

## TRAFFIC SIGNAL SYSTEM NOTES

### A. NEW TRAFFIC SIGNAL EQUIPMENT

- ALL SIGNAL HEAD HOUSING SHALL BE 12" POLYCARBONATE. THE SIGNAL HEAD EQUIPMENT SHALL BE FLAT BLACK AND INCLUDE FLAT BLACK VISORS.
- ALL SIGNAL HEADS SHALL HAVE FLAT BLACK LOUVERED BACKPLATES WITH A 2" RETROREFLECTIVE TAPE BORDER.
- TRAFFIC SIGNAL CONTROLLER SHALL BE AN ECONOLITE COBALT (NEMA TS2, TYPE 2) IN A NEMA P44 TRAFFIC CONTROL CABINET WITH A 15-INCH BASE EXTENSION INSTALLED AT THE LOCATION SHOWN ON THE PLANS. THE TRAFFIC CONTROL CABINET SHALL BE ORIENTED SUCH THAT THE DOOR DOES NOT FACE THE ROADWAY. THE CABINET AND BASE EXTENSIONS SHALL BE FLAT BLACK.
- ALL SIGNAL HEADS SHALL HAVE RED, YELLOW AND GREEN L.E.D. SIGNALS WITH A VISIBLE BEAM SPREAD OF 80 DEGREES OFF AXIS.
- ALL SIGNAL HEADS SHALL BE MOUNTED ON THE BRACKET SUCH THAT THE MIDDLE ONE-THIRD OF THE SIGNAL HEAD ALIGNS WITH THE MAST ARM.
- RELATED TRAFFIC SIGNAL EQUIPMENT SUCH AS THE BUS INTERFACE UNIT (BIU) AND THE MALFUNCTION MANAGEMENT UNIT (MMU) SHALL BE ECONOLITE BRAND.
- ALL SIGNAL EQUIPMENT AND SIGNS MOUNTED ON CANTILEVERED MAST ARMS SHALL HAVE SAFETY CABLES.
- A DISCONNECT BREAKER FOR EACH CIRCUIT SHALL BE INSTALLED IN A RAINPROOF (NEMA 3R), LOCKED CABINET ON A STANCHION NEXT TO OR BELOW THE METER SOCKET. IF STREET LIGHTING IS PRESENT, THE TRAFFIC SIGNAL CIRCUITS MUST BE SEPARATE FROM THE STREET LIGHTING CIRCUITS.

### B. TRAFFIC SIGNAL OPERATIONS

- SWITCH-OVER TO THE INSTALLED SIGNAL SYSTEM SHALL NOT OCCUR DURING PEAK TRAFFIC PERIODS. UNIFORMED TRAFFIC OFFICERS SHALL CONTROL TRAFFIC DURING THE SWITCH-OVER.
- ALL SIGNALS SHALL DWELL ON ROUTE 2 UNLESS OTHERWISE NOTED.
- THE ROUTE 2 THRU PHASE SHALL BE USED FOR THE START-UP PHASE FOLLOWING FLASHING OPERATION.
- SIGNAL TIMINGS SHOWN ON THE PLANS MAY REQUIRE FINE-TUNING IN THE FIELD BASED ON TRAFFIC OBSERVATIONS AND/OR ADDITIONAL FIELD STUDIES.

### C. JUNCTION BOXES

- HEAVY DUTY JUNCTION BOXES ARE DETAILED ON SHEET TSP-3. DIMENSIONS MAY BE INCREASED IF REQUIRED BY THE ELECTRICAL CODE.
- THE LOGO ON JUNCTION BOX COVERS SHALL BE "TRAFFIC SIGNAL."
- ALL JUNCTION BOXES SHALL BE INSTALLED IN ACCORDANCE WITH VTRANS' "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2011, SECTION 678.

### D. TRAFFIC SIGNAL CONDUIT

- ALL TRAFFIC SIGNAL CONDUIT SHALL BE SCHEDULE 80 PVC.
- CONDUIT PLACED BELOW THE ROADWAY SHALL BE PLACED IN THE EXISTING SLEEVE, SIZE SHOWN ON THE PLANS.
- ALL UNUSED CONDUIT SHALL BE FILLED WITH STEEL WOOL PRIOR TO BEING CAPPED.
- ALL TRAFFIC SIGNAL CONDUIT WORK SHALL BE PERFORMED IN ACCORDANCE WITH VTRANS' "STANDARD SPECIFICATIONS FOR CONSTRUCTION", DATED 2011, SECTION 678.

### E. VEHICLE DETECTION

- ALL VEHICLE DETECTORS SHALL HAVE FLAT BLACK HOUSINGS.
- STOP BAR AND ADVANCED VEHICLE DETECTOR LOCATIONS SHALL BE DETERMINED BY THE CONTRACTOR IN ACCORDANCE WITH THE MANUFACTURER'S GUIDANCE FOR THE TYPE OF DETECTOR SUPPLIED. THE CONTRACTOR SHALL SUBMIT PROPOSED MOUNTING LOCATIONS AND DOCUMENTATION OF CONFORMANCE WITH THE MANUFACTURER'S GUIDANCE TO THE ENGINEER.
- ALL VEHICLE DETECTORS SHALL BE PLACED SUCH THAT OCCLUSION IS MINIMIZED AND PHASING IS NOT NEGATIVELY AFFECTED.
- STOP BAR VEHICLE DETECTION AREAS SHALL EXTEND FIVE FEET PAST THE FINAL, PERMANENT STOP BAR.
- ADVANCED VEHICLE DETECTION ZONES SHALL BE A MINIMUM OF 350 TO 400 FEET UPSTREAM OF THE FINAL, PERMANENT STOP BAR.
- IF DETECTION BY THE ADVANCED VEHICLE DETECTION SYSTEM IS SPECIFIED IN THE PLAN, IT SHALL PROVIDE DETECTION OF RANGE, SPEED AND ESTIMATED TIME OF ARRIVAL OF APPROACHING VEHICLES IN A CONTINUOUS RANGE OF 350 TO 600 FEET FROM THE FINAL LOCATION OF THE DETECTOR UNIT.
- THERE SHALL BE NO WIRING SPLICES BETWEEN THE VEHICLE DETECTORS AND THE TRAFFIC SIGNAL CONTROLLER EQUIPMENT.
- THE VEHICLE DETECTION SYSTEM SHALL BE ECONOLITE ENCORE AND WAVETRONIX MATRIX SMART SENSOR ADVANCED BRANDS.
- SEE THE PLANS OR THE SPECIAL PROVISIONS FOR A DETAILED LIST OF EQUIPMENT.

### F. MAST ARM POLE FOUNDATIONS

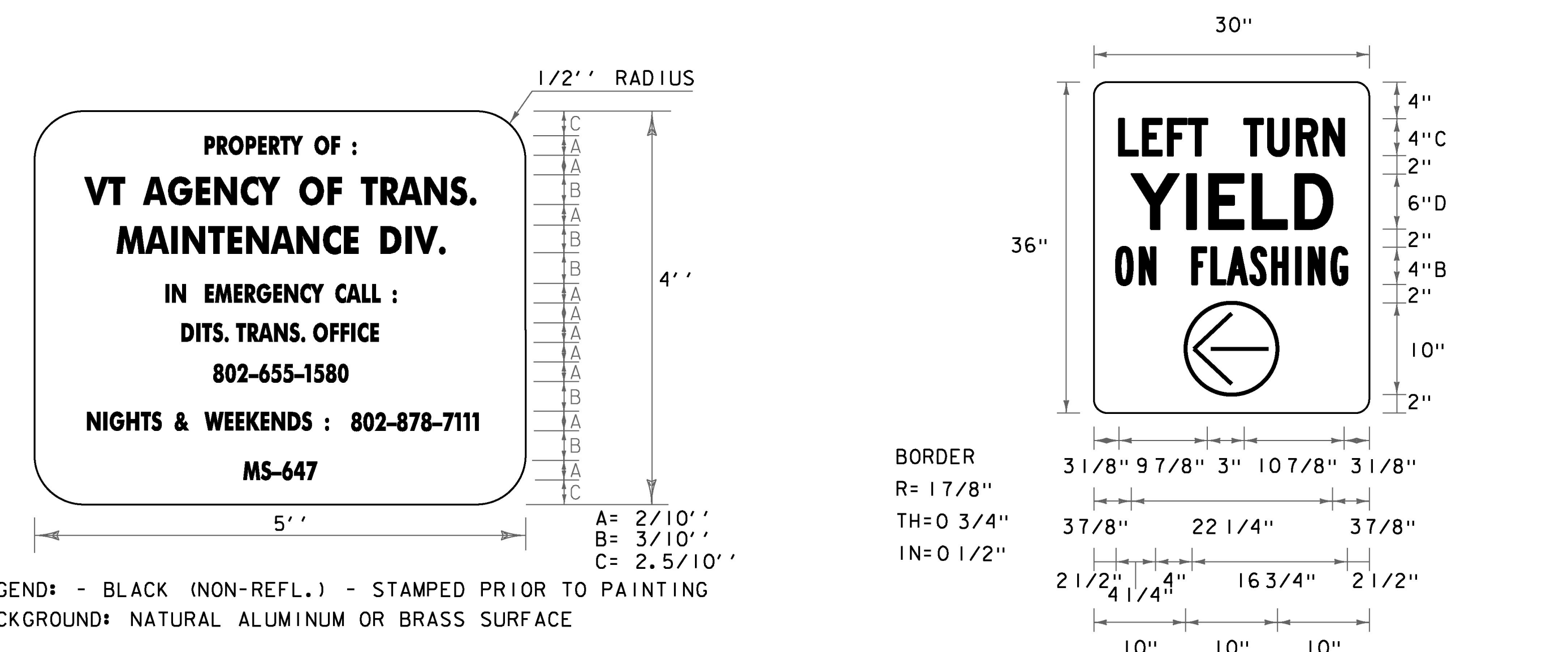
- FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH THE MRE1 10-01 GUIDELINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOUNDATION DESIGN. IN ADDITION TO FABRICATION DRAWINGS, THE BORING LOGS, DESIGN CRITERIA, AND DESIGN CALCULATIONS SHALL BE SUBMITTED AS WORKING DRAWINGS IN ACCORDANCE WITH SECTION 105.03. ADDITIONAL REQUIREMENTS CAN BE FOUND IN THE TRAFFIC SIGNAL GENERAL NOTES IN THIS PLAN SET.

### G. GENERAL

- A UNIFORMED TRAFFIC OFFICER WITH A BLUE LIGHT SHALL BE PRESENT DURING ALL LANE CLOSURES.
- THE CONTRACTOR SHALL ACQUIRE ALL THE NECESSARY PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE TRAFFIC SIGNAL EQUIPMENT. IF APPLICABLE, THE ROUTING OF POWER TO THE INTERSECTION SHALL BE SUCH THAT THE AGENCY OF TRANSPORTATION HAS FULL RESPONSIBILITY FROM THE TRANSFORMER THROUGH THE TRAFFIC SIGNAL SYSTEM. NO INTERVENING OWNERSHIP OR RESPONSIBILITY SHALL BE ALLOWED.
- ALL ELECTRICAL WIRING SHALL BE DONE BY A LICENSED ELECTRICIAN AND OVERSEEN BY A MASTER ELECTRICIAN.

## TRAFFIC CONTROL NOTES FOR TRAFFIC SIGNAL SYSTEM WORK

- THE FOLLOWING NOTES APPLY TO TRAFFIC CONTROL NECESSARY FOR THE INSTALLATION OR MODIFICATION OF THE TRAFFIC SIGNALS ONLY. FOR OVERALL PROJECT TRAFFIC CONTROL MANAGEMENT REQUIREMENTS REFER TO THE TRAFFIC CONTROL PLANS AND SECTION 641 OF THE CONTRACT SPECIAL PROVISIONS.
- DURING PEAK TRAFFIC HOURS, TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON ROUTE 2 AND VT ROUTE 14 UNLESS ALLOWED OTHERWISE BY THE ENGINEER. TWO-WAY TRAFFIC SHALL BE MAINTAINED DURING NON-WORK HOURS AT NIGHT, ON WEEKENDS AND HOLIDAYS. DURING PEAK TRAFFIC AND DURING CONSTRUCTION, AS APPROVED BY THE ENGINEER, UNIFORMED TRAFFIC OFFICERS SHALL DIRECT TRAFFIC, WHENEVER REQUIRED.
- TRAFFIC CONTROL SIGNING AND CHANNELIZING DEVICES SHALL BE IN ACCORDANCE WITH THE APPROPRIATE STANDARD DRAWINGS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- AFTER SIGNAL INSTALLATION, ALL HEADS MUST BE COVERED (TURNING SHALL NOT BE ALLOWED) UNTIL TURNED ON. THE METHOD OF COVERING SHALL BE AS FOLLOWS:
  - ALL NEW TRAFFIC AND PEDESTRIAN SIGNAL HEADS WHICH HAVE BEEN INSTALLED BUT NOT PLACED IN EITHER FLASHING OR FULL OPERATION SHALL BE COVERED. EXISTING SIGNAL HEADS WHICH ARE PLACED OUT OF SERVICE IN ORDER TO PERFORM WORK ON THE SIGNAL SYSTEM SHALL ALSO BE COVERED. EXCEPT WHEN SUCH WORK CAN BE COMPLETED IN A RELATIVELY SHORT PERIOD OF TIME (SEVERAL HOURS) AND TRAFFIC CONTROL HAS BEEN PROVIDED FOR.
  - THE SIGNAL COVERS SHALL CONSIST OF A ONE-PIECE PLASTIC BAG HAVING A MINIMUM THICKNESS OF FOUR MILLIMETERS. THE BAG SHALL BE OPAQUE. THE COVER SHALL SLIP OVER THE ENTIRE SIGNAL HEAD AND SHALL BE SECURELY TIED AT THE OPENING WITH A ROPE OF SUFFICIENT SIZE AND STRENGTH TO SECURE THE COVER. AN INTERMEDIATE ROPE OF THE SAME MATERIAL SHALL BE DRAWN AROUND THE CENTER OF THE COVER TO PREVENT EXCESS FLAPPING IN THE WIND.
  - A DRAIN HOLE SHALL BE MADE AT THE BOTTOM OF THE BAG TO ALLOW THE ESCAPE OF MOISTURE. NO TAPE OR ADHESIVE WILL BE ALLOWED TO BE ATTACHED TO ANY SURFACE OF THE SIGNAL HOUSING OR LENSES. ALL COVERS SHALL BE PLACED IN A NEAT WORKMANLIKE MANNER, ANY COVER WHICH IS TORN OR MISSING SHALL BE IMMEDIATELY REPLACED. PAYMENT FOR THE COVERS, THEIR REPLACEMENT, AND REMOVAL AND ALL INCIDENTALS FOR COMPLETION OF THE WORK SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE TRAFFIC SIGNAL.
- APPROACH CONSTRUCTION SIGNING SHALL REMAIN IN PLACE DURING THE ENTIRE CONSTRUCTION PERIOD. OTHER SIGNING SHALL BE REMOVED OR COVERED WHEN NOT APPLICABLE.
- VARIATIONS IN THE SIGNING PACKAGES MAY BE DICTATED BY UNIQUE GEOMETRY AND/OR TRAFFIC CONDITIONS AND THE TRAFFIC CONTROL PLANS.
- THE CONTRACTOR SHALL NOT WORK WITHIN THE HIGHWAY RIGHT-OF-WAY WITHOUT THE APPROPRIATE CONSTRUCTION SIGNING IN PLACE.
- AT LOCATIONS WHERE SIGNALS CURRENTLY EXIST, A WORKING SIGNAL SYSTEM SHALL BE IN PLACE AT THE END OF EACH DAY. IF THE SIGNAL SYSTEM IS NOT WORKING AT THE END OF THE DAY, THE CONTRACTOR SHALL PROVIDE UNIFORMED TRAFFIC OFFICERS TO CONTROL TRAFFIC UNTIL SUCH TIME THAT THE EXISTING OR NEW SIGNAL SYSTEM IS IN OPERATION AT NO COST TO THE STATE OF VERMONT.
- THE TYPE OF TEMPORARY TRAFFIC BARRIER USED ON THIS PROJECT SHALL COMPLY WITH NCHRP REPORT 350 TEST LEVEL THREE (TL-3). TEMPORARY TRAFFIC BARRIER MEETING THIS REQUIREMENT CAN BE FOUND ON THE FHWA WEBSITE.



LEGEND: - BLACK (NON-REFL.) - STAMPED PRIOR TO PAINTING  
 BACKGROUND: NATURAL ALUMINUM OR BRASS SURFACE

### CONTROLLER IDENTIFICATION PLAQUE NOTES:

- THE PLAQUE SHALL BE MOUNTED ON ALL NEW TRAFFIC SIGNAL CONTROLLER CABINETS. IT SHALL BE FASTENED TO THE CONTROLLER CABINET IN SUCH A MANNER AS TO BE NOT EASILY REMOVED, SUCH AS WELDED, RIVETED OR BOLTED WITH VANDAL-PROOF FASTENERS.
- THE LETTERS SHALL BE PUNCHED OR STAMPED, SUCH STAMPING SHALL PENETRATE AT LEAST 1/2 THE BASE MATERIAL THICKNESS.
- THE BASE MATERIAL FOR THE PLAQUE SHALL BE BRASS OR ALUMINUM WITH A MINIMUM THICKNESS OF 1/16".

CODE: R10-101  
 LOCATION: STA. 144+40, LT  
 COLOR: LEGEND & BORDER - BLACK (NON-REFL)  
 BACKGROUND - WHITE (REFL)  
 MATERIAL: 0.125" FLAT SHEET ALUMINUM

### CONTROLLER IDENTIFICATION PLAQUE

NOT TO SCALE



PROJECT NAME: EAST MONTPELIER	PLOT DATE: 2/17/2017
PROJECT NUMBER: BRF 037-(117)	DRAWN BY: S. NEELY
FILE NAME: 26a3_Traffic Sig Nts.dgn	CHECKED BY: K. RICHARDSON
PROJECT LEADER: T. KNIGHT	SHEET 60 OF 158
DESIGNED BY: D. DEBAIE	
TRAFFIC SIGNAL NOTES TSN 1	