

LIST OF MAJOR EQUIPMENT

SUBMITTAL OF SHOP DRAWINGS

I. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, SHOP DRAWINGS FOR TRAFFIC SIGNAL EQUIPMENT. THE SUBMITTAL SHALL CONTAIN AT A MINIMUM THE FOLLOWING INFORMATION.

A. TRAFFIC SIGNAL CONTROLLER

1. TYPE OF CONTROLLER, MANUFACTURER, MODEL, NUMBER OF PHASES AND FUNCTIONS. ASSURANCE OF CONFORMANCE TO THE LATEST CALTRANS TYPE 170 CONTROLLER STANDARDS. BENCH TESTING (MINIMUM OF 7 DAYS) WILL BE REQUIRED. COPIES OF THE TEST RESULTS SHALL BE SUBMITTED AS DISCUSSED IN THE STANDARD SPECS SECTION 752.06. THE TEST RESULTS SHALL CONTAIN THE BEGIN AND END TIME AND DATE. ALL CONTROLLER AND TIME-BASED COORDINATION SETTINGS USED, (IF ANY) EQUIPMENT SERIAL NUMBERS, SIGNATURE OF THE PERSON PERFORMING THE TEST AND SIGNATURE OF A WITNESS WHO SHALL BE EITHER A REGISTERED ELECTRICAL ENGINEER OR A LICENSED MASTER ELECTRICIAN.

B. TRAFFIC SIGNAL AND PEDESTRIAN HEADS

1. SIZE, MANUFACTURER, MODEL, LAMP WATTAGE, OPTICS, WIRING, HOUSING (MATERIAL AND COLOR) AND VISORS. THE SIGNAL HEADS SHALL MEET THE LATEST ITE STANDARDS.

C. CONTROLLER CABINET

1. SIZE, MANUFACTURER, MODEL, ACCESSORIES, MATERIALS, AND FINISH.

D. AUXILIARY EQUIPMENT-FLASHER(S), VEHICLE DETECTOR(S), CONFLICT MONITOR, CLOCK(S), ETC.

1. MANUFACTURER, MODEL, FUNCTIONS, ASSURANCE OF CONFORMANCE TO THE LATEST NEMA STANDARDS, WHERE APPLICABLE.

E. STRAIN POLES AND PEDESTAL POSTS

1. DIMENSIONS - POLE/POST HEIGHT, SPAN WIRE ATTACHMENT HEIGHT, POLE/POST DIAMETER (TOP AND BOTTOM), POLE GAUGE, HANDHOLE (SIZE AND LOCATION), BASE PLATE, BOLT CIRCLE AND ANCHOR BOLT SIZE, AS APPLICABLE.
2. MATERIAL SPECIFICATIONS FOR EACH COMPONENT.
3. ANCHOR BOLTS AND WASHERS SHALL BE AN AUSTENITIC GRADE OF STAINLESS STEEL CONFORMING TO THE CHEMISTRY OF ASTM A276 TYPE 304 WITH THE FOLLOWING PHYSICAL PROPERTIES:
 - (A) TENSILE STRENGTH, MINIMUM 80,000 PSI
 - (B) YIELD STRENGTH, MINIMUM 55,000 PSI
 - (C) ELONGATION IN 2 INCHES, MINIMUM 25%
 - (D) ROCKWELL B HARDNESS, MINIMUM OR CHARPY V-NOTCH (AASHTO T243 USING 15 FT-LBS H FREQUENCY OF TESTING), MINIMUM AT 40°F
 NUTS FOR ANCHOR BOLTS SHALL BE THE HEAVY HEX TYPE CONFORMING TO THE REQUIREMENTS OF ASTM A-194 GRADE 8. IN LIEU OF HEAVY HEX TYPE NUTS, TWO STANDARD TYPE NUTS CONFORMING TO THE SAME REQUIREMENTS, ASTM A-194 GRADE 8, MAY BE USED ABOVE THE BASE PLATE, IF LOCKED TOGETHER.

4. WELDING INFORMATION FOR ALL WELDED CONNECTIONS (SEE SUBSECTION 506.10). THE FOLLOWING INFORMATION WILL BE REQUIRED FOR ALL WELDED JOINTS (ALUMINUM OR STEEL):

- A. PROCEDURE SPECIFICATIONS PER AWS D1.1 APPENDIX E FORM E1.
 - B. PROCESS AND PROCEDURE QUALIFICATION TESTS PER AWS D1.1 APPENDIX E FORM E2.
 - C. CERTIFICATE OF CONFORMANCE TO SPECIFICATIONS FOR FILLER MATERIAL.
- WHEN USING ANY GMAW OR FCAW WELDING PROCESS, THE FOLLOWING WILL ALSO BE REQUIRED:

A MANUFACTURER'S CERTIFICATE THAT GAS OR GAS MIXTURE IS SUITABLE FOR THE INTENDED APPLICATION AND MEETS THE DEW POINT REQUIREMENTS.

REFERENCE - AASHTO MODIFICATION OF AWS D1.1 SEC. 4.18.

5. SPECIAL FEATURES AS INDICATED ON THE PLANS, SUCH AS FINISH OR COLOR.

II. THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL, SHOP DRAWINGS FOR STREET LIGHT POLES AND LUMINAIRES. THE SUBMITTAL SHALL CONTAIN AT A MINIMUM THE FOLLOWING INFORMATION:

A. LUMINAIRES

1. FIXTURES
 - A. VOLTAGE RATING
 - B. WATTAGE AND LAMP TYPE
 - C. BALLAST TYPE
 - D. PHOTO CELL
 - E. ANY OTHER FEATURES SPECIFIED ON THE PLANS SUCH AS FINISH, SPECIAL WIRE ACCESS, ETC.
2. PHOTOMETRIC DATA
 - A. IES DISTRIBUTION TYPE
 - B. UTILIZATION CURVE
 - C. ISO-FOOT-CANDLE CURVES
 - D. MOUNTING HEIGHT FACTOR
 - E. MAINTENANCE FACTOR

B. POLES - SEE SECTION 1-E ABOVE

C. WIRING

1. CONDUCTOR MATERIAL, INSULATION TYPE, VOLTAGE RATING, AND TEMPERATURE RATING, SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE USE, SIZE AND COLOR CODE REQUIREMENTS.

III. IN 1 AND 2 ABOVE, THE INFORMATION SUPPLIED SHALL EITHER MATCH OR BE EQUIVALENT TO THE DETAILS SPECIFIED ON THE PLANS OR ON STD. SHEETS. IF EQUIVALENT, THE CONTRACTOR MAY BE ASKED TO SUPPLY PROOF OF EQUIVALENCY. COPIES OF CATALOGUE SHEETS ARE ACCEPTABLE IF ALL THE APPROPRIATE INFORMATION IS INCLUDED.

EQUIPMENT (678.15)	RIVERSIDE AVE. & WINOOSKI AVE.	RIVERSIDE AVE. & NO. PROSPECT ST.	RIVERSIDE AVE. & HILLSIDE TERR. EAST	RIVERSIDE AVE. & SALMON RUN	RIVERSIDE AVE. & COLCHESTER AVE (3)		TOTAL
SIGNAL MAST ARM POLES ①	2	2	-	-	-	-	4
PEDESTAL POSTS	5	3	4	4	-	-	16
NEW 12" SIGNAL HEADS, LED LENSES W/TUNNEL VISORS & MOUNTING HARDWARE							
MAST ARM MOUNTING	ONE-WAY 4-SECTION	-	1	-	-	-	1
	ONE-WAY 3-SECTION	7	2	-	-	-	9
	TWO-WAY 3-SECTION	-	-	-	-	-	-
	TWO-WAY 1 3-SECTION	-	-	-	-	-	-
	1 5-SECTION	-	-	-	-	-	-
	THREE-WAY 3-SECTION	-	2	-	-	-	2
POST TOP MOUNTING	ONE-WAY 3 SECTION	-	-	2	-	-	2
	TWO-WAY 3 SECTION	2	-	2	4	-	8
BRACKET MOUNTED	ONE-WAY 3-SECTION	-	-	-	-	-	-
	TWO-WAY 3-SECTION	1	-	-	-	-	1
NEW ONE SECTION LED, SYMBOLIC "DON'T WALK/WALK" PEDESTRIAN SIGNAL WITH COUNTDOWN INDICATOR AND CLAMSHELL MOUNTING HARDWARE & "Z-CRATE" VISORS	2	1	2	2	-	-	7
SIDE MOUNTED	ONE-WAY	1	-	4	2	-	7
	TWO-WAY	-	-	-	-	-	-
POST TOP MOUNTED	ONE-WAY	2	3	-	-	-	5
	TWO-WAY	1	-	-	-	-	1
NEW PEDESTRIAN PUSHBUTTONS W/ INDICATOR LIGHTS & SIGNS	6	4	4	4	-	-	18
PEDESTRIAN AUDIO SIGNALS	1	1	1	1	-	-	4
TYPE 170 CONTROLLER AND CABINET	1	1	1	1	1	-	5
TYPE A REGULATORY SIGNS-MAST/POST MOUNTED -LEFT TURN YIELD ON GREEN (STD E-140) -NO TURN ON RED (STD E-140)	-	2	1	1	-	-	4
	1	-	-	-	-	-	1

THE QUANTITIES LISTED ABOVE ARE APPROXIMATE AND ARE FURNISHED AS GENERAL INFORMATION ONLY. THEY ARE FOR THE PERMANENT INSTALLATIONS ONLY. ANY ITEM NOT LISTED BUT REQUIRED AS PART OF THE SIGNAL SYSTEM DESIGN SHALL BE INCLUDED AS PART OF 678.15. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF THE NUMBER OF ITEMS AND TYPES OF EQUIPMENT REQUIRED TO PROVIDE FOR THE SIGNAL SYSTEM DESIGN AS SHOWN. ADDITIONAL EQUIPMENT MAY BE NECESSARY DURING CONSTRUCTION: PAYMENT SHALL BE INCLUDED IN TRAFFIC CONTROL (641.10).

ELECTRICAL CONDUIT (678.21)							
2" PVC	-	-	-	-	-	-	-
3" PVC	755'	62'	432'	530'	20'	-	1799'
2" GALV.	-	-	-	-	20'	-	20'
VEHICLE LOOP DETECTORS (678.22) ②	687'	589'	516'	641'	-	-	2433'
JUNCTION BOXES (678.26)	11	3	5	8	1	-	28
ELECTRICAL CONDUIT SLEEVE (678.30)	170'	-	45'	140'	-	-	355'

- 1) SEE SHEETS 159-161 FOR SIGNAL POLE DETAILS. ALL POSTS & MAST ARMS SHALL BE GALVANIZED AND POWDER COATED IN A FLAT BLACK FINISH
- 2) QUANTITY IS ESTIMATED ASSUMING SEPARATE SAW SLOT FOR LEAD-IN FROM EACH LOOP TO CURB. LEAD-INS FROM ADJACENT LOOPS ACTUATING THE SAME PHASE MAY BE INSTALLED IN THE SAME SAW SLOT, IF IT IS OF ADEQUATE SIZE. SO DOING WILL REDUCE QUANTITY SUBSTANTIALLY. ALL LOOP SPLICES IN PULL/JUNCTION BOXES SHALL BE SEALED IN AN EPOXY SPLICE KIT.
- 3) FOR SIGNAL NOTES AT RIVERSIDE/COLCHESTER, SEE SHEET #70 OF 252 (GENERAL PLANS).

DATUM
VERTICAL _____
HORIZONTAL _____

SURVEYED BY _____ DATE _____
DRAWN BY KAS DATE 6/4/92
SQUAD LEADER SSA
DESIGN FILE NO. 89108
PRF FILE 89108 DATE PLOTTED _____
PROJ. NAME BURLINGTON
PROJ. NO. MEGC 5000 (15)
SHEET 151 OF 252 SHEETS