

LIST OF MAJOR EQUIPMENT

| EQUIPMENT ITEMS 678.15 - TRAFFIC CONTROL SIGNAL SYSTEM, INTERSECTION(VT ROUTE 15 & OLD STAGE ROAD) | QUANTITY | REMARKS | PROCUREMENT | |
|---|----------|--|---|--|
| NEMA P44 BASE-MOUNTED CONTROLLER CABINET WITH 15-INCH EXTENDED BASE ON A NEW 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 | |
| STOP BAR DETECTOR ASSEMBLY (FLAT BLACK) | 4 | 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 | 6 | 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) | 7 | 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) | 2 | FLAT BLACK | | |
| NEW 12-INCH LED SIGNAL HEADS (ONE-WAY 5-SECTION, VISORS, DISCONNECT HANGERS, 5 INCH LOUVERED BACKPLATES WITH 2 INCH RETRO-REFLECTIVE BORDER AND MOUNTING HARDWARE) | 2 | FLAT BLACK | | |
| SIGNAL HEAD BRACKETS AND ANCILLARY EQUIPMENT | 11 | FLAT BLACK | TO BE PROVIDED AND INSTALLED BY CONTRACTOR | |
| 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 | | | |
| ACCESSIBLE PEDESTRIAN PUSH BUTTON ASSEMBLIES POLE MOUNTED WITH LOCATOR TONE, R10-3e SIGN | 8 | FLAT BLACK | | |
| ACCESSIBLE PEDESTRIAN SIGNAL HEADS COUNTDOWN STYLE, FLAT BLACK HOUSING | 8 | FLAT BLACK | | |
| POWER STANCHION WITH DISCONNECTS | 1 | | | |
| NEW LED BLANK OUT SIGN | 4 | | | |
| HARDENED NETWORK SWITCH | 1 | CISCO IE 2000 | | TO BE PROVIDED AND INSTALLED BY OTHERS |
| 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.

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 | 14 | 12 | 55 | | 25 | 16 | 51 | 25 | |
| 2 | 211 | 98 | 4 | 11.5 | 61.5 | | 25 | 16 | 57 | 25 | |
| 3 | 311 | 110 | 38 | 12 | 73 | | 25 | 22 | 63 | 25 | |

CONTROLLER TIMING CHART

| PHASE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---------------------|-----|------|---|-----|------|------|---|-----|
| IN USE | X | X | | X | X | X | | X |
| TRAFFIC MOVEMENT | ↑ | → | | ↓ | ↓ | ← | | ↑ |
| MIN. GREEN | 5 | 8 | | 5 | 5 | 8 | | 5 |
| MAX 1 - GREEN (OFF) | 5.5 | 48.5 | | 19 | 9.5 | 44.5 | | 19 |
| MAX 2 - GREEN (AM) | 5 | 55 | | 19 | 9.5 | 50.5 | | 19 |
| MAX 3 - GREEN (PM) | 5.5 | 66.5 | | 19 | 15.5 | 56.5 | | 19 |
| YELLOW CLEARANCE | 4.5 | 4.5 | | 4.0 | 4.5 | 4.5 | | 4.0 |
| ALL RED CLEARANCE | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | | 2.0 |
| VEHICLE EXTENSION | 2.0 | 2.0 | | 2.0 | 2.0 | 2.0 | | 2.0 |
| DELAY GREEN | 0.0 | 5.0 | | 5.0 | 0.0 | 5.0 | | 5.0 |
| WALK | | 7 | | 7 | | 7 | | 7 |
| PEDESTRIAN CLEAR | | 19 | | 17 | | 19 | | 17 |
| RECALL MODE | | SOFT | | | | SOFT | | |
| COORDINATED | | X | | | | X | | |

PREEMPTION TIMINGS

| DIRECTION | PREEMPTOR | | | |
|---------------|-----------|-------|---|---|
| | 1 | 2 | 3 | 4 |
| HOLD PHASE | 2 & 5 | 1 & 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 |

CONDUIT SCHEDULE

| | WIRED CONDUIT | | ELECTRICAL CONDUIT | | DESCRIPTION |
|------------------------------|---------------|------|--------------------|------|-----------------|
| | 2" | 4" | 2" | 4" | |
| STANCHION TO CONTROLLER | -24' | 21' | | 21' | POWER |
| CONTROLLER TO EXISTING MAP-1 | -34' | 20' | | | SIGNAL/LIGHTING |
| CONTROLLER TO EXISTING MAP-1 | -34' | 20' | | | DETECTION |
| CONTROLLER TO EXISTING MAP-1 | | | | -34' | FUTURE USE |
| CONTROLLER TO PB-24-JB-21 | -33' | 30' | | | SIGNAL/LIGHTING |
| CONTROLLER TO PB-24-JB-21 | -33' | 30' | | | DETECTION |
| CONTROLLER TO PB-24-JB-21 | | | | -33' | FUTURE USE |
| PB-21 TO PB-22 | 86' | | | | SIGNAL/LIGHTING |
| PB-21 TO PB-22 | 86' | | | | DETECTION |
| PB-21 TO PB-22 | | | | 86' | FUTURE USE |
| PB-22 TO EXISTING MAP-2 | 14' | | | | SIGNAL/LIGHTING |
| PB-22 TO EXISTING MAP-2 | 14' | | | | DETECTION |
| PB-22 TO EXISTING MAP-2 | | | | 14' | FUTURE USE |
| PB-22 TO PB-23 | 30' | | | | SIGNAL/LIGHTING |
| PB-22 TO PB-23 | 30' | | | | DETECTION |
| PB-22 TO PB-23 | | | | 30' | FUTURE USE |
| PB-23 TO PB-24 | 62' | | | | SIGNAL/LIGHTING |
| PB-23 TO PB-24 | 62' | | | | DETECTION |
| PB-23 TO PB-24 | | | | 62' | FUTURE USE |
| PB-24 TO EXISTING MAP-3 | 13' | | | | SIGNAL/LIGHTING |
| PB-24 TO EXISTING MAP-3 | 13' | | | | DETECTION |
| PB-24 TO EXISTING MAP-3 | | | | 13' | FUTURE USE |
| CONTROLLER TO PB-25-JB-25 | -36' | 30' | | | SIGNAL/LIGHTING |
| CONTROLLER TO PB-25-JB-25 | -36' | 30' | | | DETECTION |
| CONTROLLER TO PB-25-JB-25 | | | | -36' | FUTURE USE |
| PB-25 TO PB-26 | 69' | | | | SIGNAL/LIGHTING |
| PB-25 TO PB-26 | 69' | | | | DETECTION |
| PB-25 TO PB-26 | | | | 69' | FUTURE USE |
| PB-26 TO EXISTING MAP-4 | 19' | | | | SIGNAL/LIGHTING |
| PB-26 TO EXISTING MAP-4 | 19' | | | | DETECTION |
| PB-26 TO EXISTING MAP-4 | | | | 19' | FUTURE USE |
| SUBTOTAL | 816' | 181' | | 396' | 127' |
| ROUNDING | -14' | | | -4' | |
| TOTALS | 830' | 181' | | 400' | 127' |

ELECTRICAL WIRING

| | LENGTH | DESCRIPTION |
|--------------------------------|--------|-----------------------|
| EXISTING MAP-1 WIRING | | |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 1 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 6 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 6 |
| POLE BASE TO DETECTION | 60' | STOP BAR |
| POLE BASE TO DETECTION | 60' | ADVANCE |
| POLE BASE TO LED SIGN | 60' | NO RIGHT TURN ON RED |
| POLE BASE TO PREEMPTION | 60' | DETECTOR |
| POLE BASE TO STROBE LIGHT | 60' | PREEMPTION |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING VT 15 |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING VT 15 |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING OLD STAGE RD |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING OLD STAGE RD |
| EXISTING MAP-2 WIRING | | |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 8 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 8 |
| POLE BASE TO LED SIGN | 60' | NO RIGHT TURN ON RED |
| POLE BASE TO DETECTION | 60' | STOP BAR |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING OLD STAGE RD |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING OLD STAGE RD |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING VT 15 |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING VT 15 |
| EXISTING MAP-3 WIRING | | |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 2 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 2 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 6 |
| POLE BASE TO DETECTION | 60' | STOP BAR |
| POLE BASE TO DETECTION | 60' | ADVANCE |
| POLE BASE TO LED SIGN | 60' | NO RIGHT TURN ON RED |
| POLE BASE TO PREEMPTION | 60' | DETECTOR |
| POLE BASE TO STROBE LIGHT | 60' | PREEMPTION |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING VT 15 |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING VT 15 |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING COMMONWEALTH |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING COMMONWEALTH |
| EXISTING MAP-4 WIRING | | |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 4 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 4 |
| POLE BASE TO SIGNAL HEAD | 60' | PHASE 4 |
| POLE BASE TO DETECTION | 60' | STOP BAR |
| POLE BASE TO LED SIGN | 60' | NO RIGHT TURN ON RED |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING COMMONWEALTH |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING COMMONWEALTH |
| POLE BASE TO PEDESTRIAN HEAD | 10' | CROSSING VT 15 |
| POLE BASE TO PEDESTRIAN BUTTON | 10' | CROSSING VT 15 |
| SUBTOTAL | 1660' | |
| ROUNDING | 40' | |
| TOTALS | 1700' | |

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 & OLD STAGE ROAD).

| REVISION | DATE | DESCRIPTION | BY |
|----------|---------|---------------|-----|
| △ | 5/10/17 | CHART REVISED | KAR |

MS 559: VT ROUTE 15 & OLD STAGE ROAD

| | |
|---------------------------------|-----------------|
| PROJECT NAME: | WILLISTON-ESSEX |
| PROJECT NUMBER: | STPG SGNL(46) |
| FILE NAME: | t15i017sig.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 11B | SHEET 40 OF 66 |