Make this section a part of the Standard Specifications:

"SECTION 771 – LIGHT EMITTING DIODE (LED) PEDESTRIAN-COUNTDOWN SIGNAL (PCS)

771.01 General.

Light Emitting Diode (LED) Pedestrian-Countdown Signal (PCS) will be furnished by the State. Coordinate with the State representative to pick up PCS units in sufficient quantity to complete the installation work of the project. Installation of PCS units inplace shall be included within the scope of work of Traffic Signal System.

771.02 Material Requirements.

(A) LED PCS module. Supplied by the State.

(B) LED PCS case. Provided by the Contractor.

(1) The LED PCS case shall be of polycarbonate resin and be new. Housing shall be ultra-violet-stabilized virgin polycarbonate resin, injection molded, complete with integral top, bottom, and sides; shall have minimum thickness of 0.09 inch; and color shall be dark green.

(2) Door Frame. One-piece doorframe shall be furnished complete with two hinge lugs and two latch slots for each door. Door shall be attached to case by two Type 304 stainless steel spring pins. Two stainless steel hinged bolts with captive stainless steel wing nuts and washer shall be attached to case with use of stainless steel spring pins. Latching or unlatching of door shall require no special tools.

(3) The LED PCS case shall be dust-proof, weatherproof, and corrosion-resistant. The LED PCS case shall provide for easy access and replacement of components.

771.03 Electrical Requirements.

(A) The LED PCS module shall connect directly to the line voltage, 120 volts nominal, and shall be able to operate over the voltage range of 80-130 volts AC. The variation in line voltage shall not cause the light intensity to vary by more than 10% over the entire operating voltage range.

(B) The "UPRAISED HAND" and two countdown numbers and

"WALKING PERSON" shall consume no more than 11 Watts.

(C) The LEDs shall operate over the temperature range of -40 degrees Fahrenheit to +165 degrees Fahrenheit.

(D) The forward current, as measured through each LED, shall not exceed 60% of the LED manufacturer's maximum current rating when operating at 77 degrees Fahrenheit.

(E) The LEDs shall be wired in series parallel strings. The failure of any one LED, and its associated string of LEDs, shall not cause the loss of more than 20% of the light output of the complete LED module.

(F) The LEDs shall not emit visible light when subjected to a 120 volt AC, 4 milliamp leakage current from a NEMA solid state load switch (load switch in the off state).

(G) Transient voltage suppression/protection shall be provided internal to the LED PCS module to minimize the possibility of damage due to extreme over voltage.

(H) The LED PCS module shall be operationally compatible with current model 170 E Controller type controllers and conflict monitors.

(I) The LED PCS module including its circuitry must meet Federal Communications Commission (FCC) regulations concerning the emission of noise and radiation.

(J) The LED PCS module shall be supplied with three conductors three (3) feet in length for each connection to the terminal board of the traffic signal indication. Each conductor shall be 600 volt, stranded No. 20 AWG minimum copper wire, rated for service at +221 degrees Fahrenheit, capable of withstanding all adverse effects of moisture, corrosive atmosphere and temperatures associated with the operation of the signal head. Spade lugs shall be installed on the ends of each conductor.

(K) All wiring and terminal blocks shall conform to the National Electrical Code, rated for service at +105 degrees Celsius, are to be provided for electrical connection.

771.04 Photometric Requirements.

(A) For a minimum period of 60 months, maintained minimum luminance values for the "WALKING PERSON" and "UPRAISED HAND" pedestrian signal indication shall not be less than 5300 cd/m^2 and 3750 cd/m^2 respectively when measured perpendicular to the surface of the module at nine separate points on the indication. These values may be decrease up to 50% of these table values beyond 15 degree from the perpendicular in either to the left or right on a horizontal plane.

(B) The uniformity of the "Walking Person" and the "Upraised Hand" pedestrian signal indication illumination shall meet a ratio of not more than 1 to 5 between the minimum and maximum luminance measurements per PTCSI.

(C) LED PCS module shall be designed so that when operated during the warranty period of the unit, the numeric display shall be readable to a viewer (both day and night) at all distances from 10 feet to the full width of the area to be crossed.

771.05 Operational Requirements.

(A) The LED PCS module shall be compatible with all brands of 170 traffic controllers. The control and regulation module shall have the capability for the countdown displays to be automatically adjusted with the programmed intervals of the traffic controller.

(B) The LED PCS module shall operate in the Clearance Cycle Countdown Mode. The LED PCS module will start counting when the flashing clearance signal turns on and will countdown to "0" and turn off when the steady "UPRAISED HAND" indication is on.

(C) At power on, the LED PCS module enters a single automatic learning cycle. During the automatic learning cycle, the countdown display shall remain dark.

(D) If the controller output displays steady "UPRAISED HAND" indication and the unit has not arrived to zero or if both the "UPRAISED HAND" and "WALKING PERSON" are dark for some reason, the unit suspends any timing and the countdown number indication display will go dark.

(E) The LED PCS module shall allow for consecutive cycles without displaying the steady "UPRAISED HAND" indication.

(F) The unit re-programs itself if it detects any increase or decrease of pedestrian timing.

(G) The light source of a flashing "UPRAISED HAND" indication shall be flashed continuously at a rate of not less than 50 or more than 60 times per minute.

END OF SECTION 771