

TRAFFIC SIGNAL SYSTEM NOTES

A. NEW SIGNAL EQUIPMENT

1. ALL SIGNAL HEADS SHALL BE 12" POLYCARBONATE. THE SIGNAL HEADS SHALL HAVE FLAT BLACK HOUSINGS AND VISORS.
2. ALL SIGNAL HEADS SHALL HAVE FLAT BLACK LOUVERED BACK PLATES WITH A 2" RETROREFLECTIVE TAPE BORDER.
3. THE TRAFFIC SIGNAL CONTROLLER AND RELATED EQUIPMENT SHALL BE AN ECONOLITE ASC/3-2100 (NEMA TS2) IN A NEMA P44 TRAFFIC CONTROL CABINET WITH 15-INCH BASE EXTENSION INSTALLED AT THE LOCATION SHOWN ON THE PLANS. TRAFFIC CONTROL CABINET SHALL BE ORIENTED SUCH THAT THE DOOR DOES NOT FACE THE ROADWAY.
4. ALL SIGNAL HEADS SHALL HAVE RED, YELLOW, AND GREEN L.E.D. SIGNALS WITH A VISIBLE BEAM SPREAD OF 80 DEGREES OFF AXIS.
5. ALL SIGNAL HEADS SHALL BE MOUNTED ON THE BRACKET SUCH THAT THE MIDDLE ONE-THIRD OF THE SIGNAL HEAD ALIGNS WITH THE MAST ARM.
6. ALL SIGNAL EQUIPMENT INCLUDING MAST ARMS SHALL BE PAINTED FLAT BLACK.
7. ALL SIGNAL EQUIPMENT AND MAST ARM MOUNTED SIGNS SHALL HAVE SAFETY CABLES.
8. 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.

B. SIGNAL OPERATION

1. SWITCH-OVER TO NEW SIGNAL SYSTEM SHALL NOT OCCUR DURING PEAK TRAFFIC OPERATING PERIODS. UNIFORMED TRAFFIC OFFICERS SHALL CONTROL TRAFFIC DURING SWITCH-OVER.
2. ALL SIGNALS SHALL DWELL ON MAINLINE PHASE 2 & 6 UNLESS OTHERWISE NOTED.
3. THE MAINLINE PHASE 2 & 6 THRU PHASE SHALL BE USED FOR THE START-UP PHASE FOLLOWING FLASHING OPERATION.
4. SIGNAL TIMING SHOWN ON THE PLANS MAY REQUIRE FINE-TUNING IN THE FIELD BASED ON TRAFFIC OBSERVATION AND/OR ADDITIONAL FIELD STUDIES.

C. PULLBOXES AND JUNCTION BOXES

1. PULLBOXES AND JUNCTION BOXES ARE DETAILED ON VTRANS STANDARD E-173. MINIMUM JUNCTION BOX SIZE SHALL BE 18" x 12" x 12", OR LARGER AS REQUIRED BY THE ELECTRICAL CODE.
2. THE LOGO ON PULLBOXES AND JUNCTION BOXES SHALL BE "TRAFFIC SIGNAL".
3. ALL PULLBOXES AND JUNCTION BOXES SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 678.

D. TRAFFIC SIGNAL CONDUIT

1. ALL TRAFFIC SIGNAL CONDUITS SHALL BE SCHEDULE 80 PVC.
2. WHEN CONDUIT IS PLACED BELOW THE ROADWAY OR ACROSS SIDE ROADS, IT SHALL BE PLACED IN A STEEL OR HOPE SLEEVE, SIZE AS SHOWN ON PLANS.
3. ALL CONDUIT SHALL BE FILLED WITH STEEL WOOL PRIOR TO BEING CAPPED.
4. ALL TRAFFIC SIGNAL CONDUIT WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 678.

E. VEHICLE DETECTION

1. 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 FOR APPROVAL.
2. ALL VEHICLE DETECTORS SHALL BE PLACED SUCH THAT OCCLUSION IS MINIMIZED AND PHASING IS NOT AFFECTED.
3. STOP BAR VEHICLE DETECTION AREAS SHALL EXTEND FIVE FEET PAST THE FINAL, PERMANENT STOP BAR.
4. ADVANCED VEHICLE DETECTION AREAS SHALL BE A MINIMUM OF 350 TO 400 FEET UPSTREAM OF THE FINAL, PERMANENT STOP BAR.
5. IF DILEMMA ZONE DETECTION BY ADVANCED VEHICLE DETECTION SYSTEMS IS SPECIFIED ON THE PLAN, IT SHALL PROVIDE DETECTION OF RANGE, SPEED, AND ESTIMATED TIME OF ARRIVAL OF APPROACHING VEHICLES IN A CONTINUOUS RANGE OF 200 TO 600 FEET FROM THE FINAL LOCATION OF THE DETECTOR UNIT.
6. VEHICLE DETECTION SYSTEM SHALL BE ECONOLITE ACCUSCAN BRAND, WAVETRONIX BRAND, OR SMARTMICRO TRAFFIC RADAR.
7. THERE SHALL BE NO WIRING SPLICES BETWEEN THE SIGNAL CONTROLLER EQUIPMENT AND THE VEHICLE DETECTERS.
8. SEE THE PLANS OR THE SPECIAL PROVISIONS FOR A DETAILED LIST OF EQUIPMENT.

F. MAST ARM POLE FOUNDATIONS

1. FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH VTRANS' MATERIALS & RESEARCH ENGINEERING INSTRUCTIONS GEOTECHNICAL DESIGN PROCEDURES FOR MAST ARM AND OVERHEAD SIGN SUPPORT FOUNDATIONS (MRE110-01), DATED MARCH 9, 2010, A COPY OF WHICH CAN BE FOUND ON THE AGENCY'S WEBSITE:

WWW.OUTSIDE.VERMONT.GOV/AGENCY/VTRANS/EXTERNAL/DOCS/CONSTRUCTION/03GEOTECHENG/ENGINEERING/MAST%20ARM%20AND%20OVERHEAD%20SIGN%20SUPPORT%20FOUNDATIONS%20MRE1%2010-01%20ENGINEERING.PDF

THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOUNDATION DESIGN. IN ADDITION TO FABRICATION DRAWINGS, DESIGN CRITERIA, AND DESIGN CALCULATIONS SHALL BE SUBMITTED AS WORKING DRAWINGS IN ACCORDANCE WITH SUBSECTION 105.03. BORING LOGS ARE PROVIDED IN THE PLANS FOR THE CONTRACTORS USE IN DESIGNING THE FOUNDATION. FOUNDATIONS WILL BE CONSIDERED INCIDENTAL TO ITEM 678.15 TRAFFIC SIGNAL.

G. GENERAL

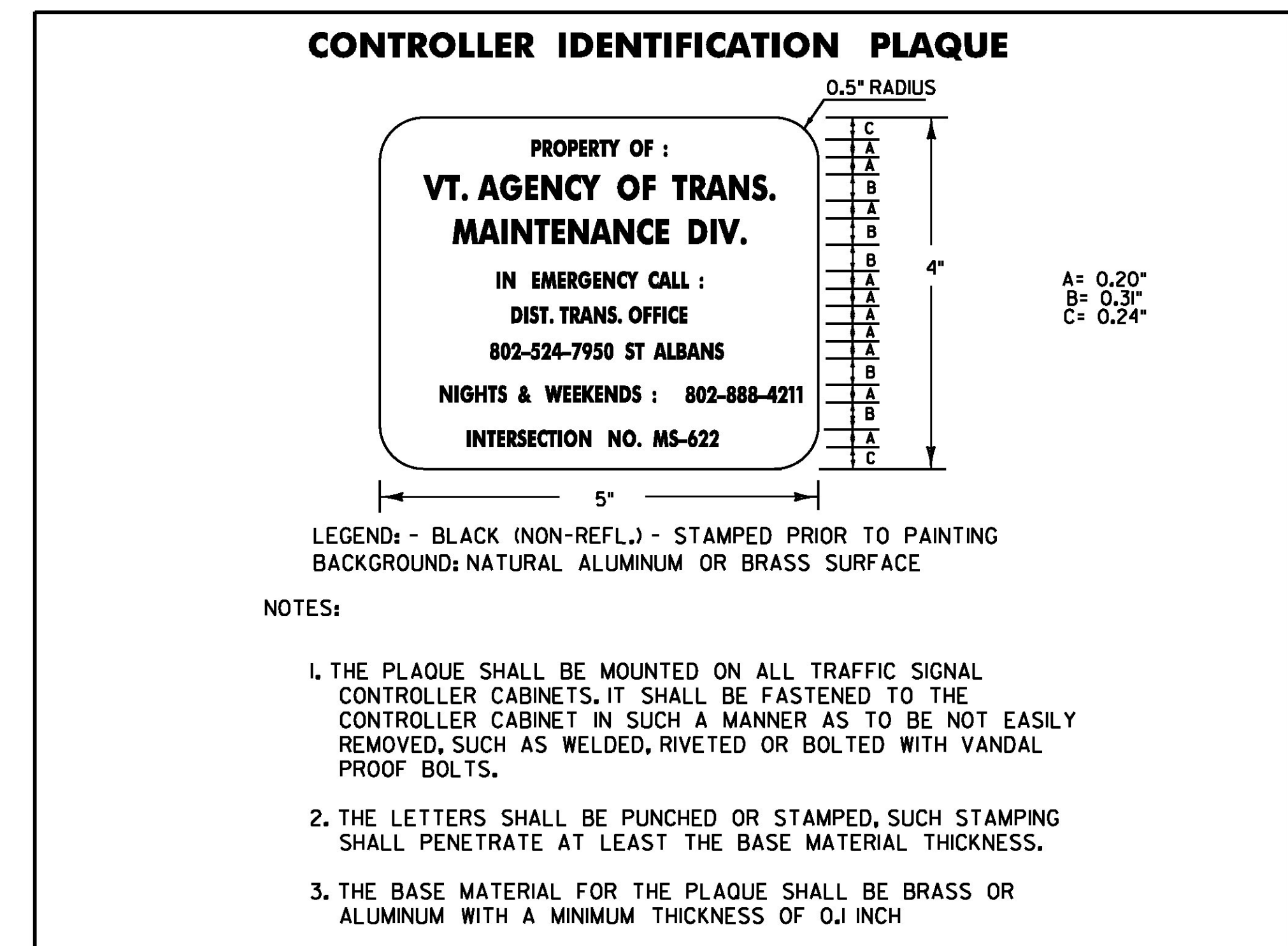
1. A UNIFORMED TRAFFIC OFFICER WITH A BLUE LIGHT SHALL BE PRESENT DURING ALL LANE CLOSURES.
2. THE CONTRACTOR SHALL ACQUIRE ALL THE NECESSARY PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE TRAFFIC SIGNAL EQUIPMENT, IF APPLICABLE. THE ROUTING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

STREET LIGHTING GENERAL NOTES

1. BRACKET ARMS SHALL BE SINGLE MEMBER TYPE AND SHALL BE DESIGNED IN ACCORDANCE WITH THE 2013 AASHTO STANDARD SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINARIES, AND TRAFFIC SIGNALS AND ITS LATEST REVISIONS.
2. STREET LIGHT ASSEMBLIES SHALL BE PAINTED FLAT BLACK AND HAVE FLAT BLACK HOUSINGS. FINISHES SHALL BE PER SECTION 679 OF THE LATEST SPECIFICATIONS FOR CONSTRUCTION.
3. LUMINAIRES SHALL BE ONE OF THE FOLLOWING OR APPROVED EQUAL:
 - A. BETA LEDWAY IP-SERIES
 - B. HOLOPHANE LEDEGENDS SERIES
 - C. LRL LED SAT-96M SERIES.

ALL LUMINAIRES SUPPLIED SHALL BE OF THE SAME TYPE AND FROM THE SAME MANUFACTURER.

ALL LUMINAIRES SHALL BE EQUIPPED WITH BIRD SPIKES.
4. LIGHTING LEVELS MEASURED AT THE ROADWAY SURFACE SHALL HAVE AN AVERAGE MAINTAINED ILLUMINANCE OF 1.3 FOOT-CANDLES.
5. WIRING AND GROUNDING
 - A. CIRCUIT CONDUCTORS SHALL BE CLEARLY IDENTIFIED BY CORROSION RESISTANCE TAGS INDICATING THE CIRCUIT NUMBER AND PANEL SOURCE AT EVERY LIGHT POLE AND HANDHOLE.
 - B. ALL CONDUIT MUST INCLUDE A GROUNDING CONDUCTOR. RIGID STEEL CONDUIT SHALL BE PROPERLY CONNECTED AT ALL JOINTS SO AS TO BE WATERTIGHT AND MAINTAIN ELECTRICAL CONTINUITY AND HAVE GROUNDING BUSHINGS SO AS TO ACT AS A GROUNDING CONDUCTOR.
 - C. THE GROUNDING CONDUCTORS SHALL BE CONTINUOUS.
 - D. ALUMINUM WIRE SHALL NOT BE USED FOR GROUND WIRE.
6. ALL STREET LIGHTING WORK SHALL CONFORM TO STANDARD T-134



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