TRAFFIC SIGNAL 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.
3. THE TRAFFIC SIGNAL CONTROLLER AND RELATED EQUIPMENT SHALL BE AN ECONOLITE ASC/3-2100, A NAZTEC MODEL 980, OR APPROVED EQUIVALENT. THE TRAFFIC SIGNAL SYSTEM CONTROLLER SHALL BE A NEMA TS-2, TYPE 1 CONTROLLER MOUNTED IN A NEMA P44 TRAFFIC CONTROL CABINET WITH 15-INCH BASE EXTENSION INSTALLED AT THE LOCATIONS 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 EQUIPMENT SHALL BE PAINTED FLAT BLACK IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
6. ALL SIGNAL EQUIPMENT AND MAST ARM MOUNTED SIGNS SHALL HAVE SAFETY CABLES.
7. 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 (SEE VTrans STANDARD E-175). A SEPARATE CIRCUIT BREAKER SHALL BE INSTALLED FOR ROADWAY LIGHTING, IF APPLICABLE. THE METER DISCONNET SHALL BE A 100 AMP METER SOCKET DISCONNECT, AND SHALL HAVE A BYPASS.

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 US ROUTE 2 UNLESS OTHERWISE NOTED.
3. THE US ROUTE 2 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 SLEEVE, SIZE AS SHOWN ON THE PLANS.
3. ALL TRAFFIC SIGNAL CONDUIT WORK SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 678.
4. MINIMUM CONDUIT SIZES SHALL BE:

a. 1.5" FOR INTERCONNECT CABLE.

b. 2" FOR SHIELDED LEAD-IN CABLE, SIGNAL CABLE, POWER CABLE, AND ALL OTHERS, UNLESS SPECIFIED OTHERWISE ON THE PLANS.

c. SEE CHART ON VTrans STANDARD E-172 FOR DESIGN VALUES.

E. VIDEO DETECTION CAMERAS

1. VIDEO VEHICLE DETECTORS SHALL BE PLACED SO THAT OCCLUSION IS MINIMIZED AND PHASING IS NOT AFFECTED.
2. VIDEO VEHICLE DETECTION AREAS SHALL EXTEND FIVE FEET PAST THE STOP BAR.
3. VIDEO VEHICLE DETECTION SYSTEM SHALL BE ECONOLITE AUTOSCOPE SOLO TERRA, ITERIS VERSICAM, TRAFICON VP SERIES, OR APPROVED EQUAL.
4. SEE THE PLANS OR THE SPECIAL PROVISIONS FOR A DETAILED LIST OF EQUIPMENT.
5. ANY OTHER MISCELLANEOUS EQUIPMENT AND LABOR NECESSARY TO PROVIDE A FULLY FUNCTIONAL VIDEO DETECTION SYSTEM SHALL BE INCIDENTAL TO ITEM #678.15 TRAFFIC CONTROL SYSTEM, INTERSECTION.

F. MAST ARM FOUNDATIONS

1. FOUNDATIONS SHALL BE DESIGNED IN ACCORDANCE WITH THE VTRANS MRE1 10-01 GUIDELINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SOIL BORINGS AND FOUNDATION DESIGN. IN ADDITION TO FABRICATION DRAWINGS, THE BORING LOGS, DESIGN CRITERIA, AND DESIGN CALCULATIONS SHALL BE SUBMITTED AS WORKING DRAWINGS IN ACCORDANCE WITH SUBSECTION 105.03.

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.

   ALL ELECTRICAL WIRING SHALL BE DONE BY A LICENSED ELECTRICIAN AND OVERSEEN BY A MASTER ELECTRICIAN.
3. A METAL PLAQUE LISTING OWNERSHIP AND EMERGENCY PHONE NUMBERS SHALL BE ATTACHED TO THE OUTSIDE OF THE CONTROLLER CABINET.

H. TRAFFIC SIGNAL COORDINATION

1. THE TRAFFIC SIGNAL CONTROLLERS AT THE INTERSECTIONS OF US ROUTE 2 @ VT ROUTE 117 AND US ROUTE 2 @ I-89 RAMP "D" AND PARK & RIDE DRIVEWAY SHALL OPERATE AS A COORDINATED SIGNAL SYSTEM.
2. THE LOCAL TS-2 SIGNAL CONTROLLERS SHALL OPERATE IN A TIME-BASED COORDINATION MODE.
3. CLOCK SYNCHRONIZATRION SHALL BE ACHIEVED WITH A GLOBAL POSITIONING SYSTEM (GPS) SYNCHRONIZATION DEVICE.

I. REMOVAL OF EXISTING OR REUSE OF SALVAGED TRAFFIC SIGNAL EQUIPMENT

1. AT THE DISCRETION OF VERMONT AGENCY OF TRANSPORTATION (VTrans), REMOVED AND NOT REUSED TRAFFIC SIGNAL EQUIPMENT SHALL BE DELIVERED TO VTRANS. UNWANTED TRAFFIC SIGNAL EQUIPMENT MUST BE DISPOSED OF BY THE CONTRACTOR. REMOVAL OF TRAFFIC SIGNAL EQUIPMENT SHALL INCLUDE REMOVAL OF CONCRETE BASES OR CUTTING BASES ONE FOOT BELOW GRADE, AND BACKFILLING OF THE HOLES. ANY TRAFFIC SIGNAL EQUIPMENT THAT IS DAMAGED OR LOST BY THE CONTRACTOR DURING REMOVAL SHALL BE REPAIRED OR REPLACED, TO THE SATISFACTION OF VTRANS AT THE CONTRACTOR'S EXPENSE. THE REMOVAL, TRANSPORTING, SALVAGING, AND DISPOSAL OF EXISTING SIGNAL EQUIPMENT SHALL BE PAID FOR UNDER ITEM 678.45 REMOVAL OF EXISTING TRAFFIC CONTROL SIGNAL SYSTEM.

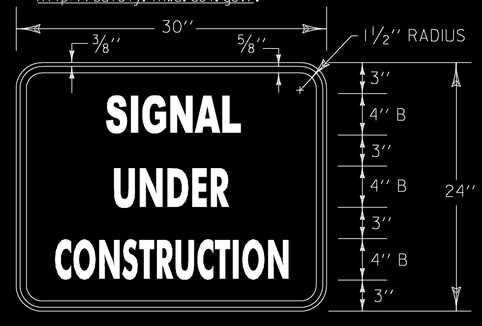
TRAFFIC CONTROL NOTES FOR TRAFFIC SIGNAL WORK

1. 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 TRAFFIC MANAGEMENT PLANS AND SECTION 641.
2. DURING CONSTRUCTION, TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES ON U.S. ROUTE 2, VERMONT ROUTE 117, AND WITHIN THE PARK & RIDE FACILITY. TWO-WAY TRAFFIC SHALL BE MAINTAINED AT NIGHT, ON WEEKENDS AND HOLIDAYS, DURING PEAK TRAFFIC AND DURING CONSTRUCTION. THE I-89 EXIT 11 SB OFF RAMP (RAMP D) SHALL REMAIN OPEN AT ALL TIMES. AT THE DISCRETION OF THE ENGINEER (OR OTHER DESIGNATED AGENCY REPRESENTATIVE), UNIFORMED TRAFFIC CONTROL OFFICERS OR TRAINED FLAG PERSONS SHALL CONTROL TRAFFIC, WHENEVER REQUIRED.
3. TRAFFIC CONTROL SIGNING AND CHANNELIZING DEVICES SHALL BE IN ACCORDANCE WITH THE APPROPRIATE STANDARD DRAWINGS (E-101, E-102, E-106, E-107, E-110, E-111) AND THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. 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 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 4 MIL. 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 PLACEMENT, AND REMOVAL AND ALL INCIDENTALS FOR COMPLETION OF THE WORK SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE TRAFFIC SIGNAL.
5. WHERE TWO-WAY TRAFFIC IS MAINTAINED USING FLAGGERS DURING CONSTRUCTION, THE SIGN PACKAGE SHOWN ON STD E-110 SHOULD BE USED. APPROACH CONSTRUCTION SIGNING SHALL REMAIN IN PLACE DURING THE ENTIRE CONSTRUCTION PERIOD. OTHER SIGNING SHALL BE REMOVED OR COVERED WHEN NOT APPLICABLE.
6. VARIATIONS IN THE SIGNING PACKAGES MAY BE DICTATED BY UNIQUE GEOMETRY AND/OR TRAFFIC CONDITIONS AND THE TRAFFIC MANAGEMENT PLANS.
7. THE CONTRACTOR SHALL NOT WORK WITHIN THE HIGHWAY ROW WITHOUT THE APPROPRIATE CONSTRUCTION SIGNING IN PLACE AS SHOWN ON STD E-100.
8. 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 IS IN OPERATION AT NO COST TO THE STATE.
9. "SIGNAL UNDER CONSTRUCTION" SIGN PANELS SHALL BE MOUNTED UNDER "ROAD CONSTRUCTION AHEAD" SIGNS ANYTIME SIGNAL SYSTEM WORK IS BEING PERFORMED (SEE SIGN DETAIL THIS SHEET).
10. 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 AT THE FOLLOWING FHWA WEBSITE: http://safety.fhwa.dot.gov/.



MATERIALS: SEE STD. E-144
COLORS: TEXT & BORDER - BLACK
BACKGROUND - ORANGE (RETROREFLECTIVE SHEETING)

"SIGNAL UNDER CONSTRUCTION" SIGN PANELS SHALL BE MOUNTED UNDER "ROAD CONSTRUCTION AHEAD" SIGNS ANYTIME SIGNAL SYSTEM WORK IS BEING PERFORMED.

CONSTRUCTION SIGN DETAIL

NOT TO SCALE

PROJECT NAME:	RICHMOND
PROJECT NUMBER:	STP 0284 (17)
FILE NAME: z97cl86trfbdr2.dgn	PLOT DATE: 5/1/2013
PROJECT LEADER: JEFFREY MAXTUTIS	DRAWN BY: Y.CAO/I.ALMY
DESIGNED BY: J.SOBEL	CHECKED BY: D.FLYNN
TRAFFIC SIGNAL DETAIL SHEET 1	SHEET 71 OF 133