

TRAFFIC SIGNAL NOTES

A. NEW EQUIPMENT

- 1.) ALL SIGNAL HEADS SHALL HAVE 300 mm POLYCARBONATE SECTIONS. THE HOUSING SHALL BE FEDERAL YELLOW WITH FLAT BLACK DOORS AND VISORS IN AREAS OF POOR VISIBILITY. ALL SPAN WIRE MOUNTED TRAFFIC SIGNALS SHALL HAVE DISCONNECT HANGERS WITH NON-ALUMINUM BALANCE ADJUSTER FITTINGS.
- 2.) TRAFFIC SIGNAL CONTROLLER & CABINET. EACH UNIT SHALL BE A VEHICLE, ACTUATED SOLID STATE CONTROLLER CAPABLE OF PRODUCING THE TIMING AND COORDINATION (IF REQUIRED) SHOWN ON THE PLANS. ALL CONTROLLERS SHALL HAVE A MINIMUM OF 8 PHASES. EACH PHASE (USED OR UNUSED) SHALL HAVE A LOAD SWITCH AND ALL NECESSARY FLASH TRANSFER RELAYS. EACH INSTALLATION SHALL INCLUDE TIME CLOCK(S) WITH BATTERY BACKUP, 12 CHANNEL CONFLICT MONITOR WITH STOP TIMING FUNCTION, LED DISPLAY LOAD SWITCHES (INPUT SIDE), REMOTE FLASHER, VEHICLE DETECTOR AMPLIFIERS, SURGE PROTECTION, LAMP RECEPTACLE AND CONVENIENCE OUTLET WITH GROUND FAULT INTERRUPTION. ALL CONFLICT MONITORS SHALL BE CAPABLE OF RECORDING AT LEAST 9 "EVENTS". ALL LOAD SWITCHES SHALL BE LABELED ON THE CABINET WALL. ALL CONTROLLERS SHALL HAVE DUAL MAXIMUM CAPABILITIES AND TIME BASE COORDINATORS (TBC), IF REQUIRED, WHICH SHALL PROVIDE FOUR CYCLE LENGTHS WITH MULTIPLE PROGRAMS PER CYCLE. EACH SYSTEM SHALL BE POLE OR GROUND MOUNTED IN A PREWIRED RAINPROOF NEMA (3R) CABINET WITH A POLICE DOOR HAVING STANDARD SWITCHES (MAIN ON/OFF, SIGNAL ON/OFF, AND FLASH). THERE SHALL BE A WATER PROOF PLASTIC ENVELOPE ATTACHED TO THE CABINET INTERIOR FOR STORAGE OF THE CONTROLLER MANUAL AND PLAN SHEETS. ALL CONTROLLERS SHALL BE MENU DRIVEN, KEYBOARD ENTRY. ALL CONTROLLERS SHALL BE CAPABLE OF TELEMETRY INTERCONNECTED COORDINATION WITH A KMC-10,000 (ECONOLITE) MASTER CONTROLLER.
- 3.) THE CONTROLLERS/TBC SHALL BE SHIPPED FROM THE FACTORY PRESET AND A REPRESENTATIVE OF THE MANUFACTURER SHALL BE ON THE PROJECT SITE FOR TURN ON OF THE UNITS. IN ADDITION TO EQUIPMENT FURNISHED TO PROVIDE A FUNCTIONAL SIGNAL SYSTEM, THE CONTRACTOR SHALL SUPPLY THE FOLLOWING SPARE PARTS: ONE LOAD SWITCH, ONE TRANSFER RELAY AND ONE EEPROM PER INTERSECTION. THIS EQUIPMENT MAY BE USED DURING THE CONSTRUCTION PERIOD IN THE CABINET PRIOR TO COMPLETION. THE CONTROLLER CABINET(S) SHALL HAVE A POLISHED ALUMINUM NATURAL FINISH AND BE PROVIDED WITH A #2 LOCK, A MASTER #3220 PADLOCK AND A STANDARD POLICE DOOR LOCK. EACH LOCK SHALL HAVE 2 KEYS. EACH CABINET SHALL INCLUDE A 50° C -10° C FAN/THERMOSTAT. THE CABINET DOOR SHALL BE SUPPLIED WITH TEST SWITCHES FOR EACH PHASE. ANY DOOR MOUNTED TOGGLE SWITCHES SHALL BE PROTECTED FROM ACCIDENTAL BUMPING. WHEN TBC'S ARE USED, THEY SHALL BE PROGRAMMED SO AS TO AUTOMATICALLY ADJUST FOR DAYLIGHT SAVINGS TIME CHANGES (APRIL - FIRST SUNDAY, OCTOBER - LAST SUNDAY).
- 4.) BACKPLATES SHALL BE PLACED ON ALL EAST/WEST FACING SIGNAL HEADS.
- 5.) ALL NEW EQUIPMENT SHALL MEET OR EXCEED NEMA STANDARDS AND IMSA OR ITE SPECIFICATIONS, WHERE APPLICABLE.
- 6.) THE ELECTRIC CABLE SHALL BE LASHED TO THE SPAN WIRE WITH STAINLESS ALLOY 430 LASHING (SPINNING) WIRE.
- 7.) STANDARD WIRE SHALL BE USED FOR ALL UNSUPPORTED AND SPAN WIRE SUPPORTED WIRE.
- 8.) A MAIN DISCONNECT BREAKER SHALL BE INSTALLED IN A RAINPROOF (NEMA 3R), LOCKED CABINET ON A STANCHION.
- 9.) STEEL STRAIN POLES SHALL BE DESIGNED USING THE LATEST REVISION OF AASHTO'S "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS". ALL STRAIN POLES SHALL BE BACKRACKED AS SPECIFIED ON THE PLANS. POLE DIAMETER, OR ON AN ATTACHED METAL TAG.

B. SIGNAL OPERATION

- 1.) SIGNAL TIMING SHOWN ON THE PLANS MAY REQUIRE FINE-TUNING IN THE FIELD BASED ON TRAFFIC OBSERVATION AND/OR ADDITIONAL FIELD STUDIES.
- 2.) NEW TRAFFIC SIGNAL(S) SHALL BE OPERATED IN THE FLASH MODE FOR A MINIMUM OF 48 HOURS PRIOR TO BEING PUT INTO FULL OPERATION. FULL OPERATION SHALL NOT BE INITIATED EXCEPT IN THE PRESENCE OF THE TRAFFIC AND SAFETY ENGINEER OR HIS DESIGNATED REPRESENTATIVE.
- 3.) THE TRAFFIC SIGNALS SHALL NOT OPERATE WITHOUT THE PAVEMENT MARKINGS AND SIGNAL RELATED SIGNING IN PLACE.
- 4.) ALL SIGNALS SHALL DWELL ON VT. ROUTE 67A THROUGH MOVEMENT UNLESS OTHERWISE NOTED.
- 5.) ALL SIGNALS SHALL BE WIRED SUCH THAT NO MORE THAN TWO THROUGH FACES (NORTH-SOUTH AND/OR EAST-WEST) ARE WIRED INTO ONE LOAD SWITCH EVEN THOUGH TWO APPROACHES MAY TIME DURING THE SAME PHASE.

C. PULLBOXES AND JUNCTION BOXES

- 1.) PULLBOXES AND JUNCTION BOXES ARE DETAILED ON VAOT STANDARD SHEET E-173M. MINIMUM JUNCTION BOX SIZE SHALL BE 450 mm X 300 mm X 300 mm (A X B X C), OR LARGER AS REQUIRED BY THE ELECTRICAL CODE.

D. TRAFFIC SIGNAL CONDUIT

- 1.) ALL TRAFFIC SIGNAL CONDUIT SHALL BE PVC, WITH SCHEDULE 40 MINIMUM USED UNDERGROUND AND SCHEDULE 80 USED ABOVE GROUND.
- 2.) MINIMUM CONDUIT SIZES SHALL BE:
 - A) 40 mm (DN41) FOR LOOP LEAD-INS
 - B) 50 mm (DN53) FOR ALL OTHERS
 SEE CHART ON VAOT STANDARD E-172M FOR DESIGN VALUES
- 3.) WHEN CONDUIT IS PLACED BELOW THE ROADWAY OR ACROSS SIDE ROADS, IT SHALL BE PLACED IN A PVC ELECTRICAL CONDUIT SLEEVE, SIZE AS SHOWN ON THE PLANS (150 mm MINIMUM)
- 4.) THE MINIMUM DEPTH BELOW THE ROADWAY SURFACE FOR THE PLACEMENT OF SLEEVES & CONDUIT SHALL BE 1m. THE MINIMUM DEPTH BELOW GROUND FOR THE PLACEMENT OF SLEEVES AND CONDUIT SHALL BE 600 mm.
- 5.) 150 mm WIDE RED PLASTIC MARKING TAPE SHALL BE PLACED IN THE EXCAVATED TRENCH 150 mm TO 300 mm BELOW THE FINISHED GRADE FOR ALL CONDUIT AND SLEEVE RUNS EXCEPT THOSE JACKED UNDER THE ROADWAY.
- 6.) OPEN CUTS IN EXISTING BITUMINOUS CONCRETE PAVEMENT REQUIRED TO PLACE THE 150 mm PVC ELECTRICAL CONDUIT SLEEVE SHALL BE PERFORMED IN ACCORDANCE WITH VAOT STANDARD D-20M. A SAWCUT SHALL BE PERFORMED IN THE EXISTING PAVEMENT SURFACE PRIOR TO EXCAVATION. PAYMENT WILL BE CONSIDERED SUBSIDIARY TO ITEM 490.30. THE SUPERPAVE BITUMINOUS CONCRETE PAVEMENT (PG 58-28) PLACED SUBSEQUENT TO THE INSTALLATION OF THE 150 mm PVC ELECTRICAL SLEEVE AND BACKFILL MATERIAL WILL BE PAID UNDER ITEM 490.30 AND WILL CONSIST OF THE FOLLOWING:
 - 50 mm SURFACE COURSE, TYPE III S (AS DIRECTED BY RESIDENT ENGINEER)
 - 30 mm LEVELING COURSE, TYPE IV S (AS DIRECTED BY RESIDENT ENGINEER)
 - 80 mm BINDER COURSE, TYPE II S (AS DIRECTED BY RESIDENT ENGINEER)
 - 100 mm BASE COURSE, TYPE I S

E. VEHICLE LOOP DETECTORS

- 1.) SEE VAOT STANDARD E-172M
- 2.) ALL LOOP AND LEAD-IN WIRE SHALL BE 3.31 mm²

F. STREET LIGHTING

- 1.) EACH STRAIN POLE SHALL HAVE A 400 WATT HIGH PRESSURE SODIUM LUMINAIRE INSTALLED WITH A 10.7 m +/- MOUNTING HEIGHT ABOVE THE EDGE OF PAVEMENT. LUMINAIRES SHALL BE DESIGNED FOR STREET LIGHTING AND THE INDICATED LIGHT DISTRIBUTION. THEY SHALL INCLUDE AN ALUMINUM HOUSING WITH EASY ACCESS TO THE BALLAST ASSEMBLY, PHOTOELECTRIC CONTROL, FILTERED OPTICAL ASSEMBLY, AND REGULATOR BALLAST FOR 120 VOLT LAMPS. THE BALLAST SHALL BE MATCHED TO ITS STARTING CIRCUIT. WIRING SHALL BE NEAT, BUNDLED, AND KEPT AWAY FROM EXCESS HEAT.
 - A.) BRACKET ARM MOUNTED LUMINAIRES (PREFERRED) SHALL HAVE A MEDIUM CUT-OFF DISTRIBUTION. THE ARM ORIENTATION SHALL BE SHOWN ON THE PLANS.
 - B.) POLE TOP MOUNTED LUMINAIRES SHALL HAVE A NEMA BEAM TYPE 7 X 6 DISTRIBUTION AND SHALL BE PROVIDED WITH GLARE REDUCTION VISORS. THE AIM POINT MUST BE SHOWN ON THE PLANS.

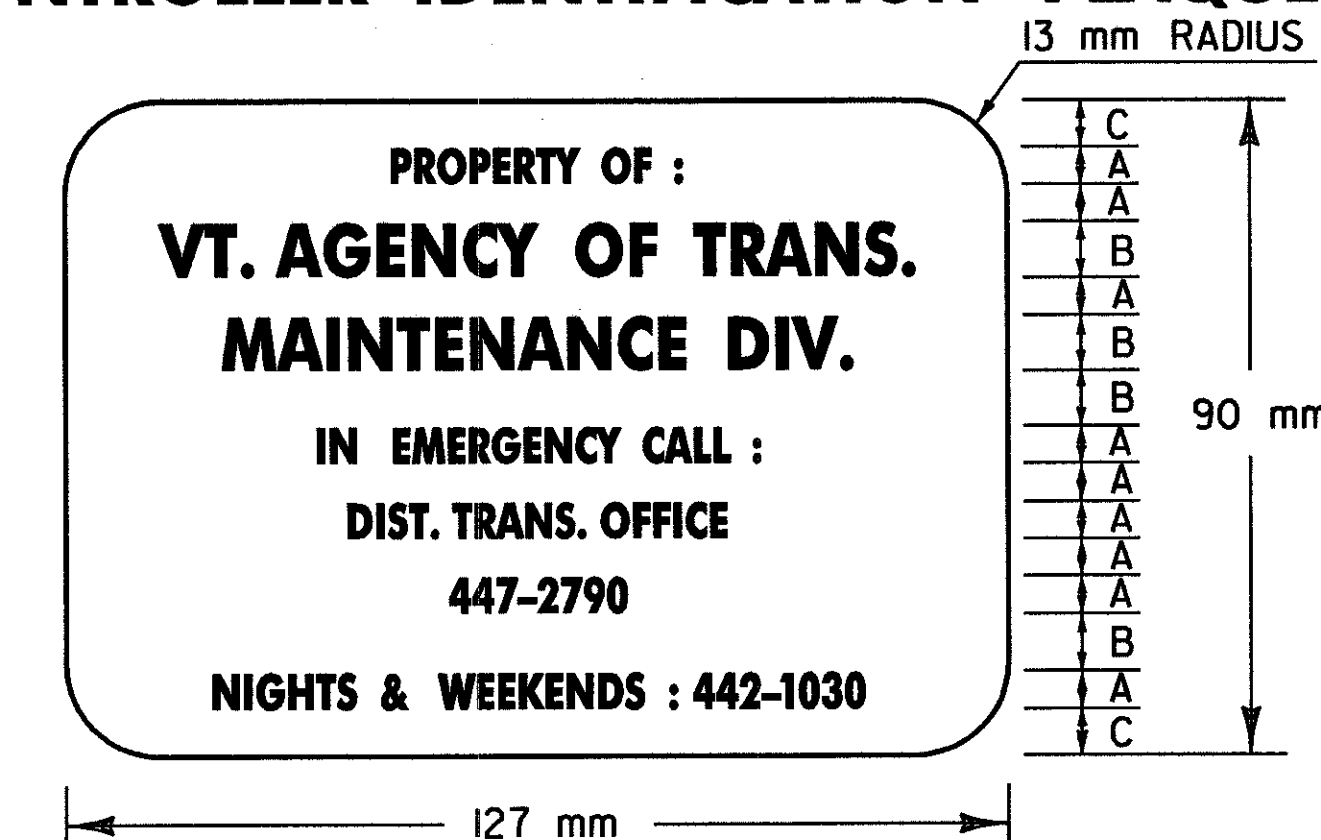
- 2.) THE INSTALLED LUMINAIRE LIGHT UTILIZATION AND MINIMUM FOOTCANDLES SHALL BE AT LEAST AS GREAT AS THAT FOR THE DESIGN PHOTOMETRIC SHOWN IN THE PLANS.
- 3.) STREET LIGHTS ON STRAIN POLES SHALL UTILIZE THE SAME POWER SOURCE AS THE TRAFFIC SIGNAL BUT WITH A SEPARATE DISCONNECT BREAKER IN THE CONTROLLER CABINET.
- 4.) STREET LIGHT WIRING SHALL BE 5.26 mm² (MINIMUM) STRANDED COPPER BETWEEN THE CONTROLLER AND THE LUMINAIRE.

G. GENERAL

- 1.) ALL ELECTRICAL WORK AND MATERIALS SHALL BE SUBJECT TO INSPECTION AND APPROVAL OF THE DISTRICT ELECTRICAL INSPECTOR. ALL WORK MUST MEET THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE.
- 2.) ALL SPLICES SHALL BE SOLDERED USING ROSIN CORE SOLDER AND THEN SHALL BE FULLY SEALED BY THE APPLICATION OF DUAL-WALL, HEAT-SHRINKABLE, TUBING.
- 3.) AFTER FINAL PROJECT ACCEPTANCE, THE TRAFFIC SIGNAL INSTALLATION(S) SHALL BECOME THE PROPERTY AND RESPONSIBILITY OF THE AGENCY OF TRANSPORTATION AND THE AGENCY TRAFFIC DESIGN SECTION SHALL BE NOTIFIED IMMEDIATELY (802) 828-3594.
- 4.) THE CONTRACTOR SHALL ACQUIRE ALL NECESSARY PERMITS AND MAKE ALL NECESSARY ARRANGEMENTS WITH THE UTILITY COMPANY TO PROVIDE A PERMANENT POWER SUPPLY TO THE SIGNAL AND STREET LIGHTING EQUIPMENT. THE METER SOCKET SHALL BE INSTALLED ON A STANCHION. THE ROUTING OF POWER TO THE INTERSECTION SHALL BE SUCH THAT THE AGENCY HAS FULL RESPONSIBILITY FROM THE TRANSFORMER THROUGH THE SIGNAL. NO INTERVENING OWNERSHIP/RESPONSIBILITY SHALL BE ALLOWED.

- 5.) A METAL PLAQUE LISTING OWNERSHIP AND EMERGENCY PHONE NUMBERS SHALL BE ATTACHED TO THE OUTSIDE OF THE CONTROLLER CABINET. SEE DETAIL ON THIS SHEET. CONTACT THE AREA DISTRICT TRANSPORTATION ADMINISTRATOR AT (802) 447-2790 TO CONFIRM LISTED PHONE NUMBERS PRIOR TO CONSTRUCTION.
- 6.) THE REQUIRED 30 DAY TEST PERIOD FOR THE SIGNAL EQUIPMENT SHALL NOT BEGIN UNTIL ALL CONSTRUCTION IS COMPLETE AND ALL PAPERWORK HAS BEEN COMPLETED TO THE SATISFACTION OF THE AGENCY.

CONTROLLER IDENTIFICATION PLAQUE



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

- NOTES:
- 1.) THE PLAQUE SHALL BE MOUNTED ON ALL TRAFFIC SIGNAL CONTROLLER CABINETS. IT SHALL BE FASTENED TO THE CONTROLLER CABINET IN SUCH A MANNER AS TO BE RIVETED OR BOLTED WITH VANDAL PROOF BOLTS. NOT EASILY REMOVED, SUCH AS WELDED.
 - 2.) THE LETTERS SHALL BE PUNCHED, STAMPED, OR ENGRAVED. SUCH STAMPING SHALL PENETRATE AT LEAST 1/2 THE BASE MATERIAL THICKNESS.
 - 3.) THE BASE MATERIAL FOR THE PLAQUE SHALL BE BRASS OR ALUMINUM WITH A MINIMUM THICKNESS OF 2.5 mm.

A= 5 mm
B= 8 mm
C= 6.5 mm

TRAFFIC SIGNAL NOTE SHEET 1

SURVEYED BY	N/A	DATE	N/A
DESIGNED BY	M.R.W.	DATE	9/00
DRAWN BY	K.H.D.	DATE	9/00
CHECKED BY	T.R.J.	DATE	9/00
DESIGN FILE NO.	TSNI.DGN		
PROJ. NAME	BENNINGTON - HOOSICK D.P.I. 014601 C/4		
PROJ. NO.	P.I.N. 1306.60		
DWG. NO. SD-5	SHEET 172 OF 385		