WB)

Description: Traffic Signal Cabinet Door (OPEN) and Police Access Panel and Cabinet Conduit Elbow

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *3*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Route 243 (Nutley St)*
Int. Street Name: *-*

Description: Traffic Signal Cabinet (OPEN)

Description: Electrical Service Disconnect

Description: Police Access Panel

Description: Uninterruptible Power Supply Cabinet (OPEN)

Description: Uninterruptible Power Supply Cabinet (OPEN)

Description: Route 243 (Nutley St) Northbound Approach
MUTCD compliance issue

Intersection 4

Route 123 (Maple Ave) and Courthouse Rd and Lawyers Rd

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

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

Date: *12/4/2018*

Intersection #: *4*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *Lawyers Rd*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/20/2018 and 9/20/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Courthouse Rd	6648	25
2 - Southbound	Lawyers Rd	6648	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

The signal is not in compliance with the permit plan. The permit plan shows 3-section protected left turn signals EB & WB along Maple Ave and NB Courthouse Road and SB Lawyers Road; however, the left turn signals have been changed to 4-section flashing yellow arrow signals for all approaches.

Primary Recommendations:
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave at Center St.
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Verify all APS push buttons are operating properly and repair the ones that are not. Some emitted incorrect sound or no sound at all.
    - APS pushbutton on Southwest corner is damaged (front cover falling off).
- Replace faded NB stop bar pavement marking.
- Install 3" retroreflective tape on all vehicular signal backplates except EB, WB, NB, & SB 4-section FYA signals which already have retroreflective tape.

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

Date: *12/4/2018*

Intersection #: *4*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *Lawyers Rd*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	2	2	2	2			8
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (5-Section)	*8"*							0
	12"							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		9	9	10	10			38
(Qty) of Backplates, Black		3	3	2	2			10
(Qty) of Backplates, High Visibility		1	1	1	1			4
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	2	2	2	2			8
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty		2	2	2	2			8
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS		X	X	X	X			-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty		20						20
"X" if Curb Ramps Present		X	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 4 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 4 Hand Hole on Pole (Yes or No)
- 4 Date Tag on Pole (Yes or No)
- 3 Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: All new painted green

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: All new

Pedestrian Signal Heads: X Good ___ Poor
Remarks: All new

Type & Number of Push Button Supports:
- 2 Strain Pole / Mast Arm
- 6 Pedestal
- Stub Pole

Remarks: Most push buttons emitting incorrect sound or no sound during walk indication

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM: *Remarks: Faded stop bar NB Brick x-walks*

Curb Ramp: *Remarks: All new. Shared landings.*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *4*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *Lawyers Rd*

Cabinet Type:

	NEMA
	Type 170
	Electromechanical
	Flasher
X	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SE	Location (Quadrant)
55%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)
SE-3 Type B (Underground)	VDOT Standard (SE-1 thru SE-11)

Power Source

X	Underground
	Overhead
X	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)

Accessories

X	Police Access Panel
X	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.; pull-out drawer
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Cabinet Monitor Unit / CMU	1	McCain 2212-HV
Auxiliary Display Unit / ADU	1	EDI 2220
Switch Pack / Flasher Unit HDSP / HDFU	9	(8) HDSP: McCain 2202-HV, (1) HDFU: McCain 2202-HV
Isolator Card	2	EDI 242L
Serial Interface Unit / SIU	2	EDI 2218
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite autoscope terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

Yes	Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
Yes	Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
N/A	Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
No	Does installation and operation conform with the permit plan?

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

Date: 12/4/2018

Intersection #: 4

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Courthouse Rd
Int. Street Name: Lawyers Rd

Description: Courthouse Rd
Intersection Approach (NB)

Description: Courthouse Rd
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

Description: Traffic Signal Cabinet (OPEN)

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *4*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Courthouse Rd*
Int. Street Name: *Lawyers Rd*

Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (OPEN)

Description: Uninterruptible Power Supply Cabinet (OPEN)

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS) (Damaged)

Intersection 5

Route 123 (Maple Ave) and Center St

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

Date: *12/20/2018*

Intersection #: *5*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Center St*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Center St	-	25
2 - Southbound	Center St	-	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

The signal is in compliance with the permit plan.

Primary Recommendations:
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave at Washington and Old Dominion (W&OD) Trail.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Town Hall (to be evaluated).
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Install 3" retroreflective tape on all vehicular signal backplates.

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

Date: *12/20/2018*

Intersection #: *5*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Center St*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"	1	1	1	1			4
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		8	8	8	8			32
(Qty) of Backplates, Black		2	2	2	2			8
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	2	2	2	2			8
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty								0
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS		X	X	X	X			-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 4 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 4 Hand Hole on Pole (Yes or No)
- 4 Date Tag on Pole (Yes or No)
- 4 Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: All new painted green

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: All new

Pedestrian Signal Heads: X Good ___ Poor
Remarks: All new

Type & Number of Push Button Supports:
- ___ Strain Pole / Mast Arm
- 8 Pedestal
- ___ Stub Pole

Remarks: All new

Preemption Purpose:
- ___ Emergency Vehicle
- ___ Railroad
- ___ Transit

Signing & PM: *Remarks: All Good*
Brick x-walks

Curb Ramp: *Remarks: All new. Shared landings.*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/20/2018*

Intersection #: *5*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Center St*
Int. Street Name: *-*

Cabinet Type:
- ___ NEMA
- ___ Type 170
- ___ Electromechanical
- ___ Flasher
- X ATC

Type of Operation:
- ___ Pre-Timed
- ___ Semi-Actuated
- X Fully-Actuated

Type of Coordination:
- ___ None
- ___ TBC w/o GPS
- X TBC w/ GPS
- ___ Hardwire Twisted Pair
- ___ Fiber Optic Cable
- ___ Spread Spectrum Radio

Cabinet Maintenance:
- X Filter Present
- ___ Permit Plan Present
- ___ Moisture Issues

Cabinet Details:
- SE Location (Quadrant)
- 40% Capacity (% Full)
- Good Overall Condition (Good / Poor)
- N/A Bottom Condition (Rusted ?)
- N/A Boot / Conduit Elbow (Rusted ?)

Type of Mounting
- ___ Type I (Base)
- ___ Type II (Pole)
- ___ Pedestal
- CF-1 VDOT Standard (CF-1, CF-3, CF-4)
- SE-3 Type B (Underground) VDOT Standard (SE-1 thru SE-11)

Power Source
- X Underground
- ___ Overhead
- X w/ Meter
- No Rust Disconnect Enclosure Condition (Rusted ?)

Accessories
- X Police Access Panel
- X Manual Cord
- X Generator Adaptor Kit
- ___ UPS (Separate Cab.)
- X UPS (Mounted to Sig. Cab.)
- ___ Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Cabinet Monitor Unit / CMU	1	McCain 2212-HV
Auxiliary Display Unit / ADU	1	EDI 2220
Switch Pack / Flasher Unit HDSP / HDFU	9	(8) HDSP: McCain 2202-HV, (1) HDFU: McCain 2202-HV
Isolator Card	2	EDI 242L
Serial Interface Unit / SIU	2	EDI 2218
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite autoscope terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, date 4/17
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

Operational and Permit Plan Checks ***("Yes", "No", or "N/A")***
- Yes Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- Yes Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- Yes Does installation and operation conform with the permit plan?

Intersection #: *5*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Center St*
Int. Street Name: *-*

Description: Center St
Intersection Approach (NB)

Description: Center St
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

Description: Traffic Signal Cabinet (CLOSED) and
Uninterruptible Power Supply Cabinet

Description: Traffic Signal Cabinet (OPEN)

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

Date: 12/20/2018

Intersection #: 5

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Center St
Int. Street Name: -

Description: Cabinet Conduit Elbow

Description: Electrical Service Disconnect

Description: Electrical Service Meter

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS)

Description:

Intersection 6

Route 123 (Maple Ave) and Washington & Old Dominion Trail

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

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

Date: *12/4/2018*

Intersection #: *6*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Washington & Old Dominion Trail*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018 (Updated on 9/20/2018)

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Washington & Old Dominion Trail	-	-
2 - Southbound	Washington & Old Dominion Trail	-	-
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave at Park St.
- Upgrade existing trail curb ramps with detectable warning surface to be ADA compliant.
- Install new pedestrian push button on stub pole along NB W&OD Trail farther from Maple Ave.

Secondary Recommendations:
- Repaint existing mast arms.
- Install electronic security lock on controller cabinet.
- Replace existing electrical service.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Replace faded NB & SB stop bar pavement markings.

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

Date: *12/4/2018*

Intersection #: *6*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Washington & Old Dominion Trail*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"			2	2			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"							0
"X" if Incandescent								-
"X" if LED				X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors				6	6			12
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility				2	2			4
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	1	1					2
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X					-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		1	1					2
Pedestrian Push Button Qty		1	1					2
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X					-
"X" if APS		X	X					-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty				8	8			16
"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.								

"X" All that Apply

Type & Number of Signal Supports:
- 2 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 2 Hand Hole on Pole (Yes or No)
- 2 Date Tag on Pole (Yes or No)
- Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Painted green, chipping Some rust.

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good ___ Poor
Remarks: N/A

Type & Number of Push Button Supports:
- 1 Strain Pole / Mast Arm
- 1 Pedestal
- Stub Pole

Remarks: N/A

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM: *Remarks: Faded stopbars NB & SB*

Curb Ramp: *Remarks: None present*

Truncated Domes at all corners? No

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *6*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Washington & Old Dominion Trail*
Int. Street Name: *-*

Cabinet Type:
- X NEMA
- Type 170
- Electromechanical
- Flasher
- ATC

Type of Operation:
- Pre-Timed
- X Semi-Actuated
- Fully-Actuated

Type of Coordination:
- None
- TBC w/o GPS
- X TBC w/ GPS
- Hardwire Twisted Pair
- Fiber Optic Cable
- Spread Spectrum Radio

Cabinet Maintenance:
- X Filter Present
- Permit Plan Present
- Moisture Issues

Cabinet Details:
- SW Location (Quadrant)
- 35% Capacity (% Full)
- Poor Overall Condition (Good / Poor)
- N/A Bottom Condition (Rusted ?)
- N/A Boot / Conduit Elbow (Rusted ?)

Type of Mounting
- Type I (Base)
- Type II (Pole)
- Pedestal
- CF-1 VDOT Standard (CF-1, CF-3, CF-4)

Power Source
- Underground
- X Overhead
- w/ Meter
- No Rust Disconnect Enclosure Condition (Rusted ?)
- SE-4 Type A (Overhead) VDOT Standard (SE-1 thru SE-11)

Accessories
- X Police Access Panel
- Manual Cord
- X Generator Adaptor Kit
- UPS (Separate Cab.)
- UPS (Mounted to Sig. Cab.)
- Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	2	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module		
Preemption Module		
UPS / Battery Backup		
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

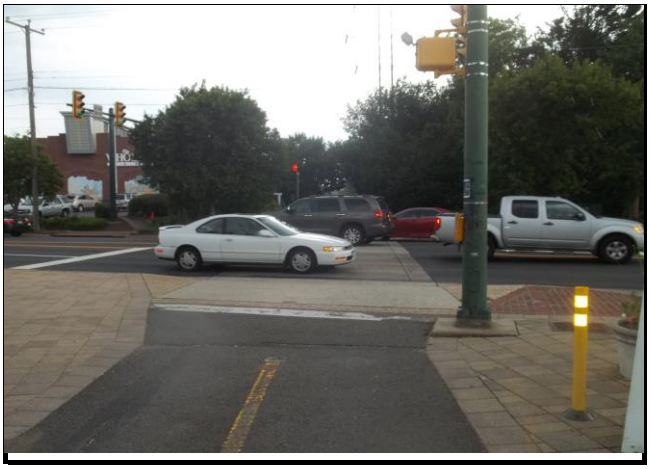
Operational and Permit Plan Checks ***("Yes", "No", or "N/A")***
- N/A Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- Yes Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- N/A Does installation and operation conform with the permit plan?

Intersection #: *6*

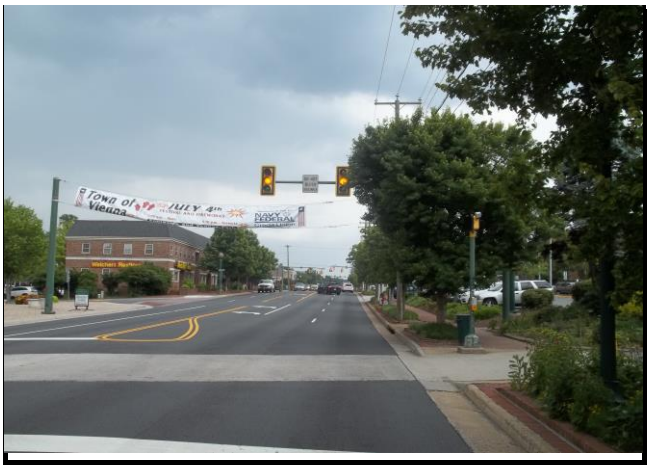
Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Washington & Old Dominion Trail*
Int. Street Name: *-*

Description: Washington & Old Dominion Trail
Intersection Approach (NB)

Description: Washington & Old Dominion Trail
Intersection Approach (SB)



Description: Route 123 (Maple Ave)
Intersection Approach (EB)



Description: Route 123 (Maple Ave)
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: 12/4/2018

Intersection #: 6

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Washington & Old Dominion Trail
Int. Street Name: -

Description: Police Access Panel (Open)

Description: Electrical Service Disconnect

Description: Traffic Signal Cabinet Generator Connection and GPS Clock Sensor

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS)

Description:

Intersection 7

Route 123 (Maple Ave) and Park St

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

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

Date: *12/4/2018*

Intersection #: *7*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Park St*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Park St	6676	25
2 - Southbound	Park St	6676	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

A permit plan of existing conditions was not available; however, this traffic signal is scheduled for full replacement in the near future (advertisement ≈ 2020) and the new design plan is available.

The new signal should include a McCain 352i ATC cabinet and attached Tesco battery backup system, McCain ATC eX2 controller, and Autoscope Vision video detection cameras to be fully compatible and consistent with future adaptive signal control plans.

It was noted during the inventory that the curb ramp in the SW quadrant has ADA compliance issues due to an existing metal fence creating a barrier to the pedestrian push button. The current signal design plan (scheduled for advertisement in 2020) proposes to reset this fence and eliminate the barrier/reach issues.

Primary Recommendations:
- Install 10 port Ethernet switch.
- Install underground single-mode fiber optic cable in existing underground conduit between this intersection and Maple Ave at Glyndon St.
- Install two junction boxes between this intersection and Maple Ave at Glyndon St to intercept fiber optic cable run and improve ease of pulling cable (Total run is 680', 2 junction boxes makes max pull 230').

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- None.

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

Date: *12/4/2018*

Intersection #: *7*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Park St*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"	1	1	1	1			4
"X" if Incandescent		X	X	X	X			-
"X" if LED								-
(Qty) of Opt Programmed								0
(Qty) of Visors								0
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6	2	2	2	2			8
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty		2	2	2	2			8
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty				20	20			40
"X" if Curb Ramps Present		X	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 2 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- Hand Hole on Pole (Yes or No)
- Date Tag on Pole (Yes or No)
- 2 Pedestal

Condition of Signal Supports: Good / X Poor
Remarks: Painted green, chipping

Strain Pole Bottom Tether Wire: Present / Not Present
Remarks: N/A

Vehicular Signal Heads: Good / X Poor
Remarks: Paint chipping
WB & SB 5-sect yellow & red 8"

Pedestrian Signal Heads: X Good / Poor
Remarks: SW quad EB crossing
ped head defective

Type & Number of Push Button Supports:
- 2 Strain Pole / Mast Arm
- 2 Pedestal
- Stub Pole

Remarks: N/A

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM:
Remarks: Brick x-walks
Faded stop bar NB & SB

Curb Ramp:
Remarks: All new. Shared landings.

Truncated Domes at all corners? Yes

Misc. Equip.:
Remarks: N/A

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

Date: *12/4/2018*

Intersection #: *7*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Park St*
Int. Street Name: *-*

Cabinet Type:
- X NEMA
- Type 170
- Electromechanical
- Flasher
- ATC

Type of Operation:
- Pre-Timed
- Semi-Actuated
- X Fully-Actuated

Type of Coordination:
- None
- TBC w/o GPS
- X TBC w/ GPS
- Hardwire Twisted Pair
- Fiber Optic Cable
- Spread Spectrum Radio

Cabinet Maintenance:
- X Filter Present
- X Permit Plan Present
- Moisture Issues

Cabinet Details:
- SE Location (Quadrant)
- 75% Capacity (% Full)
- Poor Overall Condition (Good / Poor)
- N/A Bottom Condition (Rusted ?)
- N/A Boot / Conduit Elbow (Rusted ?)

Type of Mounting
- Type I (Base)
- Type II (Pole)
- Pedestal
- CF-1 VDOT Standard (CF-1, CF-3, CF-4)

Power Source
- Underground
- X Overhead
- w/ Meter
- No Rust Disconnect Enclosure Condition (Rusted ?)
- SE-3 Type A (Overhead) VDOT Standard (SE-1 thru SE-11)

Accessories
- X Police Access Panel
- X Manual Cord
- X Generator Adaptor Kit
- UPS (Separate Cab.)
- UPS (Mounted to Sig. Cab.)
- Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	13	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite Autoscope Vision
Preemption Module		
UPS / Battery Backup		
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

Operational and Permit Plan Checks ***("Yes, "No", or "N/A")***
- Yes Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- Yes Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- N/A Does installation and operation conform with the permit plan?

Intersection #: *7*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Park St*
Int. Street Name: *-*

Description: Park St
Intersection Approach (NB)

Description: Park St
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

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

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *7*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Park St*
Int. Street Name: *-*

Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Traffic Signal Cabinet Generator Adaptor

Description: Pedestrian Signal, ADA compliance issues

Description: Pedestrian Signal, ADA compliance issues

Description: Pedestrian Signal, ADA compliance issues

Intersection 8

Route 123 (Maple Ave) and Glyndon St

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

Date: *12/4/2018*

Intersection #: *8*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Glyndon St*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018 (Updated on 9/20/2018)

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Glyndon St	-	25
2 - Southbound	Glyndon St	-	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

The signal is in compliance with the permit plan.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install underground single-mode fiber optic cable in existing underground conduit between this intersection and Maple Ave at Branch Rd.
- Install two junction boxes conduit between this intersection and Maple Ave at Branch Rd to intercept fiber optic cable run and improve ease of pulling cable (Total run is 770', 2 junction boxes makes max pull 260').
- Replace existing push buttons with APS push buttons.
- Replace existing pedestrian signals (SP-6) with new countdown pedestrian signals (SP-8) and new educational push button signs.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Replace existing electrical service.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- None.

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

Date: 12/4/2018

Intersection #: 8

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Glyndon St
Int. Street Name: -

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	8"							0
	12"							0
Vehicular Signal Qty (2-Section)	8"							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	8"							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	8"							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	8"							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	8"							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	8"							0
	12"							0
Vehicular Signal Qty (5-Section)	8"	1	1	1	1			4
	12"							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		8	8	8	8			32
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility		2	2	2	2			8
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	SP-5							0
	SP-6	2	2	2	2			8
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty		2	2	2	2			8
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

Type & Number of Signal Supports: 4 VDOT Std. Mast Arms; ___ VDOT Std. Strain Poles; ___ Decorative Mast Arms; ___ Decorative Strain Pole; 4 Hand Hole on Pole (Yes or No); ___ Date Tag on Pole (Yes or No); ___ Pedestal

Condition of Signal Supports: X Good; ___ Poor
Remarks: Painted green. Paint patch areas on all poles.

Strain Pole Bottom Tether Wire: ___ Present; ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good; ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good; ___ Poor
Remarks: Not Countdown

Type & Number of Push Button Supports: 8 Strain Pole / Mast Arm; ___ Pedestal; ___ Stub Pole
Remarks: N/A

Preemption Purpose: ___ Emergency Vehicle; ___ Railroad; ___ Transit

Signing & PM:
Remarks: Brick x-walks

Curb Ramp:
Remarks: All new. Shared landings. 4' Landing area behind type A ramps not provided.

Truncated Domes at all corners? Yes

Misc. Equip.:
Remarks: N/A

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

Date: *12/4/2018*

Intersection #: *8*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Glyndon St*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SE	Location (Quadrant)
50%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)

Power Source

	Underground
X	Overhead
	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)
SE-4 Type A (Overhead)	VDOT Standard (SE-1 thru SE-11)

Accessories

X	Police Access Panel
	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller		McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	13	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite Autoscope Vision
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

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

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

Date: 12/4/2018

Intersection #: 8

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Glyndon St
Int. Street Name: -

Description: Glyndon St
Intersection Approach (NB)

Description: Glyndon St
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

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

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *8*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Glyndon St*
Int. Street Name: *-*

Description: Police Access Panel

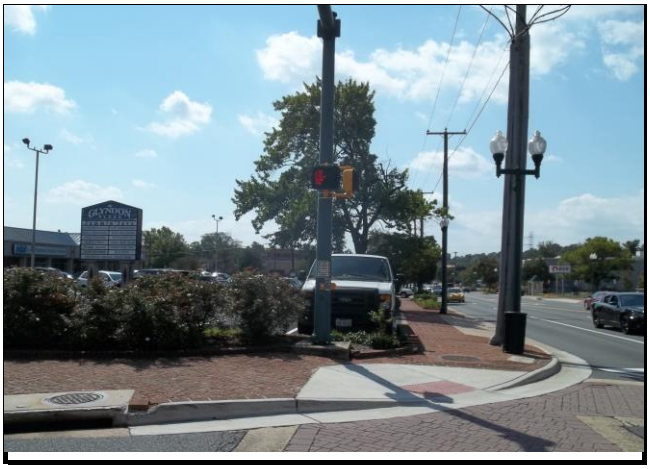
Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (Closed)

Description: Uninterruptible Power Supply Cabinet (Open)

Description: Traffic Signal Cabinet (OPEN)

Description: Non-Countdown Pedestrian Signal



Intersection 9

Route 123 (Maple Ave) and Branch Rd

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

Date: *12/4/2018*

Intersection #: *9*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Branch Rd*
Int. Street Name: *Office Drwy*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Branch Rd	6934	25
2 - Southbound	Office Drwy	6934	-
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

The signal is in compliance with the permit plan.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install underground single-mode fiber optic cable in existing underground conduit between this intersection and Maple Ave at Beulah Rd.
- Replace existing push buttons with APS push buttons.
- Replace existing pedestrian signals (SP-6) with new countdown pedestrian signals (SP-8) and new educational push button signs.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Replace faded NB stop bar pavement marking.

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

Date: *12/4/2018*

Intersection #: *9*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Branch Rd*
Int. Street Name: *Office Drwy*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"	1	1					2
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"			1	1			2
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		7	7	8	8			30
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility		2	2	2	2			8
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6	0	2	2	0			4
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED			X	X				-
(Qty) of Tunnel Visors								0
(Qty) of Louvers			2	2				4
Pedestrian Push Button Qty			2	2				4
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button			X	X				-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty		20						20
"X" if Curb Ramps Present			X	X				
"X" if Truncated Domes Present			X	X				
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 2 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 2 Hand Hole on Pole (Yes or No)
- Date Tag on Pole (Yes or No)
- 2 Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Painted green
Dual mast arms

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good ___ Poor
Remarks: N/A

Type & Number of Push Button Supports:
- 1 Strain Pole / Mast Arm
- 3 Pedestal
- Stub Pole

Remarks: N/A

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM: *Remarks: Brick x-walks*
Faded stop bar NB

Curb Ramp: *Remarks: All new. Shared landings.*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *9*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Branch Rd*
Int. Street Name: *Office Drwy*

Cabinet Type:
- X NEMA
- Type 170
- Electromechanical
- Flasher
- ATC

Type of Operation:
- Pre-Timed
- Semi-Actuated
- X Fully-Actuated

Type of Coordination:
- None
- TBC w/o GPS
- X TBC w/ GPS
- Hardwire Twisted Pair
- Fiber Optic Cable
- Spread Spectrum Radio

Cabinet Maintenance:
- X Filter Present
- Permit Plan Present
- Moisture Issues

Cabinet Details:
- SE Location (Quadrant)
- 40% Capacity (% Full)
- Good Overall Condition (Good / Poor)
- N/A Bottom Condition (Rusted ?)
- N/A Boot / Conduit Elbow (Rusted ?)

Type of Mounting
- Type I (Base)
- Type II (Pole)
- Pedestal
- CF-1 VDOT Standard (CF-1, CF-3, CF-4)
- SE-3 Type B (Underground) VDOT Standard (SE-1 thru SE-11)

Power Source
- X Underground
- Overhead
- w/ Meter
- No Rust Disconnect Enclosure Condition (Rusted ?)

Accessories
- X Police Access Panel
- Manual Cord
- X Generator Adaptor Kit
- UPS (Separate Cab.)
- X UPS (Mounted to Sig. Cab.)
- Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	9	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite Autoscope Vision
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

Operational and Permit Plan Checks ***("Yes", "No", or "N/A")***
- Yes Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- Yes Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- Yes Does installation and operation conform with the permit plan?

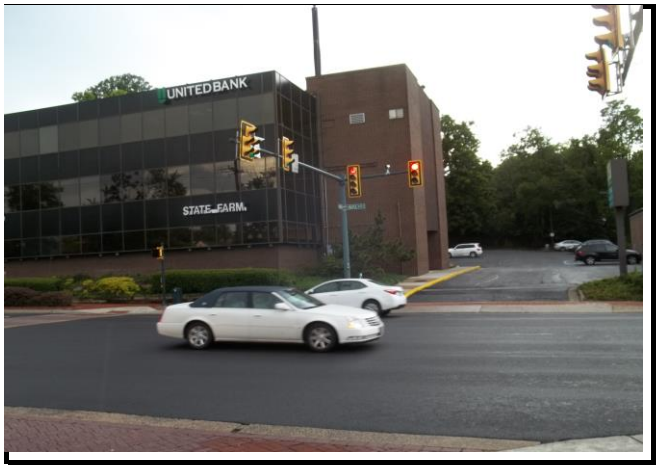
Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Photograph Log)

Date: 12/4/2018

Intersection #: 9

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Branch Rd
Int. Street Name: Office Drwy

Description: Branch Rd
Intersection Approach (NB)

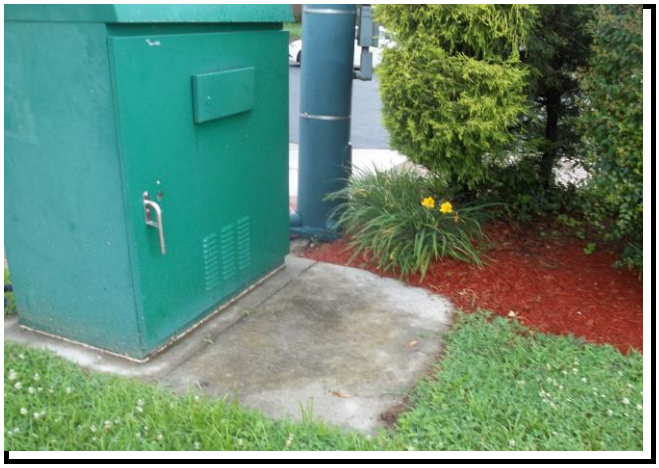


Description: Branch Rd
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
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: 12/4/2018

Intersection #: 9

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Branch Rd
Int. Street Name: Office Drwy

Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (Closed)

Description: Uninterruptible Power Supply Cabinet (Open)

Description: Queueing from Northbound Left at Beulah Rd. extending to Branch Road intersection increasing NB Right Turn delay

Description: Queueing from Northbound Left at Beulah Rd. extending to Branch Road intersection increasing NB Right Turn delay

Intersection 10

Route 123 (Maple Ave) and Beulah Rd

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

Date: *12/4/2018*

Intersection #: *10*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Beulah Rd*
Int. Street Name: *Shopping Plaza Drwy*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Shopping Plaza Drwy	-	-
2 - Southbound	Beulah Rd	6669	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

The signal is not in compliance with the permit plan. The permit plan shows concurrent phasing NB & SB (Beulah Rd & Shopping Plaza Drwy) with all 3-section signal heads; however, each approach has one 3-section and one 4-section signal head and utilizes split phasing.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install underground single-mode fiber optic cable in existing underground conduit between this intersection and Maple Ave at East St.
- Install two junction boxes between this intersection and Maple Ave at East St to intercept fiber optic cable run and improve ease of pulling cable (Total run is 930', 2 junction boxes makes max pull 310').
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.
- Replace existing push buttons with APS push buttons.
- Replace 3 existing pedestrian signals (SP-6) with new countdown pedestrian signals (SP-8) and new educational push button signs.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- None.

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

Date: *12/4/2018*

Intersection #: *10*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Beulah Rd*
Int. Street Name: *Shopping Plaza Drwy*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"	1	1					2
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"			1	1			2
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		7	7	8	8			30
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility		2	2	2	2			8
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6	0	1	0	2			3
	SP-7							0
	SP-8		1					1
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors		0	2	0	2			4
(Qty) of Louvers								0
Pedestrian Push Button Qty		0	2	0	2			4
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button			X		X			-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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		X			
"X" if Truncated Domes Present			X		X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 2 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 2 Hand Hole on Pole (Yes or No)
- Date Tag on Pole (Yes or No)
- 2 Pedestal

Condition of Signal Supports: ___ Good ___ Poor
Remarks: Painted green
Dual mast arms

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good ___ Poor
Remarks: SW quad SB x-walk is SP-8

Type & Number of Push Button Supports:
- 2 Strain Pole / Mast Arm
- 2 Pedestal
- Stub Pole

Remarks: N/A

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM: *Remarks: All good*

Curb Ramp: *Remarks: New where present*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *10*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Beulah Rd*
Int. Street Name: *Shopping Plaza Drwy*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SE	Location (Quadrant)
40%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)
SE-3 Type B (Underground)	VDOT Standard (SE-1 thru SE-11)

Power Source

X	Underground
	Overhead
	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)

Accessories

X	Police Access Panel
	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	9	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite Autoscope Terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

Yes	Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
Yes	Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
No	Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
No	Does installation and operation conform with the permit plan?

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

Date: 12/4/2018

Intersection #: 10

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Beulah Rd
Int. Street Name: Shopping Plaza Drwy

Description: Beulah Rd
Intersection Approach (NB)

Description: Beulah Rd
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

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

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *10*

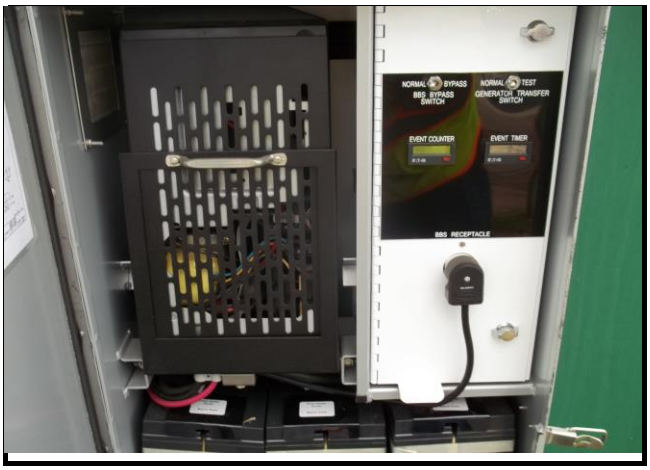
Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Beulah Rd*
Int. Street Name: *Shopping Plaza Drwy*

Description: Police Access Panel (Open)

Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (Closed)

Description: Uninterruptible Power Supply Cabinet (Open)



Description: Existing Conduits for Traffic Signal Interconnect (Underground) Running Shared in Signal Junction Box

Description: Existing Conduits for Traffic Signal Interconnect (Underground) Running Shared in Signal Junction Box

Intersection 11

Route 123 (Maple Ave) and East St

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

Date: *12/4/2018*

Intersection #: *11*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *East St*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	East St	-	25
2 - Southbound	East St	-	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

The signal is in compliance with the permit plan.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave at Follin Ln.
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.
- Replace existing pedestrian signals (SP-6) with new countdown pedestrian signals (SP-8) and new educational push button signs.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Replace faded SB stop bar pavement marking.

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

Date: *12/4/2018*

Intersection #: *11*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *East St*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	1	1	1	1			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"	1	1	1	1			4
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		8	8	8	8			32
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility		2	2	2	2			8
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6	2	2	2	2			8
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		2	2	2	2			8
Pedestrian Push Button Qty		2	2	2	2			8
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X	X	X			-
"X" if APS		X	X	X	X			-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty			22					22
"X" if Curb Ramps Present		X	X	X	X			
"X" if Truncated Domes Present		X	X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 4 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 4 Hand Hole on Pole (Yes or No)
- Date Tag on Pole (Yes or No)
- Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Painted green

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: EB green indications 25% burnt out

Pedestrian Signal Heads: X Good ___ Poor
Remarks: N/A

Type & Number of Push Button Supports:
- 6 Strain Pole / Mast Arm
- Pedestal
- 1 Stub Pole

Remarks: N/A

Preemption Purpose:
- ___ Emergency Vehicle
- ___ Railroad
- ___ Transit

Signing & PM: *Remarks: Faded stop bar SB*

Curb Ramp: *Remarks: Brick x-walks All new. Shared landings.*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *11*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *East St*
Int. Street Name: *-*

Cabinet Type:
- X NEMA
- Type 170
- Electromechanical
- Flasher
- ATC

Type of Operation:
- Pre-Timed
- Semi-Actuated
- X Fully-Actuated

Type of Coordination:
- None
- TBC w/o GPS
- X TBC w/ GPS
- Hardwire Twisted Pair
- Fiber Optic Cable
- Spread Spectrum Radio

Cabinet Maintenance:
- X Filter Present
- Permit Plan Present
- Moisture Issues

Cabinet Details:
- SW Location (Quadrant)
- 40% Capacity (% Full)
- Good Overall Condition (Good / Poor)
- N/A Bottom Condition (Rusted ?)
- N/A Boot / Conduit Elbow (Rusted ?)

Type of Mounting
- Type I (Base)
- Type II (Pole)
- Pedestal
- CF-1 VDOT Standard (CF-1, CF-3, CF-4)
- SE-3 Type B (Underground) VDOT Standard (SE-1 thru SE-11)

Power Source
- X Underground
- Overhead
- w/ Meter
- No Rust Disconnect Enclosure Condition (Rusted ?)

Accessories
- X Police Access Panel
- Manual Cord
- X Generator Adaptor Kit
- UPS (Separate Cab.)
- X UPS (Mounted to Sig. Cab.)
- Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	13	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite Autoscope Terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, date 6/17
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

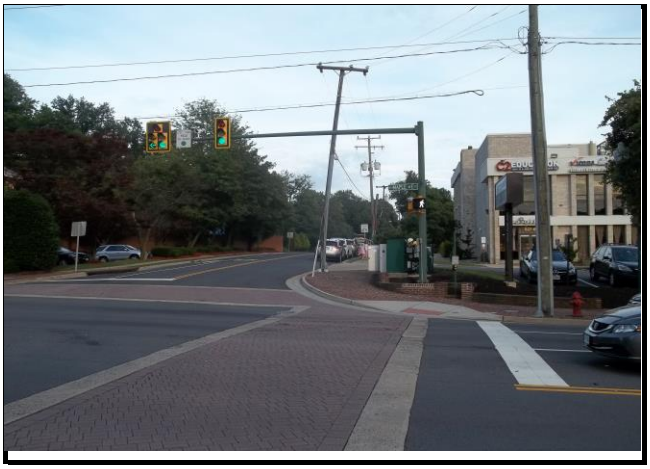
Operational and Permit Plan Checks ***("Yes", "No", or "N/A")***
- Yes Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- Yes Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- Yes Does installation and operation conform with the permit plan?

Intersection #: *11*

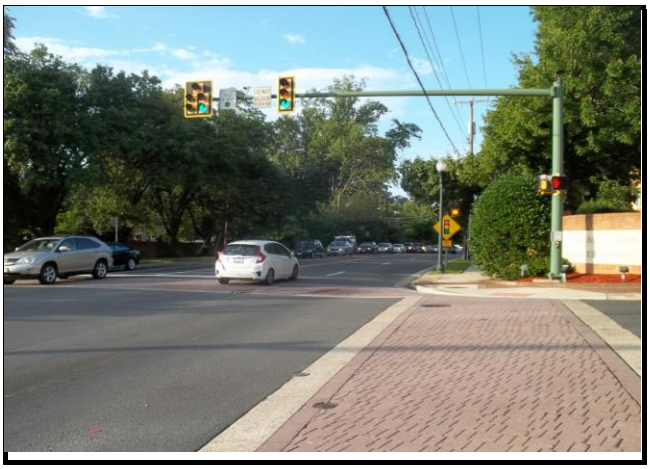
Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *East St*
Int. Street Name: *-*

Description: East St
Intersection Approach (NB)

Description: East St
Intersection Approach (SB)



Description: Route 123 (Maple Ave)
Intersection Approach (EB)



Description: Route 123 (Maple Ave)
Intersection Approach (WB)

Description: Traffic Signal Cabinet (OPEN)

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *11*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *East St*
Int. Street Name: *-*

Description: Police Access Panel

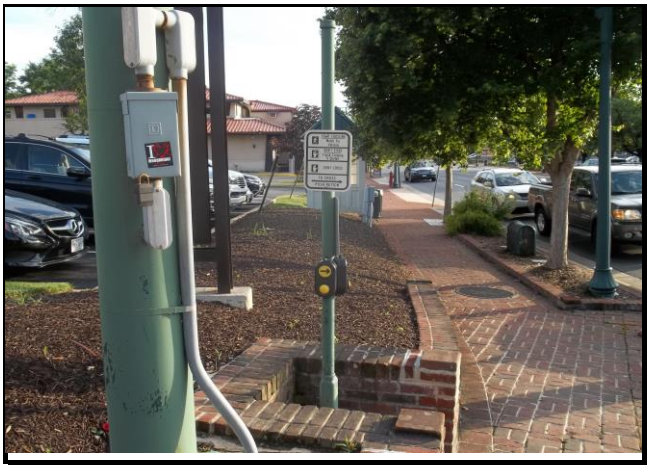
Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply (Closed)

Description: Uninterruptible Power Supply (Open)

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS)



Intersection 12

Route 123 (Maple Ave) and Follin Ln

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

Date: *12/4/2018*

Intersection #: *12*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Follin Ln*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/20/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Follin Ln	6927	25
2 - Southbound	Golf Course Drwy	-	-
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Town of Vienna public works indicated that the mast arm in the NW quadrant and controller cabinet at this intersection were recently struck, and a temporary controller cabinet is currently in use.

During a follow up meeting on 11/7/2018, the Town of Vienna indicated that they had replaced the temporary controller cabinet with a permanent cabinet, and they were in the process of replacing the damaged mast arm in the NW quadrant.

Primary Recommendations:
- Rebuild the entire signal including new signal poles, mast arms, vehicular signal heads, pedestrian signal heads, APS push buttons, video detection, signs, conduit, junction boxes, and wiring except reuse the existing controller cabinet, battery back up system, and new mast arm in the NW quadrant.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave at East St. Note the cost for this recommendation is included in the cost for the intersection of Maple Ave at East St.
- Install CCTV camera with PTZ capabilities.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Replace faded WB crosswalk pavement markings.

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

Date: 12/4/2018

Intersection #: 12

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Follin Ln
Int. Street Name: -

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	8"							0
	12"							0
Vehicular Signal Qty (2-Section)	8"							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	8"							0
	12"	2	2	2	2			8
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	8"							0
	12"			1	1			2
Vehicular Signal Qty (3-Section ALL ARROWS)	8"							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	8"							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	8"							0
	12"							0
Vehicular Signal Qty (5-Section)	8"							0
	12"							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		6	6	9	9			30
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	SP-5							0
	SP-6							0
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED								-
(Qty) of Tunnel Visors								0
(Qty) of Louvers								0
Pedestrian Push Button Qty								0
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button								-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty					100			100
"X" if Curb Ramps Present			X	X	X			
"X" if Truncated Domes Present			X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
4 VDOT Std. Mast Arms
VDOT Std. Strain Poles
Decorative Mast Arms
Decorative Strain Pole
Hand Hole on Pole (Yes or No)
Date Tag on Pole (Yes or No)
Pedestal

Condition of Signal Supports: X Poor — Good
Remarks: Painted green Pole NW quad struck/damaged

Strain Pole Bottom Tether Wire: Present / Not Present
Remarks: N/A

Vehicular Signal Heads: X Poor — Good
Remarks: Mostly 1st gen LED partially burnt out

Pedestrian Signal Heads: Good / Poor
Remarks: N/A

Type & Number of Push Button Supports:
Strain Pole / Mast Arm
Pedestal
Stub Pole
Remarks: N/A

Preemption Purpose:
Emergency Vehicle
Railroad
Transit

Signing & PM:
Remarks: High visibility x-walks EB/WB/SB Faded x-walk WB

Curb Ramp:
Remarks: DWS where present. All good.

Truncated Domes at all corners? Yes

Misc. Equip.:
Remarks: CCTV camera NW quad

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

Date: *12/4/2018*

Intersection #: *12*

Corridor Name: *Route 123 (Maple Ave)*

Int. Street Name: *Follin Ln*

Int. Street Name: *-*

Cabinet Type:

	NEMA
	Type 170
	Electromechanical
	Flasher
X	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

NE	Location (Quadrant)
45%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)

Power Source

	Underground
X	Overhead
	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)
SE-3 Type A (Overhead)	VDOT Standard (SE-1 thru SE-11)

Accessories

X	Police Access Panel
X	Manual Cord
	Generator Adaptor Kit
	UPS (Separate Cab.)
	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX2	Shelf mtd.; temp controller cabinet
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Cabinet Monitor Unit / CMU	1	McCain 2212-HV
Auxiliary Display Unit / ADU	1	McCain 2220
Switch Pack / Flasher Unit HDSP / HDFU	9	(8) HDSP: McCain 2202-HV, (1) HDFU: McCain 2202-HV
Isolator Card		
Serial Interface Unit / SIU	2	McCain 2218
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite autoscope vision
Preemption Module		
UPS / Battery Backup		
GPS Unit / Clock		
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

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

Intersection #: *12*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Follin Ln*
Int. Street Name: *-*

Description: Follin Ln
Intersection Approach (NB)

Description: Follin Ln
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

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

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *12*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Follin Ln*
Int. Street Name: *-*

Description: Cabinet Conduit Elbow

Description: Electrical Service Disconnect

Description: Police Access Panel

Description: Traffic Signal Cabinet (Open) with Cabinet Adapter Base

Description: Route 123 (Maple Ave) Intersection Approach (EB)
Signal Sight Distance

Description: Traffic Signal Pole Damaged (Vehicle Impact)
on Northwest Corner

Intersection 13

Beulah Rd and Church St

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

Date: *12/4/2018*

Intersection #: *13*

Corridor Name: *Beulah Rd*
Int. Street Name: *Church St*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Beulah Rd	6669	25
2 - Southbound	Beulah Rd	6669	25
3 - Eastbound	Church St	6933	25
4 - Westbound	Church St	6933	25
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Primary Recommendations:
- Replace controller cabinet with McCain 352i ATC cabinet, riser, and attached Tesco battery backup system on existing foundation and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave at Beulah Rd.

Secondary Recommendations:
- Rebuild the entire signal including new signal poles, mast arms, vehicular signal heads, pedestrian signal heads, APS push buttons, SE quadrant curb ramp, signs, video detection, conduit, junction boxes, and wiring except reuse the new controller cabinet and battery back up system installed in the primary recommendations.
- Install electronic security lock on controller cabinet.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- Replace faded EB crosswalk pavement markings and WB faded arrow pavement markings.
- Relocate EB stop bar a minimum distance of 40' from vehicular signal heads (may require detector changes).

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

Date: 12/4/2018

Intersection #: 13

Corridor Name: Beulah Rd
Int. Street Name: Church St
Int. Street Name: -

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	8"							0
	12"							0
Vehicular Signal Qty (2-Section)	8"							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	8"							0
	12"	2	2	2	2			8
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	8"							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	8"							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	8"							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	8"							0
	12"							0
Vehicular Signal Qty (5-Section)	8"							0
	12"							0
"X" if Incandescent		X	X	X	X			-
"X" if LED								-
(Qty) of Opt Programmed								0
(Qty) of Visors		6	6	6	6			24
(Qty) of Backplates, Black		2	2	2	2			8
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	SP-5							0
	SP-6							0
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED								-
(Qty) of Tunnel Visors								0
(Qty) of Louvers								0
Pedestrian Push Button Qty								0
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button								-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								0
(Qty) of Internally Illuminated								0
(Qty) of LED Blank-Out Signs								0
(Qty) of Flashing Warning Signs								0
Faded Pav't Markings Qty				60				60
"X" if Curb Ramps Present		X	X	X				
"X" if Truncated Domes Present			X	X				
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors								
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- ___ VDOT Std. Mast Arms
- 1 VDOT Std. Strain Poles
- ___ Decorative Mast Arms
- 1 Wood Utility Pole
- 1 Hand Hole on Pole (Yes or No)
- 1 Date Tag on Pole (Yes or No)
- ___ Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Strain pole painted green
Date tag painted over
Paint chipping

Strain Pole Bottom Tether Wire: ___ Present X Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: EB heads not 40' from stop bar

Pedestrian Signal Heads: ___ Good ___ Poor
Remarks: N/A

Type & Number of Push Button Supports:
- ___ Strain Pole / Mast Arm
- ___ Pedestal
- ___ Stub Pole

Remarks: N/A

Preemption Purpose:
- ___ Emergency Vehicle
- ___ Railroad
- ___ Transit

Signing & PM:
Remarks: High visibility x-walks EB/NB/SB
Faded x-walk markings EB
Faded arrow marking WB

Curb Ramp:
Remarks: All good where present
SE quad curb ramp no DWS

Truncated Domes at all corners? No

Misc. Equip.:
Remarks: Microwave detection antenna/receiver on utility pole NE quad

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

Date: *12/4/2018*

Intersection #: *13*

Corridor Name: *Beulah Rd*
Int. Street Name: *Church St*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

NE	Location (Quadrant)
40%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)
SE-4 Type A (Overhead)	VDOT Standard (SE-1 thru SE-11)

Power Source

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

Accessories

X	Police Access Panel
	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
X	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	5	PDC
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module		
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, no date
GPS Unit / Clock	1	McCain
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other: Magnetometer Detector Module	1	Trafficware Pods (pucks)

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

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

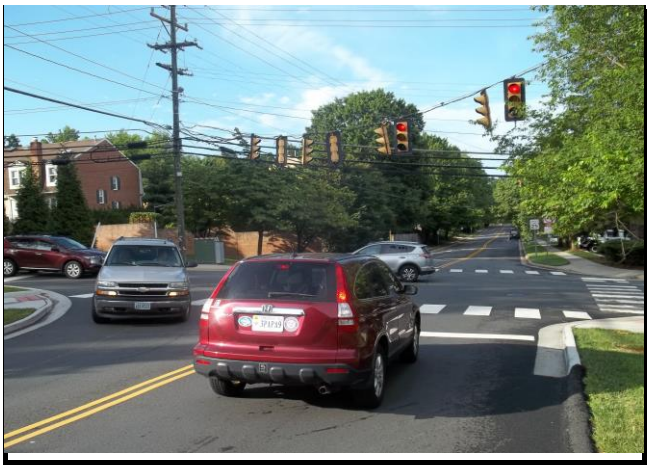
Intersection #: *13*

Corridor Name: *Beulah Rd*
Int. Street Name: *Church St*
Int. Street Name: *-*

Description: Beulah Rd
Intersection Approach (NB)

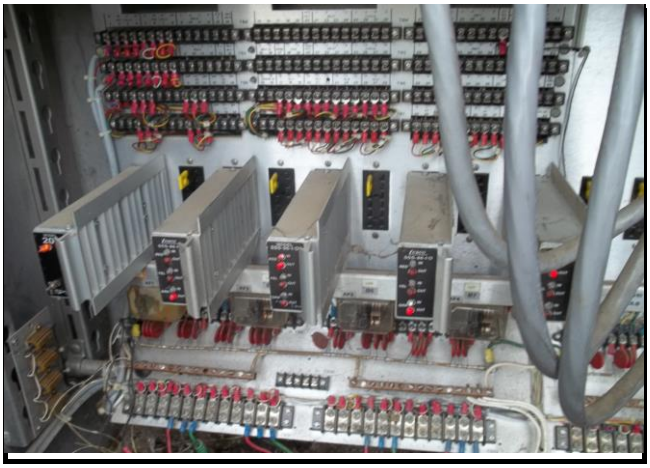
Description: Beulah Rd
Intersection Approach (SB)

Description: Church St
Intersection Approach (EB)



Description: Church St
Intersection Approach (WB)

Description: Traffic Signal Cabinet (OPEN)



Description: Traffic Signal Cabinet (OPEN)

Intersection #: *13*

Corridor Name: *Beulah Rd*
Int. Street Name: *Church St*
Int. Street Name: *-*

Description: Police Access Panel

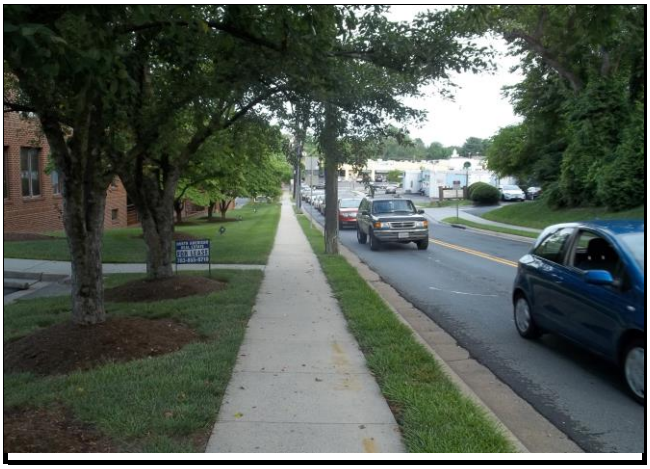
Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (Closed)

Description: Uninterruptible Power Supply Cabinet (Open)

Description: Shrubs and Earth Covering Existing Traffic Signal Strain Pole Foundation, Baseplate and Anchor Bolts

Description: Queueing from Northbound Buelah Rd. Approach at Church Extending to Buelah Rd. at Maple Ave (Rte. 123) Intersectio



Intersection 14

Follin Ln and Echols St

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

Date: *12/4/2018*

Intersection #: *14*

Corridor Name: *Follin Ln*
Int. Street Name: *Echols St*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Follin Ln	6927	25
2 - Southbound	Follin Ln	6927	25
3 - Eastbound	Echols St	2	25
4 - Westbound	Echols St	2	25
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Primary Recommendations:
- None since this intersection is not included in the Smart Scale application.

Secondary Recommendations:
- Rebuild the entire signal including new signal poles, mast arms, controller cabinet, battery backup system, vehicular signal heads, pedestrian signal heads, APS push buttons, video detection, signs, conduit, junction boxes, and wiring.
- Install 10 port Ethernet switch.
- Install electronic security lock on controller cabinet.
- Install aerial single-mode fiber optic cable along existing utility poles and underground single-mode fiber optic cable in new buried conduit where necessary between this intersection and Maple Ave at Follin Ln.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.

Maintenance Recommendations:
- None.

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

Date: 12/4/2018

Intersection #: 14

Corridor Name: Follin Ln
Int. Street Name: Echols St
Int. Street Name: -

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	2	2	2	2			8
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors		6	6	6	6			24
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility		2	2	2	2			8
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	0	2	2	0			4
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Tunnel Visors								0
(Qty) of Louvers								0
Pedestrian Push Button Qty		0	2	2	0			4
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button			X	X				-
"X" if APS			X	X				-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X				
"X" if Truncated Domes Present			X	X				
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors								
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 2 VDOT Std. Mast Arms
- VDOT Std. Strain Poles
- Decorative Mast Arms
- Decorative Strain Pole
- 2 Hand Hole on Pole (Yes or No)
- 2 Date Tag on Pole (Yes or No)
- 2 Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Dual mast arms
Painted green, tags painted over
Paint chipping

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: X Good ___ Poor
Remarks: N/A

Pedestrian Signal Heads: X Good ___ Poor
Remarks: N/A

Type & Number of Push Button Supports:
- 1 Strain Pole / Mast Arm
- 3 Pedestal
- Stub Pole

Remarks: N/A

Preemption Purpose:
- Emergency Vehicle
- Railroad
- Transit

Signing & PM: *Remarks: High visibility x-walks WB & SB*

Curb Ramp: *Remarks: All good where present.*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *14*

Corridor Name: *Follin Ln*
Int. Street Name: *Echols St*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
	Semi-Actuated
X	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SE	Location (Quadrant)
40%	Capacity (% Full)
Poor	Overall Condition (Good / Poor)
N/A	Bottom Condition (Rusted ?)
N/A	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
	Type II (Pole)
	Pedestal
CF-1	VDOT Standard (CF-1, CF-3, CF-4)
SE-3 Type B (Underground)	VDOT Standard (SE-1 thru SE-11)

Power Source

X	Underground
	Overhead
	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)

Accessories

X	Police Access Panel
	Manual Cord
X	Generator Adaptor Kit
	UPS (Separate Cab.)
	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	Peek LMD 9200	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	Peek
Load Switch / Switch Pack	7	PDC
Loop Detector Amplifier	4	Sarasota
Radar Detector Module		
Video Detector Module		
Preemption Module		
UPS / Battery Backup		
GPS Unit / Clock	1	Iota engineering ITS 50R
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

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

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

Intersection #: *14*

Corridor Name: *Follin Ln*
Int. Street Name: *Echols St*
Int. Street Name: *-*

Description: Follin Ln
Intersection Approach (NB)

Description: Follin Ln
Intersection Approach (SB)

Description: Echols St
Intersection Approach (EB)

Description: Echols St
Intersection Approach (WB)

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

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *14*

Corridor Name: *Follin Ln*
Int. Street Name: *Echols St*
Int. Street Name: *-*

Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Traffic Signal Pole Foundation Damage and Soil Erosion

Description: Generator Power Transfer Switch

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS)

Intersection 15

Route 123 (Maple Ave) and Vienna Plaza HAWK Signal

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

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

Date: *12/4/2018*

Intersection #: *15*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Vienna Plaza HAWK Signal*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/20/2018 (Updated on 9/20/2018)

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Vienna Plaza HAWK Signal	-	-
2 - Southbound	Vienna Plaza HAWK Signal	-	-
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Primary Recommendations:
- Replace controller cabinet with McCain 356i ATC cabinet and either install new McCain ATC eX2 controller or existing McCain ATC eX controller with ITS Interface Module.
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave and Lawyers Rd/Courthouse Rd.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.

Maintenance Recommendations:
- None.

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

Date: 12/4/2018

Intersection #: 15

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Vienna Plaza HAWK Signal
Int. Street Name: -

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"			2	2			4
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"							0
"X" if Incandescent								-
"X" if LED				X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors				6	6			12
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility				2	2			4
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8	1	1					2
	SP-9							0
"X" if Incandescent								-
"X" if LED		X	X					-
(Qty) of Tunnel Visors								0
(Qty) of Louvers		1	1					2
Pedestrian Push Button Qty		1	1					2
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button		X	X					-
"X" if APS		X	X					-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X					
"X" if Truncated Domes Present		X	X					
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors								
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
1 VDOT Std. Mast Arms
VDOT Std. Strain Poles
Decorative Mast Arms
Decorative Strain Pole
1 Hand Hole on Pole (Yes or No)
1 Date Tag on Pole (Yes or No)
1 Pedestal

Condition of Signal Supports: X Good Poor
Remarks: All new painted green

Strain Pole Bottom Tether Wire: Present Not Present
Remarks: N/A

Vehicular Signal Heads: X Good Poor
Remarks: All new

Pedestrian Signal Heads: X Good Poor
Remarks: All new

Type & Number of Push Button Supports:
1 Strain Pole / Mast Arm
1 Pedestal
Stub Pole
Remarks: All new

Preemption Purpose:
Emergency Vehicle
Railroad
Transit

Signing & PM: *Remarks: Brick x-walk*

Curb Ramp: *Remarks: All new*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *15*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Vienna Plaza HAWK Signal*
Int. Street Name: *-*

Cabinet Type:

X	NEMA
	Type 170
	Electromechanical
	Flasher
	ATC

Type of Operation:

	Pre-Timed
X	Semi-Actuated
	Fully-Actuated

Type of Coordination:

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

Cabinet Maintenance:

X	Filter Present
	Permit Plan Present
	Moisture Issues

Cabinet Details:

SE	Location (Quadrant)
75%	Capacity (% Full)
Good	Overall Condition (Good / Poor)
No Rust	Bottom Condition (Rusted ?)
No Rust	Boot / Conduit Elbow (Rusted ?)

Type of Mounting

	Type I (Base)
X	Type II (Pole)
	Pedestal
	VDOT Standard (CF-1, CF-3, CF-4)
SE-3 Type B (Underground)	VDOT Standard (SE-1 thru SE-11)

Power Source

X	Underground
	Overhead
X	w/ Meter
No Rust	Disconnect Enclosure Condition (Rusted ?)

Accessories

X	Police Access Panel
	Manual Cord
	Generator Adaptor Kit
	UPS (Separate Cab.)
	UPS (Mounted to Sig. Cab.)
	Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Conflict Monitor / MMU	1	EDI
Load Switch / Switch Pack	5	Econolite
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		
Interconnect		
Other:_____		

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

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

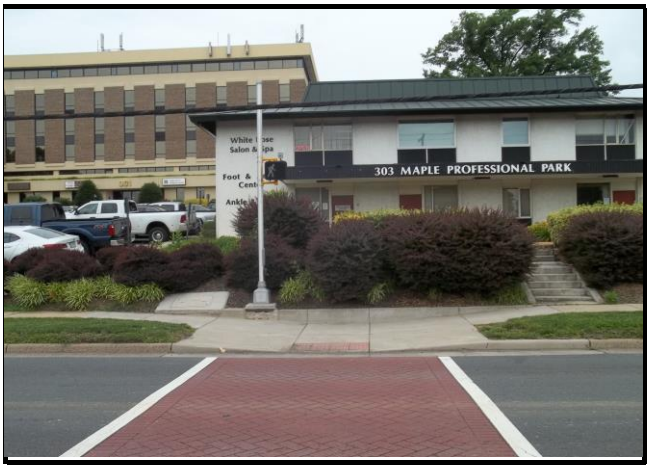
Route 123 and Route 243 Traffic Signal Upgrades
Traffic Signal Equipment Inventory (Photograph Log)

Date: 12/4/2018

Intersection #: 15

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: Vienna Plaza HAWK Signal
Int. Street Name: -

Description: Pedestrian Crosswalk
Intersection Approach (NB)



Description: Pedestrian Crosswalk
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

Description: Traffic Signal Cabinet (OPEN)

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *15*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *Vienna Plaza HAWK Signal*
Int. Street Name: *-*

Description: Police Access Panel

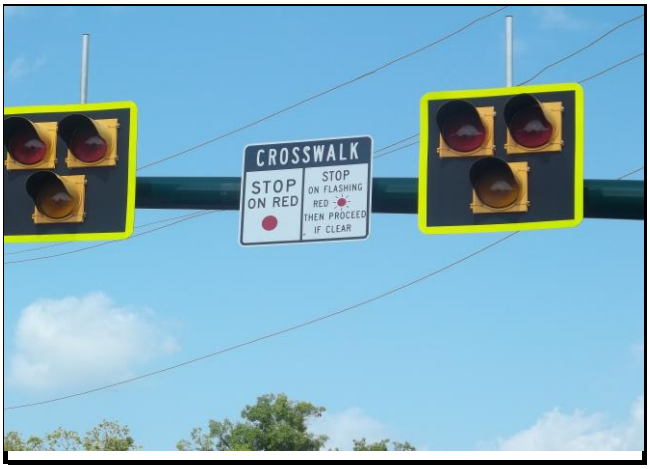
Description: Electrical Service Disconnect

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS)

Description: Accessible Pedestrian Signals (APS)

Description: Route 123 (Maple Ave)
Intersection Approach (EB) (New sign installed)



Intersection 16

Route 123 (Maple Ave) and James Madison Dr (Future HAWK Signal)

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

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

Date: *12/4/2018*

Intersection #: *16*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *James Madison Dr. (Future HAWK Signal)*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Nick Fleming
Inventory Date(s): 9/20/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	James Madison Dr. (HAWK Signal)	-	-
2 - Southbound	James Madison Dr. (HAWK Signal)	-	25
3 - Eastbound	Maple Ave	123	30
4 - Westbound	Maple Ave	123	30
5 -			
6 -			

Summary of Potential Scope:

No permit plan available.

Primary Recommendations:
- Install 10 port Ethernet switch.
- Install aerial single-mode fiber optic cable along existing utility poles between this intersection and Maple Ave and Nutley St.

Secondary Recommendations:
- Install electronic security lock on controller cabinet.

Maintenance Recommendations:
- None.

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

Date: *12/4/2018*

Intersection #: *16*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *James Madison Dr. (Future HAWK Signal)*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"							0
"X" if Incandescent								-
"X" if LED								-
(Qty) of Opt Programmed								0
(Qty) of Visors								0
(Qty) of Backplates, Black								0
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8							0
	SP-9							0
"X" if Incandescent								-
"X" if LED								-
(Qty) of Tunnel Visors								0
(Qty) of Louvers								0
Pedestrian Push Button Qty								0
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button								-
"X" if APS								-
Preemption								0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs								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	X					
"X" if Truncated Domes Present		X	X					
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors								
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply

Type & Number of Signal Supports:
- 2 VDOT Std. Mast Arms
- ___ VDOT Std. Strain Poles
- ___ Decorative Mast Arms
- ___ Decorative Strain Pole
- ___ Hand Hole on Pole (Yes or No)
- ___ Date Tag on Pole (Yes or No)
- ___ Pedestal

Condition of Signal Supports: X Good ___ Poor
Remarks: Signal Mast Arm pole Foundations installed. Signal Mast Arm poles have not been installed on foundations.

Strain Pole Bottom Tether Wire: ___ Present ___ Not Present
Remarks: N/A

Vehicular Signal Heads: ___ Good ___ Poor
Remarks: Not yet installed.

Pedestrian Signal Heads: ___ Good ___ Poor
Remarks: Not yet installed.

Type & Number of Push Button Supports:
- ___ Strain Pole / Mast Arm
- ___ Pedestal
- ___ Stub Pole

Remarks: Not yet installed.

Preemption Purpose:
- ___ Emergency Vehicle
- ___ Railroad
- ___ Transit

Signing & PM: *Remarks: High Visibility x-walk markings*

Curb Ramp: *Remarks: All new*

Truncated Domes at all corners? Yes

Misc. Equip.: *Remarks: N/A*

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

Date: *12/4/2018*

Intersection #: *16*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *James Madison Dr. (Future HAWK Signal)*
Int. Street Name: *-*

Cabinet Type:
- NEMA
- Type 170
- Electromechanical
- Flasher
- ATC

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
- VDOT Standard (CF-1, CF-3, CF-4)

Power Source
- Underground
- Overhead
- w/ Meter
- Disconnect Enclosure Condition (Rusted ?)
- VDOT Standard (SE-1 thru SE-11)

Accessories
- Police Access Panel
- Manual Cord
- Generator Adaptor Kit
- UPS (Separate Cab.)
- UPS (Mounted to Sig. Cab.)
- Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller			
Master Controller			

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		
Interconnect		
Other:_____		

Operational and Permit Plan Checks ***("Yes", "No", or "N/A")***
- N/A — Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- N/A — Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A — Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- N/A — Does installation and operation conform with the permit plan?

Intersection #: *16*

Corridor Name: *Route 123 (Maple Ave)*
Int. Street Name: *James Madison Dr. (Future HAWK Signal)*
Int. Street Name: *-*

Description: Pedestrian Crosswalk
Intersection Approach (NB)

Description: Pedestrian Crosswalk
Intersection Approach (SB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

Description: Route 123 (Maple Ave)
Intersection Approach (EB)

Description: Route 123 (Maple Ave)
Intersection Approach (WB)

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

Date: 12/4/2018

Intersection #: 16

Corridor Name: Route 123 (Maple Ave)
Int. Street Name: James Madison Dr. (Future HAWK Signal)
Int. Street Name: -

Description: Signal Mast Arm Pole Foundation South of Route 123 (Maple Ave) (EB approach signal foundation)

Description: Signal Mast Arm Pole Foundation South of Route 123 (Maple Ave) (EB approach signal foundation)

Description: Signal Mast Arm Pole Foundation North of Route 123 (Maple Ave) (WB approach signal foundation)

Description: Signal Mast Arm Pole Foundation North of Route 123 (Maple Ave) (WB approach signal foundation)

Description:

Description:

Intersection 17

Electric Ave and
Navy Federal Credit Union Ent

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915

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

Date: *12/20/2018*

Intersection #: *17*

Corridor Name: *Electric Ave*
Int. Street Name: *Navy Federal Credit Union Ent*
Int. Street Name: *-*

Signal Permit and Contact Information:

Consultant Observer(s): Dan Fritz & Nick Fleming
Inventory Date(s): 6/19/2018

Signal Permit #:
Permit Approval Date:
Latest Revision Date:

Municipality: Town of Vienna
County: Fairfax County
Primary Contact / Phone: Chad Charles / (P) 703-319-8603 / (C) 571-274-3373
Secondary Contact / Phone: Jeff Tufano / (P) 703-319-8606 / (C) 571-274-3374

Intersection Street Names and Numbers:

Approach	Street Name	Route #	Approach Speed Limit
1 - Northbound	Navy Federal Credit Union Ent	-	-
2 - Southbound	Navy Federal Credit Union Ent	-	15
3 - Eastbound	Electric Ave	1	25
4 - Westbound	Electric Ave	1	25
5 -			
6 -			

Summary of Potential Scope:

The signal is in compliance with the permit plan.

EB & WB Electric Ave left turn phases are prot/perm and lagging. They are not timed to come on together or terminate together; therefore, this creates a left turn trap situation. Town of Vienna indicated the left turn phasing was changed to lagging during construction. Recommend changing the left turn phases back to leading or programming to come on together and terminate together to eliminate the left turn trap. Another option is to replace EB & WB Electric Ave 5-section vehicular signal heads with 4-section flashing yellow arrow signals, install "Left Turn Yield On Flashing Yellow Arrow" sign, install additional EB & WB through movement 3-section head, and reprogram controller.

Primary Recommendations:
- None since this intersection is not included in the Smart Scale application.

Secondary Recommendations:
- Install 10 port Ethernet switch.
- Install electronic security lock on controller cabinet.
- Install APS pedestrian push buttons for all pedestrian crossings.
- Replace existing Autoscope Terra video detection cameras with new Autoscope Vision video detection cameras.
- Install optical/GPS (multimode) emergency vehicle preemption system on all approaches. This dual-system allows interoperability between optical (infrared) and GPS-enabled emergency vehicles.
- No communication is proposed at this intersection due to the distance away from the intersection of Follin Ln and Echols St (approx. 3,400'). In the future if additional traffic signals are installed along Follin Ln and Electric Ave, consideration should be given to installing either fiber optic cable or an Ethernet radio communication system.

Maintenance Recommendations:
- Install 3" retroreflective tape on all vehicular signal backplates.
- Replace existing 5-section vehicular signal heads EB & WB (Electric Ave.) with 4-section flashing yellow arrow signals, install "Left Turn Yield On Flashing Yellow Arrow" sign, install additional EB & WB through movement 3-section head, and reprogram controller.

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

Date: *12/20/2018*

Intersection #: *17*

Corridor Name: *Electric Ave*
Int. Street Name: *Navy Federal Credit Union Ent*
Int. Street Name: *-*

General Signal Equipment Inventory:

Signal Equipment		NB	SB	EB	WB	___	___	TOTAL
Vehicular Signal Qty (1-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (2-Section)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL SOLID)	*8"*							0
	12"	2	3	1	1			7
Vehicular Signal Qty (3-Sect, RED SOLID & 2 ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (3-Section ALL ARROWS)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Sect, 3 SOLID & 1 ARROW)	*8"*							0
	12"							0
Vehicular Signal Qty (4-Section FYA)	*8"*							0
	12"							0
Vehicular Signal Qty (5-Section)	*8"*							0
	12"			1	1			2
"X" if Incandescent								-
"X" if LED		X	X	X	X			-
(Qty) of Opt Programmed								0
(Qty) of Visors								0
(Qty) of Backplates, Black		2	3	2	2			9
(Qty) of Backplates, High Visibility								0
(Qty) of Louvers								0
(Qty) of Signal Strobes								0
Pedestrian Signal Qty	*SP-5*							0
	SP-6							0
	SP-7							0
	SP-8							0
	SP-9	0	2	2	2			6
"X" if Incandescent								-
"X" if LED			X	X	X			-
(Qty) of Tunnel Visors			2	2	2			6
(Qty) of Louvers								0
Pedestrian Push Button Qty			2	2	2			6
"X" if < 2 Inch Diameter Button								-
"X" if 2 Inch Diameter Button			X	X	X			-
"X" if APS								-
Preemption		0	0	0	0			0
"X" if Optical								
"X" if Audible								
"X" if Radio								
"X" if GPS								
"X" if Confirmation Light								
Damaged/Faded Sign Qty								0
(Qty) of Overhead St Name Signs		1	1	1	1			4
(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	X	X			
"X" if Truncated Domes Present			X	X	X			
Overhead Pole or Mast Arm Mounted Equipment								
"X" if Video Detectors		X	X	X	X			
"X" if Radar Detectors								
"X" if Communication Ant.								

"X" All that Apply				
Type & Number of Signal Supports:	4	VDOT Std. Mast Arms		
		VDOT Std. Strain Poles		
		Decorative Mast Arms		
		Decorative Strain Pole		
	4	Hand Hole on Pole (Yes or No)		
	4	Date Tag on Pole (Yes or No)		
	3	Pedestal		
Condition of Signal Supports:	X	Good		Poor
	Remarks: All new painted green			
Strain Pole Bottom Tether Wire:		Present		Not Present
	Remarks: N/A			
Vehicular Signal Heads:	X	Good		Poor
	Remarks: All new			
Pedestrian Signal Heads:	X	Good		Poor
	Remarks: All new			
Type & Number of Push Button Supports:	3	Strain Pole / Mast Arm		
		Pedestal		
	3	Stub Pole		
	Remarks: All new			
Preemption Purpose:		Emergency Vehicle		
		Railroad		
		Transit		
Signing & PM:	*Remarks: All new*			
	High visibility x-walks			
Curb Ramp:	*Remarks: All new. Shared landings.*			
Truncated Domes at all corners?	Yes			
Misc. Equip.:	*Remarks: N/A*			

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

Date: *12/20/2018*

Intersection #: *17*

Corridor Name: *Electric Ave*
Int. Street Name: *Navy Federal Credit Union Ent*
Int. Street Name: *-*

Cabinet Type:
- ___ NEMA
- ___ Type 170
- ___ Electromechanical
- ___ Flasher
- X ATC

Type of Operation:
- ___ Pre-Timed
- ___ Semi-Actuated
- X Fully-Actuated

Type of Coordination:
- X None
- ___ TBC w/o GPS
- ___ TBC w/ GPS
- ___ Hardwire Twisted Pair
- ___ Fiber Optic Cable
- ___ Spread Spectrum Radio

Cabinet Maintenance:
- X Filter Present
- X Permit Plan Present
- ___ Moisture Issues

Cabinet Details:
- NE Location (Quadrant)
- 40% Capacity (% Full)
- Good Overall Condition (Good / Poor)
- N/A Bottom Condition (Rusted ?)
- N/A Boot / Conduit Elbow (Rusted ?)

Type of Mounting
- ___ Type I (Base)
- ___ Type II (Pole)
- ___ Pedestal
- CF-3 VDOT Standard (CF-1, CF-3, CF-4)

Power Source
- X Underground
- ___ Overhead
- X w/ Meter
- No Rust Disconnect Enclosure Condition (Rusted ?)
- SE-5 VDOT Standard (SE-1 thru SE-11)

Accessories
- X Police Access Panel
- X Manual Cord
- X Generator Adaptor Kit
- ___ UPS (Separate Cab.)
- X UPS (Mounted to Sig. Cab.)
- X Com Box

Cabinet Equipment Inventory

Equipment	Qty	Manufacturer / Model	Remarks (*Rack, Shelf, Condition, Software Version, etc*.)
Local Controller	1	McCain ATC eX2	Shelf mtd.
Master Controller			

Equipment	Qty	Remarks (*Rack, Shelf, Condition, etc*.)
Cabinet Monitor Unit / CMU	1	McCain 2212-HV
Auxiliary Display Unit / ADU	1	McCain 2220
Switch Pack / Flasher Unit HDSP / HDFU	9	(8) HDSP: McCain 2202-HV, (1) HDFU: McCain 2202-HV
Isolator Card	2	EDI 242L
Serial Interface Unit / SIU	2	McCain 2218
Loop Detector Amplifier		
Radar Detector Module		
Video Detector Module	1	Econolite Autoscope Terra
Preemption Module		
UPS / Battery Backup	1	Tesco, 6 batteries, date 4/17
GPS Unit / Clock		
Radio Transceiver		
Fiber Modem		
Phone Drop / Telephone Modem		
Interconnect		
Other:_____		

Operational and Permit Plan Checks ***("Yes", "No", or "N/A")***
- Yes Do all detectors / detector amplifiers work? (i.e. amplifier lights flash when vehicles detected).
- Yes Do all pedestrian push buttons work? (i.e. push each button and observe pedestrian signal call).
- N/A Are traffic signal communication modems plugged in? (i.e. cable plugged into modem and controller).
- Yes Does installation and operation conform with the permit plan?

Intersection #: *17*

Corridor Name: *Electric Ave*
Int. Street Name: *Navy Federal Credit Union Ent*
Int. Street Name: *-*

Description: Navy Federal Credit Union Ent
Intersection Approach (NB)

Description: Navy Federal Credit Union Ent
Intersection Approach (SB)

Description: Electric Ave
Intersection Approach (EB)

Description: Electric Ave
Intersection Approach (WB)

Description: Traffic Signal Cabinet (CLOSED)

Description: Traffic Signal Cabinet (OPEN)

Intersection #: *17*

Corridor Name: *Electric Ave*
Int. Street Name: *Navy Federal Credit Union Ent*
Int. Street Name: *-*

Description: Police Access Panel

Description: Electrical Service Disconnect

Description: Uninterruptible Power Supply Cabinet (Closed)

Description: Uninterruptible Power Supply Cabinet (Open)

Description: Uninterruptible Power Supply Cabinet Generator Connection

Description: External Communications Interface Box

APPENDIX B

Detailed Cost Estimate Calculations

TOWN OF
VIENNA
since 1890

Route 123 and Route 243 Traffic Signal Upgrades
Cost Estimate Summary

Date: *12/20/2018*

Project Summary:

Municipality: Town of Vienna

Number of Signals: 17

Primary Corridor(s): Route 123 (Maple Ave)
Route 243 (Nutley St)

Preliminary Cost Estimates:

Intersection	Cost	
	Primary Recommendations	Secondary Recommendations
1 - Nutley St @ Tapawingo Rd	$350,000 (1)	$19,622
2 - Nutley St @ Courthouse Rd	$130,947	$19,622
3 - Maple Ave @ Nutley St	$92,090	$24,995
4 - Maple Ave @ Courthouse Rd	$68,470	$19,622
5 - Maple Ave @ Center St	$70,482 (4)	$19,622
6 - Maple Ave @ W&OD Trail	$73,986	$32,703
7 - Maple Ave @ Park St	$21,239	$19,622
8 - Maple Ave @ Glyndon St	$104,481	$24,294
9 - Maple Ave @ Branch Rd	$78,879	$16,819
10 - Maple Ave @ Beulah Rd	$140,826	$16,819
11 - Maple Ave @ East St	$128,020	$16,819
12 - Maple Ave @ Follin Ln	$350,000 (1)	$19,622
13 - Beulah Rd @ Church St	$67,113	$350,000 (2)
14 - Follin Ln @ Echols St	$0	$375,000 (3)
15 - Maple Ave @ Vienna Plaza HAWK Signal	$58,174	$934
16 - Maple Ave @ James Madison HAWK Signal	$14,510	$934
17 - Electric Ave @ NFCU Drwy	$0	$91,569
McCain Transparity Traffic Management System (TMS)	$30,000	$0
Total	**$1,779,219**	**$1,082,616**

(1) Cost represents complete signal replacement. These two complete signal replacements will be bid separately from the other primary recommendations.
(2) Cost represents complete signal replacement and is in addition to Primary Recommendations. Note cost is slightly higher to include potential overhead utility work.
(3) Cost represents complete signal replacement and is slightly higher to account for installation of fiber optic cable over a long distance.
(4) This cost includes installing aerial fiber optic cable to the Town Hall.

Route 123 and Route 243 Traffic Signal Upgrades
Cost Estimate - Primary Recommendations

Date: 12/20/2018

Traffic Signal Equipment Summary

Item / Category	Ave. Unit Cost ($)	1 - Nutley St @ Tapawingo Rd	2 - Nutley St @ Courthouse Rd	3 - Maple Ave @ Nutley St	4 - Maple Ave @ Courthouse Rd	5 - Maple Ave @ Center St	6 - Maple Ave @ W&OD Trail	7 - Maple Ave @ Park St	8 - Maple Ave @ Glyndon St	9 - Maple Ave @ Branch Rd	10 - Maple Ave @ Beulah Rd	11 - Maple Ave @ East St	12 - Maple Ave @ Follin Ln	13 - Beulah Rd @ Church St	14 - Follin Ln @ Echols St	15 - Maple Ave @ Vienna Plaza HAWK Signal	16 - Maple Ave @ James Madison HAWK Signal	17 - Electric Ave @ NFCU Drwy	Total Quantity	Total Cost ($)
Vehicular Signal Heads																				
Traf. Sig. Head Sec 12" HVS Backplate - EA	$300																		0	$0
Hanger Assembly SM-3, One-Way - EA	$400																		0	$0
Retrofit 12" Traf. Sig. Head - EA	$125																		0	$0
Backplate Modifications - EA	$300																		0	$0
Pedestrian Items																				
Countdown Pedestrian Signal Head (SP-8) - EA	$700								8	4	3	8							23	$16,100
Accessible Pedestrian Signals (APS) Push Buttons - EA	$1,250.00						1		8	4	4								17	$21,250
Sign Panel - SF	$37.00								8	4	4	8							24	$888
CG-12 Detectable Warning Surface - SY	$350.00						6												6	$2,100
Pedestrian Actuation (PA-2) - EA	$250.00																		0	$0
Pedestrian Actuation (PA-3) - EA	$700.00																		0	$0
Pedestrian Actuation (PA-4) - EA	$1,000.00						1												1	$1,000
Hanger Assembly SMB-3, One Way - EA	$200.00																		0	$0
Hanger Assembly SMB-3, Two Way - EA	$400.00																		0	$0
ADA Curb Ramp - EA	$5,500.00																		0	$0
Traffic Signal Equipment Cabinet																				
McCain 352i ATC Cabinet (On Existing Foundation) - EA	$20,000.00		1				1		1	1	1	1		1					7	$140,000
McCain 352i ATC Cabinet (On New CF-3 Foundation) - EA	$22,500.00																		0	$0
McCain 356i ATC Cabinet - EA	$19,000.00															1			1	$19,000
Controller Unit Only																				
Reinstall Existing McCain ATC Controller - EA	$2,500.00		1				1		1	1	1	1		1		1			8	$20,000
McCain ATC eX2 Controller - EA	$5,000.00																		0	$0
Cabinet Components																				
Uninterruptible Power Supply Type 2 (Tesco) - EA	$3,750.00		1				1		1	1	1	1		1					7	$26,250
Uninterruptible Power Supply Battery Pack (Tesco) - EA	$450.00		1				1		1	1	1	1		1					7	$3,150
Uninterruptible Power Supply Cabinet Attached (Tesco) - EA	$3,100.00		1				1		1	1	1	1		1					7	$21,700
Managed field Ethernet Switch Gbps - EA	$3,000.00		1	1	1	1	1	1	1	1	1	1		1		1	1		13	$39,000
Electronic Security Lock - EA	$500.00																		0	$0
Signing/Pavement Markings																				
Type B Class I Pave. Line Marking 24" - LF	$8.00																		0	$0
Type B Class I Pave. Line Marking 4" - LF	$1.00																		0	$0
Pvmt Symb Mrkg Sgl Turn Arrow Ty B, Cl I - EA	$250.00																		0	$0
Double Turn Arrow Thru/LT or RT Type B, Cl I - EA	$300.00																		0	$0
Sign Panel - SF	$37.00																		0	$0
Blank-Out Sign Panel - EA	$5,000.00																		0	$0
Mast Arms																				
Repaint Existing Mast Arms - EA	$3,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type A - EA	$9,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type B1 - EA	$10,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type B2 - EA	$12,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type C - EA	$11,000.00																		0	$0
Mast Arm 30' - EA	$2,750.00																		0	$0
Mast Arm 40' - EA	$3,250.00																		0	$0
Mast Arm 49' - EA	$4,000.00																		0	$0
Mast Arm 60' - EA	$6,000.00																		0	$0
Mast Arm 65' - EA	$6,500.00																		0	$0
Mast Arm 70' - EA	$7,750.00																		0	$0
Mast Arm 75' Case 1 Loading - EA	$8,250.00																		0	$0
Mast Arm 75' Case 2 Loading - EA	$9,250.00																		0	$0
Test Bore - EA	$1,900.00																		0	$0
Concrete Foundation Signal Pole PF-8 - CY	$1,150.00																		0	$0
Pedestal Pole-PF-2 12' - EA	$750.00																		0	$0
Conc. Foundation PF-2 - EA	$1,100.00																		0	$0
Electrical Service																				
Electrical Service SE-3 Type A - EA	$2,500.00																		0	$0
Electrical Service SE-4 Type A - EA	$2,500.00																		0	$0
Miscellaneous																				
Video Detection Camera (Autoscope Vision) - EA	$4,000.00		4	4	4	4					4	4							24	$96,000
Video Detection System, (4 Video Inputs) (Autoscope Vision) - EA	$12,000.00		1	1	1	1					1	1							6	$72,000
Single-Mode Fiber Optic Cable 24 Strand - LF	$7.00		1725	1750	1015	1175	575	860	950	450	1075	650		650		1125	725		12725	$89,075
Optical/GPS EVP Detection System 2-way - EA	$7,500.00																		0	$0
Optical/GPS EVP Detection System 3-way - EA	$8,500.00																		0	$0
Optical/GPS EVP Detection System 4-way - EA	$10,000.00																		0	$0
CCTV Camera Digital - EA	$5,500.00			1															1	$5,500
Digital Video Encoder - EA	$2,500.00			1															1	$2,500
Reprogram Controller - LS	$750.00																		0	$0
Junction Box, JB-S1 - EA	$1,250.00																		0	$0
Junction Box, JB-S2 - EA	$1,150.00																		0	$0
Junction Box, JB-S3 - EA	$1,400.00							2	2		2								6	$8,400
5.8 GHZ Wireless Broadband Radio - EA	$4,000.00																		0	$0

Total Signal Equipment Cost ($)		$0	$72,875	$51,250	$38,105	$39,225	$41,175	$11,820	$58,146	$43,898	$78,373	$71,246	$0	$37,350	$0	$32,375	$8,075	$0		$583,913
McCain Transparity TMS Software and Setup - Lump Sum ($)		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		$30,000
MOT, Mobilization, Equipment Package, and Schedule	**15%**	$0	$10,931	$7,688	$5,716	$5,884	$6,176	$1,773	$8,722	$6,585	$11,756	$10,687	$0	$5,603	$0	$4,856	$1,211	$0		$87,587
SUBTOTAL - CONSTRUCTION		$0	$83,806	$58,938	$43,821	$45,109	$47,351	$13,593	$66,868	$50,483	$90,129	$81,933	$0	$42,953	$0	$37,231	$9,286	$0		$701,500
Contingency ($)	**25%**	$0	$20,952	$14,734	$10,955	$11,277	$11,838	$3,398	$16,717	$12,621	$22,532	$20,483	$0	$10,738	$0	$9,308	$2,322	$0		$167,875
TOTAL - CONSTRUCTION BUDGET		$280,000	$104,758	$73,672	$54,776	$56,386	$59,189	$16,991	$83,585	$63,103	$112,661	$102,416	$280,000	$53,691	$0	$46,539	$11,608	$0		$1,429,375
Design ($)	**10%**	$28,000	$10,476	$7,367	$5,478	$5,639	$5,919	$1,699	$8,358	$6,310	$11,266	$10,242	$28,000	$5,369	$0	$4,654	$1,161	$0		$139,937
Construction Management ($)	**15%**	$42,000	$15,714	$11,051	$8,216	$8,458	$8,878	$2,549	$12,538	$9,466	$16,899	$15,362	$42,000	$8,054	$0	$6,981	$1,741	$0		$209,906
Grand Total ($)		**$350,000**	**$130,947**	**$92,090**	**$68,470**	**$70,482**	**$73,986**	**$21,239**	**$104,481**	**$78,879**	**$140,826**	**$128,020**	**$350,000**	**$67,113**	**$0**	**$58,174**	**$14,510**	**$0**		**$1,779,219**

Route 123 and Route 243 Traffic Signal Upgrades
Cost Estimate - Secondary Recommendations

Date: *12/20/2018*

Traffic Signal Equipment Summary

Item / Category	Ave. Unit Cost ($)	1 - Nutley St @ Tapawingo Rd	2 - Nutley St @ Courthouse Rd	3 - Maple Ave @ Nutley St	4 - Maple Ave @ Courthouse Rd	5 - Maple Ave @ Center St	6 - Maple Ave @ W&OD Trail	7 - Maple Ave @ Park St	8 - Maple Ave @ Glyndon St	9 - Maple Ave @ Branch Rd	10 - Maple Ave @ Beulah Rd	11 - Maple Ave @ East St	12 - Maple Ave @ Follin Ln	13 - Beulah Rd @ Church St	14 - Follin Ln @ Echols St	15 - Maple Ave @ Vienna Plaza HAWK Signal	16 - Maple Ave @ James Madison HAWK Signal	17 - Electric Ave @ NFCU Drwy	Total Quantity	Total Cost ($)
Vehicular Signal Heads																				
Traf. Sig. Head Sec 12" HVS Backplate - EA	$300																		0	$0
Hanger Assembly SM-3, One-Way - EA	$400																		0	$0
Retrofit 12" Traf. Sig. Head - EA	$125			3															3	$375
Backplate Modifications - EA	$300																		0	$0
Pedestrian Items																				
Countdown Pedestrian Signal Head (SP-8) - EA	$700																		0	$0
Accessible Pedestrian Signals (APS) Push Buttons - EA	$1,250.00																	6	6	$7,500
Sign Panel - SF	$37.00																		0	$0
CG-12 Detectable Warning Surface - SY	$350.00																		0	$0
Pedestrian Actuation (PA-2) - EA	$250.00																		0	$0
Pedestrian Actuation (PA-3) - EA	$700.00																		0	$0
Pedestrian Actuation (PA-4) - EA	$1,000.00																		0	$0
Hanger Assembly SMB-3, One Way - EA	$200.00																		0	$0
Hanger Assembly SMB-3, Two Way - EA	$400.00																		0	$0
ADA Curb Ramp - EA	$5,500.00																		0	$0
Traffic Signal Equipment Cabinet																				
McCain 352i ATC Cabinet (On Existing Foundation) - EA	$20,000.00																		0	$0
McCain 352i ATC Cabinet (On New CF-3 Foundation) - EA	$22,500.00																		0	$0
McCain 356i ATC Cabinet - EA	$19,000.00																		0	$0
Controller Unit Only																				
Reinstall Existing McCain ATC Controller - EA	$2,500.00																		0	$0
McCain ATC eX2 Controller - EA	$5,000.00																		0	$0
Cabinet Components																				
Uninterruptible Power Supply Type 2 (Tesco) - EA	$3,750.00																		0	$0
Uninterruptible Power Supply Battery Pack (Tesco) - EA	$450.00																		0	$0
Uninterruptible Power Supply Cabinet Attached (Tesco) - EA	$3,100.00																		0	$0
Managed field Ethernet Switch Gbps - EA	$3,000.00																	1	1	$3,000
Electronic Security Lock - EA	$500.00	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	15	$7,500
Signing/Pavement Markings																				
Type B Class I Pave. Line Marking 24" - LF	$8.00																		0	$0
Type B Class I Pave. Line Marking 4" - LF	$1.00																		0	$0
Pvmt Symb Mrkg Sgl Turn Arrow Ty B, Cl I - EA	$250.00																		0	$0
Double Turn Arrow Thru/LT or RT Type B, Cl I - EA	$300.00																		0	$0
Sign Panel - SF	$37.00																		0	$0
Blank-Out Sign Panel - EA	$5,000.00																		0	$0
Mast Arms																				
Repaint Existing Mast Arms - EA	$3,500.00						2												2	$7,000
Signal Mast Arm Pole MP-3, Type A - EA	$9,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type B1 - EA	$10,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type B2 - EA	$12,500.00																		0	$0
Signal Mast Arm Pole MP-3, Type C - EA	$11,000.00																		0	$0
Mast Arm 30' - EA	$2,750.00																		0	$0
Mast Arm 40' - EA	$3,250.00																		0	$0
Mast Arm 49' - EA	$4,000.00																		0	$0
Mast Arm 60' - EA	$6,000.00																		0	$0
Mast Arm 65' - EA	$6,500.00																		0	$0
Mast Arm 70' - EA	$7,750.00																		0	$0
Mast Arm 75' Case 1 Loading - EA	$8,250.00																		0	$0
Mast Arm 75' Case 2 Loading - EA	$9,250.00																		0	$0
Test Bore - EA	$1,900.00																		0	$0
Concrete Foundation Signal Pole PF-8 - CY	$1,150.00																		0	$0
Pedestal Pole-PF-2 12' - EA	$750.00																		0	$0
Conc. Foundation PF-2 - EA	$1,100.00																		0	$0
Electrical Service																				
Electrical Service SE-3 Type A - EA	$2,500.00			1			1		1										3	$7,500
Electrical Service SE-4 Type A - EA	$2,500.00																		0	$0
Miscellaneous																				
Video Detection Camera (Autoscope Vision) - EA	$4,000.00																	4	4	$16,000
Video Detection System, (4 Video Inputs) (Autoscope Vision) - EA	$12,000.00																	1	1	$12,000
Single-Mode Fiber Optic Cable 24 Strand - LF	$7.00																		0	$0
Optical/GPS EVP Detection System 2-way - EA	$7,500.00						1												1	$7,500
Optical/GPS EVP Detection System 3-way - EA	$8,500.00									1	1	1							3	$25,500
Optical/GPS EVP Detection System 4-way - EA	$10,000.00	1	1	1	1	1		1	1				1					1	9	$90,000
CCTV Camera Digital - EA	$5,500.00																		0	$0
Digital Video Encoder - EA	$2,500.00																		0	$0
Reprogram Controller - LS	$750.00																		0	$0
Junction Box, JB-S1 - EA	$1,250.00																		0	$0
Junction Box, JB-S2 - EA	$1,150.00																		0	$0
Junction Box, JB-S3 - EA	$1,400.00																		0	$0
5.8 GHZ Wireless Broadband Radio - EA	$4,000.00																		0	$0

Total Signal Equipment Cost ($)		$10,500	$10,500	$13,375	$10,500	$10,500	$17,500	$10,500	$13,000	$9,000	$9,000	$9,000	$10,500	$0	$0	$500	$500	$49,000		$183,875
McCain Transparity TMS Software and Setup - Lump Sum ($)		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		$0
MOT, Mobilization, Equipment Package, and Schedule	**15%**	$1,575	$1,575	$2,006	$1,575	$1,575	$2,625	$1,575	$1,950	$1,350	$1,350	$1,350	$1,575	$0	$0	$75	$75	$7,350		$27,581
SUBTOTAL - CONSTRUCTION		$12,075	$12,075	$15,381	$12,075	$12,075	$20,125	$12,075	$14,950	$10,350	$10,350	$10,350	$12,075	$0	$0	$575	$575	$56,350		$211,456
Contingency ($)	**25%**	$3,019	$3,019	$3,845	$3,019	$3,019	$5,031	$3,019	$3,738	$2,588	$2,588	$2,588	$3,019	$0	$0	$144	$144	$14,088		$52,864
TOTAL - CONSTRUCTION BUDGET		$15,094	$15,094	$19,227	$15,094	$15,094	$25,156	$15,094	$18,688	$12,938	$12,938	$12,938	$15,094	$280,000	$288,460	$719	$719	$70,438		$832,780
Design ($)	**15%**	$2,264	$2,264	$2,884	$2,264	$2,264	$3,773	$2,264	$2,803	$1,941	$1,941	$1,941	$2,264	$42,000	$43,270	$108	$108	$10,566		$124,918
Construction Management ($)	**15%**	$2,264	$2,264	$2,884	$2,264	$2,264	$3,773	$2,264	$2,803	$1,941	$1,941	$1,941	$2,264	$42,000	$43,270	$108	$108	$10,566		$124,918
Grand Total ($)		**$19,622**	**$19,622**	**$24,995**	**$19,622**	**$19,622**	**$32,703**	**$19,622**	**$24,294**	**$16,819**	**$16,819**	**$16,819**	**$19,622**	**$364,000**	**$375,000**	**$934**	**$934**	**$91,569**		**$1,082,616**

Whitman, Requardt & Associates, LLP
Engineers · Architects · Environmental Planners Est. 1915