

### LIST OF MAJOR EQUIPMENT

EQUIPMENT ITEMS 678.15 - TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION(VT ROUTE 15 & VT 289 WESTBOUND RAMPS)	QUANTITY	REMARKS	PROCUREMENT
NEMA P44 BASE-MOUNTED CONTROLLER CABINET WITH 15-INCH EXTENDED BASE ON AN EXISTING CONCRETE FOUNDATION INCLUDING TRAFFIC SIGNAL CONTROLLER (NEMA TS2), BIU, SMART MALFUNCTIONING MONITORING UNIT (MMU), CONTROLLER IDENTIFICATION PLAQUE, AND GPS CLOCK	1	FLAT BLACK WITH ANCILLARY EQUIPMENT, FACING AWAY FROM TRAFFIC. CONTROLLER SHALL BE ECONOLITE COBALT. MMU SHALL BE ECONOLITE MMU2-16LE SMARTMONITOR. BIU SHALL BE ECONOLITE BIU-64.	TO BE PROVIDED BY AGENCY, INSTALLED BY CONTRACTOR
NEW MASTER CONTROLLER	1	ECONOLITE ASC/2M-1000	
STOP BAR DETECTOR ASSEMBLY (FLAT BLACK)	3	ECONOLITE AUTOSCOPE ENCORE	
ADVANCED DETECTOR ASSEMBLY	2	WAVETRONIX SMARTSENSOR ADVANCE	
DETECTION PROCESSOR (CARDS)	1	ECONOLITE AUTOSCOPE TIP	
DETECTION PROCESSOR (CARDS)	1	ECONOLITE AUTOSCOPE TAP	
DETECTION PROCESSOR (CARDS)	1	WAVETRONIX CLICK 650	
DETECTION CABINET RACK	2		
DETECTOR BRACKET FOR MAST ARM OR POLE	5	FLAT BLACK	
NEW 12-INCH LED SIGNAL HEADS (ONE-WAY 3-SECTION, VISORS, DISCONNECT HANGERS, 5 INCH LOUVERED BACKPLATES WITH 2 INCH RETRO-REFLECTIVE BORDER AND MOUNTING HARDWARE)	6	FLAT BLACK	
NEW 12-INCH LED SIGNAL HEADS (ONE-WAY 4-SECTION, VISORS, DISCONNECT HANGERS, 5 INCH LOUVERED BACKPLATES WITH 2 INCH RETRO-REFLECTIVE BORDER AND MOUNTING HARDWARE)	3	FLAT BLACK	
SIGNAL HEAD BRACKETS AND ANCILLARY EQUIPMENT	9	FLAT BLACK	
OPTICAL PREEMPTION DETECTORS (FLAT BLACK)	2	TOMAR DETOC OR OPTICOM INFRARED	
OPTICAL PREEMPTION SIGNAL PROCESS CARD & CAGE	2	TOMAR OSPOCx OR OPTICOM INFRARED	
PREEMPTION AC STROBE - RED	2		
STEEL MAST ARM SIGNAL POLE (FLAT BLACK)	2		
STEEL MAST ARMS (FLAT BLACK)	3	MA-4=50', MA-5A & MA-5B=30'	
POWER STANCHION WITH DISCONNECTS	1		
HARDENED NETWORK SWITCH	1	CISCO IE 2000	TO BE PROVIDED BY OTHERS, INSTALLED BY CONTRACTOR
HARDENED NETWORK ROUTER	1	CISCO 819	
DIRECTIONAL WIRELESS INTERCONNECT ANTENNA	2		
WIRELESS INTERCONNECT PROCESSOR CARD	1		

NOTE: THE NETWORK SWITCH, WIRELESS ANTENNA, AND PROCESSOR CARD ARE FOR INFORMATION PURPOSES REGARDING THE INSTALLATION AND CONFIGURATION OF THE CABINET. THESE ITEMS WILL BE PURCHASED AND INSTALLED UNDER A SEPARATE CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THERE IS ADEQUATE ROOM FOR THESE ITEMS INSIDE THE CABINET.

CONDUIT SCHEDULE	WIRED CONDUIT		ELECTRICAL CONDUIT		DESCRIPTION
	2"	4"	2"	4"	
POWER TO STANCHION	-20'	28.84'			SERVICE
POWER TO CONTROLLER			-58'	39.59'	COMMUNICATION
STANCHION TO CONTROLLER	-54'	23.34'			POWER
CONTROLLER TO PB-13	-46'	31.33'			SIGNAL/LIGHTING
CONTROLLER TO PB-13	-46'	31.33'			DETECTION
CONTROLLER TO PB-13			-46'	31.34'	FUTURE USE
CONTROLLER TO MAP-4	-29'	52.34'			SIGNAL/LIGHTING
CONTROLLER TO MAP-4	-29'	52.34'			DETECTION
CONTROLLER TO MAP-4			-29'	52.34'	FUTURE USE
PB-13 TO PB-14	-409'	125.01'			SIGNAL/LIGHTING
PB-13 TO PB-14	-409'	125.01'			DETECTION
PB-13 TO PB-14			-409'	83.34'	FUTURE USE
<del>PB-14 TO PB-15</del>	<del>79'</del>	<del></del>	<del></del>	<del></del>	<del>SIGNAL/LIGHTING</del>
<del>PB-14 TO PB-15</del>	<del>79'</del>	<del></del>	<del></del>	<del></del>	<del>DETECTION</del>
<del>PB-14 TO PB-15</del>	<del></del>	<del></del>	<del>79'</del>	<del></del>	<del>FUTURE USE</del>
PB-15 TO MAP-5	-36'	40.34'			SIGNAL/LIGHTING
PB-15 TO MAP-5	-36'	40.34'			DETECTION
PB-15 TO MAP-5			-36'	40.34'	FUTURE USE
SUBTOTAL	609'		327'		
ROUNDING	6'		0'		
TOTALS	615'		335'		
JB-14 TO JB-14A	222.35'		121.34'		
JB-14 TO JB-14A	222.35'				
JB-15 TO JB-14A	120.51'		80.34'		
JB-15 TO JB-14A	120.51'				
JB-14A TO OLD JB	6.67'				
JB-14A TO OLD JB	6.67'				
JB-13 TO STANCHION	26.66'				
JB-13 TO STANCHION	26.66'				
JB-13 TO OLD JB	14.17'				
JB-13 TO OLD JB	14.17'				
TOTALS	1330.94'		448.63'		

### PREEMPTION TIMINGS

	PREEMPTOR			
	1	2	3	4
DIRECTION	EB	WB		
HOLD PHASE	2 & 5	6		
DET LOCK	YES	YES		
DURATION TIME	18.5	18.5		
MIN GREEN	8	8		
HOLD GREEN	12	12		
HOLD YELLOW	4.5	4.5		
HOLD RED	2	2		

### ACTION PLAN

PLAN NO.	PATTERN	FLASH	REFERENCE
1	1	NO	MAX 1
2	2	NO	MAX 2
3	3	NO	MAX 3
4	254 - FREE	NO	FREE

### WEEKDAY PEAKS

	HOURS			
	MAX 2 - AM PEAK	6:00 AM	TO	9:00 AM
MAX 1 - OFF PEAK		9:00 AM	TO	3:00 PM
MAX 3 - PM PEAK		7:00 PM	TO	10:00 PM
FREE		3:00 PM	TO	7:00 PM
		10:00 PM	TO	6:00 AM

### DAY PLAN

PLAN NO.	EVENT	ACTION PLAN	START TIME
1	1	254	12:00 AM
1	2	2	6:00 AM
1	3	1	9:00 AM
1	4	3	3:00 PM
1	5	1	7:00 PM
1	6	254	10:00 PM
2	1	254	12:00 AM
2	2	1	6:00 AM
2	3	254	8:00 PM

### SCHEDULE PLAN

SCHEDULE NO.	DAY PLAN	DAYS	DATES
1	1	MON, TUE, WED, THU, FRI	1-31
1	2	SAT, SUN	1-31

### COORDINATION PLAN

PATTERN	COS	CYCLE	OFFSET	SPLIT PHASES / SPLIT TIMES							
				1	2	3	4	5	6	7	8
1	111	92	0		78			13	65		14
2	211	98	0		86			12	74		12
3	311	110	0		99			11.5	87.5		11

### CONTROLLER TIMING CHART

PHASE	1	2	3	4	5	6	7	8
IN USE		X			X	X		X
TRAFFIC MOVEMENT		→			↓	←		← →
MIN. GREEN		8			5	8		5
MAX 1 - GREEN (OFF)		71.5			6.5	58.5		8
MAX 1 - GREEN (AM)		79.5			5.5	67.5		6
MAX 3 - GREEN (PM)		92.5			5.5	81		5
YELLOW CLEARANCE		4.5			4.0	4.5		4.0
ALL RED CLEARANCE		2.0			2.0	2.0		2.0
VEHICLE EXTENSION		2.0			2.0	2.0		2.0
DELAY GREEN		0.0			0.0	0.0		0.0
WALK								
PEDESTRIAN CLEAR								
RECALL MODE		SOFT				SOFT		
COORDINATED		X				X		

ELECTRICAL WIRING	LENGTH	DESCRIPTION
MAP-4 WIRING		
POLE BASE TO SIGNAL HEAD	67'	PHASE 2
POLE BASE TO SIGNAL HEAD	67'	PHASE 2
POLE BASE TO SIGNAL HEAD	67'	PHASE 5
POLE BASE TO SIGNAL HEAD	67'	PHASE 8
POLE BASE TO SIGNAL HEAD	67'	PHASE 8
POLE BASE TO DETECTION	67'	STOP BAR
POLE BASE TO DETECTION	67'	ADVANCE
POLE BASE TO PREEMPTION	67'	DETECTOR
POLE BASE TO STROBE LIGHT	67'	PREEMPTION
MA-5A WIRING		
POLE BASE TO SIGNAL HEAD	48'	PHASE 6
POLE BASE TO SIGNAL HEAD	48'	PHASE 6
POLE BASE TO DETECTION	48'	STOP BAR
POLE BASE TO DETECTION	48'	ADVANCE
POLE BASE TO PREEMPTION	48'	DETECTOR
POLE BASE TO STROBE LIGHT	48'	PREEMPTION
MA-5B WIRING		
POLE BASE TO SIGNAL HEAD	48'	PHASE 8
POLE BASE TO SIGNAL HEAD	48'	PHASE 8
POLE BASE TO DETECTION	48'	STOP BAR
SUBTOTAL	1035'	
ROUNDING	65'	
TOTALS	1100'	

ELECTRICAL WIRING IS SHOWN FOR ESTIMATING PURPOSES ONLY. PAYMENT FOR THIS ITEM WILL BE INCIDENTAL TO PAY ITEM 678.15 - TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION (VT ROUTE 15 & VT 289 WESTBOUND RAMPS).

REVISION	DATE	DESCRIPTION	BY
1	5/10/17	CHART REVISED	KAR

### MS 554: VT ROUTE 15 & VT 289 WESTBOUND RAMPS

PROJECT NAME:	WILLISTON-ESSEX
PROJECT NUMBER:	STPG SGNL(46)
FILE NAME: t15t017sig.dgn	PLOT DATE: 5/10/2017
PROJECT LEADER: M. LACROIX	DRAWN BY: K. RECORD
DESIGNED BY: K. RECORD	CHECKED BY: M. LACROIX
TRAFFIC SIGNAL LAYOUT SHEET 9B	SHEET 36 OF 66