COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
14685 Avion Parkway
Chantilly, VA 20151
(703) 383-VDOT (8368)

PHILIP A. SHUCET
COMMISSIONER

THOMAS F. FARLEY
DISTRICT ADMINISTRATOR

January 3, 2003

Ms. Shelley J. Row, P.E., Director
Office of Transportation Operations (HOTO-1)
U.S. Department of Transportation
Federal Highway Administration
400 7`h Street S.W.
Washington, DC 20590

Dear Ms. Row:

Enclosed is the Virginia Department of Transportation Northern Virginia (VDOT NoVa) District's request to experiment with pedestrian countdown signals.

The pedestrian countdown signals will be installed to replace existing traditional pedestrian signals at four selected intersections in VDOT NoVa District for experimentation. This request follows the requirements outlined in the FHWA document "Request for Experimentation with Pedestrian Countdown Signals". A slightly scaled-down evaluation plan is proposed reflecting discussions with FHWA staff that the countdown pedestrian signal may be approved around mid-year 2003.

Thank you for considering our request. Please contact me at 703-383-2404 or Ms. Guan Xu at 703-383-2420 if you have any questions or need additional information.

Sincerely,

Loren W. Epton, Jr.
District Traffic Engineer

Virginia Department of Transportation
Northern Virginia District

Request to the Federal Highway Administration for Experimentation with Pedestrian Countdown Signals

November 27, 2002

Introduction

Pedestrian related crashes have increased in recent years in the northern Virginia area, especially, in Fairfax County, Virginia. The Virginia Department of Transportation Northern Virginia (VDOT NoVa) District is committed to improve pedestrian safety in the area. The implementation of the countdown pedestrian signals on a trial basis at selected locations in Fairfax County is an important part of this commitment.

Problem Statement

A review of highway corridors with high pedestrian related crashes in the District indicates that certain types of pedestrian crashes may be mitigated by the implementation of countdown pedestrian signals. One type of crashes involved pedestrians who were hit by vehicles at intersections before they could complete their crossing. This was especially the case when pedestrians had to cross multi-lane major arterials with wide cross sections. Often pedestrians could not start their crossing at the beginning of a pedestrian walk phase due to the distraction of turning vehicles. When they had the chance to start their crossing there might not be enough time for them to cross the road completely. The countdown signal will provide pedestrians additional information concerning the decision whether to proceed with their cross or wait for next pedestrian walk phase.

Objective of The Experimentation

The objective of this experimentation is to investigate the effect of pedestrian countdown signals on pedestrian behavior in using protected crosswalks at signalized intersections on multi-lane roads.

Project Scope & Plan

Four intersections have been selected for the experimentation based on the review of pedestrian activities and crash history in the District. The four intersections are:

l. Richmond Highway (US Route 1) at Ladson Lane: replacing the two existing pedestrian signal displays for crossing Richmond Highway;

2. Richmond Highway (US Route 1) at Lockheed Blvd: replacing the four existing pedestrian signal displays for the two Richmond Highway crosswalks;
3. Richmond Highway (US Route 1) at Beacon Hill Road: replacing the two existing pedestrian signal displays for the crosswalk on Richmond Highway; and
4. Vaden Drive and Virginia Center Boulevard/Country Creek Road: replacing the six existing pedestrian signal displays for the crosswalks on Vaden Drive, Virginia Center Boulevard, and Country Creek Road.

The traffic signals at the three intersections along Richmond Highway are semi-actuated operating in a coordinated system. The traffic signal at the intersection of Vaden Drive and Virginia Center Boulevard/Country Creek Road is fully actuated operating as an isolated signal system.

The countdown pedestrian signals will be installed and activated within six months after VDOT receives written approval from FHWA. All four locations will have a twelve-month experimentation period and will be evaluated as described below.

Evaluation Plan

A Before-and-After study will be conducted to evaluate the effects of pedestrian countdown signals on pedestrian-related crash rates, the number of pedestrians crossing at the intersection within the protected crosswalk, the number of pedestrians initiating and/or delaying crossing during the pedestrian flashing Don't Walk "Countdown" clearance interval, and the overall effect on driver and pedestrian behavior at the intersections. The study will include before and after data collection, data analysis, and a final summary of the analysis.

Crash data for the period of twelve months before and twelve months after the installation of the countdown pedestrian signals will be collected and analyzed. Information related to crashes such as location, age and gender of driver and pedestrian, influence of alcohol, vehicle maneuver, and lighting conditions will be collected for the evaluation. Accident reports containing detailed information from police department will be used as a major crash data collection resource.

The number of pedestrians using the countdown signals and behavior information of pedestrians and drivers reacting to the pedestrian countdown signals will be collected by either video equipment or field observers. A reasonable amount of data will be collected for both the before and after period. The Fairfax County Department of Transportation will conduct the before and after data collection for the evaluation.

Additionally, after the countdown pedestrian signals are activated, random selected users at the site(s) will be surveyed on their reaction to and understanding of the countdown signals. This survey will include but not be limited to the questions outlined in the FHWA document entitled "Request for Experimentation with Pedestrian Countdown Signals". The survey will also be conducted by the Fairfax County Department of Transportation.

Samples of an accident report, survey form, and motorist and pedestrian behavior observation form are attached to this request.

Final Report

As a part of evaluation, the VDOT NoVa District will provide a final report to the FHWA on the results of the experimentation within three months after the completion of the experimentation period. The report will include the following information:

1. Before and after geometric and traffic control conditions of each selected location;
2. The date when pedestrian countdown signals are installed and activated;
3. All original data collected for the evaluation of the experimentation, including collection methods and forms
4. Before and after data analysis, including analysis method and results;
5. Conclusions and recommendations.

Site Restoration

If at any time it is determined that the pedestrian countdown signals pose a potential safety hazard to either pedestrians or motorists, they will be removed, and the site(s) will be restored to comply with standards of the Manual on Uniform Traffic Control Devices (MUTCD).

Countdown Pedestrian Signal Specification

The proposed pedestrian countdown signals will only display the countdown during the flashing Don't Walk pedestrian clearance interval.

The information on the countdown pedestrian signal hardware is as follows:

l. Intersection of Virginia Center Blvd(Rt.6154)/Vaden Drive(Rt.6731)/Country Creek Rd

Equipment Type: LED Type Pedestrian Signal Heads w/Countdown Timer - 12"x 12"overlay outline of Hand/Man (P/N: PS6-CFL3-01 A) for top section; 12"x 12" countdown display, double stroke (P/N: PS6-PFD2-O1 A) for bottom section

uantit : (6) six pedestrian heads

Manufacturer: GELcore

2. Three intersections along Richmond Highway:

Equipment Type: LED Type Pedestrian Signal Heads w/Countdown Timer - 12"x 12"overlay outline of Hand/Man (Model - PLS 120) for top section; 12"x 12" countdown display, double stroke (Model - PCS 123) for bottom section

uantit : Total of eight pedestrian heads, two at the intersection of Ladson Lane and Richmond Highway, four at Richmond Highway/Lockheed Blvd, and two at Richmond /Beacon Hill Road.

Manufacturer: Tassimco Technologies Canada Inc.

Pictures and specifications of the countdown pedestrian signals are attached for your review and approval.

Administration

The countdown pedestrian signal experiment is requested by the Virginia Department of Transportation, Northern Virginia District. Ms. Guan Xu is the contact person for this project. If you have any questions concerning this request, please contact Ms. Guan Xu at 703-383-2420.

Attachments:

A. Sample of Accident Data Record
B. Sample of Motorist and Pedestrian Behavior Data Collection Form
C. Pedestrian Survey Questions for the Evaluation of Countdown Pedestrian Signal
D. Pictures and Specifications of Pedestrian Countdown Signals manufactured by GELcore
E. Pictures and Specifications of Pedestrian Countdown Signals manufactured by Tassimco Technologies Canada Inc.

Attachment A

Sample of Accident Data Record

PAGE 1 OF 1 PAGES

COMMONWEALTH OF VIRGINIA - DEPARTMENT OF MOTOR VEHICLES

POLICE ACCIDENT REPORT

DMV COPY FR 300P (REV. 1/90)

ACCIDENT DATE (Month Day Year)	DAY OF WEEK	TIME	AM PM	COUNTY OF ACCIDENT	MILE POST NUMBER	RAILROAD CROSSING ID. NO. IF WITHIN 150 FEET
10/24/98	SAT	6:30	X	Fairfax County		

3 | CITY OR TOWN: OF | LANDMARKS AT SCENE: 7300 RT-1 | NUMBER OF VEHICLES: 1 | OFFICIAL USE ONLY: 98308-1107 | 17: 1

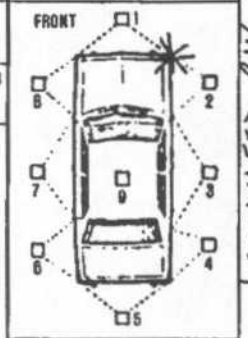
ROUTE NO. OR STREET NAME AT SCENE: RICHMOND HWY RT-1 | 18: X

AT INTERSECTION WITH OR 100 MILES X FEET N S E W OF ROUTE NUMBER OR STREET NAME: LOCKHEED BLV RT-923

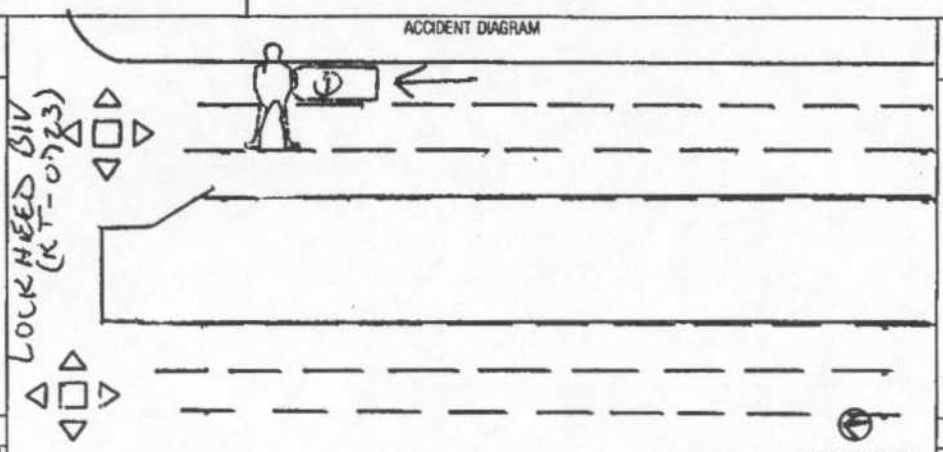
	VEHICLE NO. 1 ?	VEHICLE NO. 2 (OR PEDESTRIAN)
12	H 573-3259	H 765-1113
DRIVER'S NAME (LAST, FIRST, MIDDLE)		
OCCUPATION	Clerk	Clerk
13 ADDRESS (STREET & NO.)		
YEARS OF DRIVING EXPERIENCE	20	N/A
CITY	FALLS CHURCH	Alex
STATE	VA	VA
ZIP CODE	22043	22306
14 DATE OF BIRTH (Month Day Year)	10/28/49	3/15/47
SEX	M	F
DRIVER'S LICENSE NUMBER	- -	- -
DL / CDL		
STATE	VA	VA
VEHICLE OWNER'S NAME (LAST, FIRST, MIDDLE)	SAME	
15 ADDRESS (STREET & NO.)	SAME	
CITY	SAME	
STATE	VA	
ZIP CODE	22043	
MAKE & TYPE OF VEHICLE (SHOW MOPED, MOTORCYCLE, AMBULANCE, ETC...)	Chry Pick up	
CMV / HAZMAT		
YEAR	85	
REPAIR COST	200	
16 LICENSE PLATE NUMBER	LY58 67	
STATE	VA	
NAME OF INSURANCE CO. (NOT AGENT)	INTEGON	

DAMAGE TO PROPERTY OTHER THAN VEHICLES | OBJECT STRUCK (TREE, FENCE, ETC.) | OWNER'S NAME (LAST, FIRST, MIDDLE) | ADDRESS | REPAIR COST | 26: 1

17 VEHICLE NO. 1 DAMAGE CHECK POINTS OF IMPACT

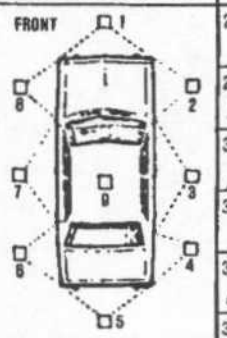


ACCIDENT DIAGRAM



INDICATE NORTH BY ARROW

VEHICLE NO. 2 DAMAGE CHECK POINTS OF IMPACT



SPEED	BEFORE ACCIDENT	LIMIT	MAXIMUM SAFE
VEHICLE NO. 1	25	45	45
VEHICLE NO. 2	N/A	45	45

VEHICLE NO. 1 DAMAGES: 1 UNKNOWN, 2 NO DAMAGE, OVERTURNED 3, MOTOR 4, UNDERCARRIAGE 5, TOTALED 6, BY FIRE 7, OTHER 8 (X)

VEHICLE NO. 2 DAMAGES: 1 UNKNOWN, 2 NO DAMAGE, OVERTURNED 3, MOTOR 4, UNDERCARRIAGE 5, TOTALED 6, BY FIRE 7, OTHER 8

ACCIDENT DESCRIPTION: The driver of Vehicle #1 was traveling North bound on RICHMOND HWY. The Pedestrian was crossing Richmond Hwy from the West Side of the Street to the east Side of the Street but before She could enter on to the curb She was Struck by Vehicle #1 when the Pedestrian entered the intersection She had the right of way however before She reached the east Side of the Street Driver #1 had Green light

OFFENSES CHARGED DRIVER: NONE

	9	10	11	12	13	14	15	16	NAMES OF INJURED - IF DECEASED, INCLUDE DATE OF DEATH
A	P	X	X	X	3/15/47	F	3	2	GEORGE, Willie
B									
C									
D									
E									

ALL INJURED

TROOPER/OFFICER'S NAME	BADGE/CODE NUMBER	DEPARTMENT NAME AND CODE NUMBER	REVIEWING OFFICER	DATE REPORT FILED
L. J. Craig	1819	Fairfax C.O. 029	M. Belle	11/24/98

98297000 385/211/214.02

Richmond Highway CORRIDOR

Prepared By Mr Michael A. Uram

RICHMOND HY NEAR ***LOCKHEED BV***

Date: ***10/24/98*** Time ***0630*** #Injured: 1 Killed: ***0***

Type of Crash ***REG*** ***PED-INJ***

at Fault in Crash ***PED***

The Driver	The Pedestrian
MALE	***FEMALE*** ***3*** Injury Type
Driver Action ***NONE***	***CROSSING AT INTERSECTION AGAINST SI***
Maneuver ***GOING STRAIGHT AHEAD***	Ped Drinking ***1*** (>2 Drinking)
HAD NOT BEEN DRINKING	***FAIRCHILD DR*** ***ALEXANDRIA*** Home Street / Town
Occupation ***CLERK***	Occupation ***CLERK***
Speed At Crash ***25*** Speed Limit ***45***	Weather ***CLEAR***
Type Vehicle ***CHRYSLER*** Yr 85	Aligment ***STRAIGHT LEVEL***
Repair Cost ***$200***	Traffic Control ***TRAFFIC SIGNAL***
Vision ***NOT OBSCURED***	

RICHMOND HY AT ***LOCKHEED BV***

Date: ***01/04/99*** Time ***0805*** #Injured: 1 Killed: ***0***

Type of Crash ***REG*** ***H&R***

at Fault in Crash ***DRIVER***

The Driver	The Pedestrian
MALE	***FEMALE*** ***4*** Injury Type
Driver Action ***HIT AND RUN***	***CROSSING AT INTERSECTION WITH SIGNA***
Maneuver ***MAKING RIGHT TURN***	Ped Drinking ***1*** (>2 Drinking)
UNKNOWN	***LOCKHEED BV*** ***ALEXANDRIA*** Home Street / Town
Occupation ***H&R***	Occupation ***HOUSEKEEPER***
Speed At Crash ***45*** Speed Limit ***45***	Weather ***FOGGY***
Type Vehicle ***CHEV*** Yr 90	Aligment
Repair Cost	Traffic Control ***TRAFFIC SIGNAL***
Vision ***NOT OBSCURED***	

Attachment B

Sample of Motorist and Pedestrian Behavior Data Collection Form

Sample: Motorist Behavior Form

Observer: _____

Location: _____ Period (Before or After): _____

Date: _____ Time - From:_____ To: _____

Motorist Obs. Number	Arrival at Intersection			Vehicle Manuever			Vehicle Passes Thru on			Conflict w/ Ped (Y or N)
	G	Y	R	Thru	RT	LT	G	Y	R	
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
.										
.										
.										
.										
200										

Sample: Pedestrian Behavior Form - Pedestrian Countdown Signals

Observer: _____

Location: _____ Period (Before or After): _____

Date: _____ Time - From: _____ To: _____

Weather Conditions: _____

Light Conditions: Daylight _____ Darkness _____ Other _____

Ped. Observation		Begin Crossing			Finish Crossing			Ped. Sex	Ped Age	Ped Action
Number	(A=alone, G=group*)	W	FDW	DW	W	FDW	DW	(M or F)	(A: 0-17, B: 18-64, C: 65+)	(R=run, A= abort, W=walk, C=conflict)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
.										
.										
200										

* Each pedestrian observation is of one pedestrian, whether alone or in a group. (Indicate which pedestrians are in groups together.) If pedestrian is part of a group, indicate if he/she is lead pedestrian or following pedestrian.

Attachment C

Pedestrian Survey Questions

Pedestrian Survey Questions for the Evaluation of Countdown Pedestrian Signal

1. **What does the flashing DON'T WALK mean?**

    a. **It is legal to enter the crosswalk as long as you can reach the other side prior to the steady DON'T WALK signal display.**
    b. **It is illegal to enter the crosswalk.**

2. **Do you cross any differently with the countdown signal than traditional pedestrian signals?**

    a. **YES (explain below)**
    b. **NO (explain below)**

3. **Do you know approximately how many seconds you need to cross this street?**

    a. **YES (if yes, please indicate the number of seconds)**
    b. **NO**

4. **Does the number of seconds displayed on the signal help you make your decision on whether you should start your crossing or not?**

    a. **YES, it helps me to make the decision**
    b. **NO, it doesn't mean anything to me. I do not make my decision based on it.**

5. **Do you interpret the combination of the flashing DON'T WALK and the countdown numbers to mean it is legal to enter the crosswalk on a flashing DON'T WALK as long as you can reach the other side prior to the countdown signal reaching zero?**
    a. **YES**
    b. **NO**

Attachment D

Pictures and Specifications of Pedestrian Countdown Signals
Manufactured by GELcore

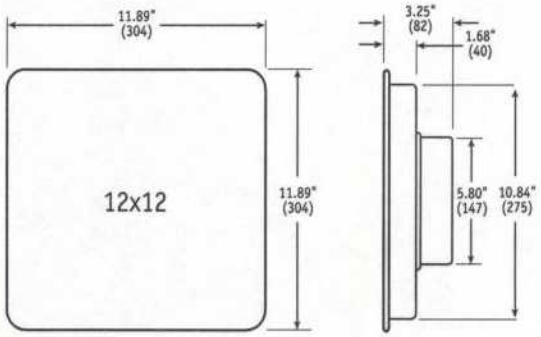
12 x 12 Pedestrian • LED Traffic Signal Modules

Features

- High efficiency & long life LED light source
- Designed to conform to applicable ITE specifications
- Failure of single LED results in loss of light from only that LED
- UV stabilized shell
- Moisture and dust resistant
- Direct retrofit design
- All products shipped with installed gasket

1 Dimensions

Dimensions = inches. (mm) indicates metric equivalent



2 Performance Standards

Characteristic	Rating
Chromaticity (Color)	ITE PTCSI-STD
Moisture Ingress	NEMA STD 250 Type IV-1991
Vibration Resistance	MIL-STD-833 Method 2007
Electronic Noise	FCC Title 47 Sub. B Sec.15*
Transient Protection	ITE PTCSI-STD

*Class A

3 Operating Specifications

Parameter	Rating
Operating Temperature	-40°C (-40°F) to +74°C (165°F)
Operating Voltage Range	80V to 135V (60Hz AC)
Power Factor (P.F.)	>90
Total Harmonic Distortion (T.H.D.)	<20%

Information provided is subject to change without notice. All values are design or typical values when measured under laboratory conditions.

GELcore LLC markets and distributes the GE brand of LED products and uses the GE trademarks under license from the General Electric Company.

4 Product Characteristics

Model Number	Size		Configuration	Symbol			Voltage (AC)	Power (W)		
	(Inches)	(mm)		Hand	Person	Countdown	Typical	Hand	Person	Figure
PS6-PFH1-01A	12x12	300x300	Hand Only	Full	-	-	120V - 60Hz	8	-	A
PS6-CFL3-01A	12x12	300x300	Overlay	Outline	Outline	-	120V - 60Hz	6	4	B
PS6-CFC5-01A	12X12	300x300	Side by Side	Full	Outline	-	120V - 60Hz	7	4	C
PS6-PFD2-01A	12x12	300x300	Countdown	-	-	2 Digit	120V - 60Hz	-	-	D
PS6-WFM1-01A	12x12	300x300	Person Only	-	Outline	-	120V - 60Hz	-	6	E

Test Condition: T_a = 25°C All values are design or typical values when measured under laboratory conditions.

Figure A

PS6-PFH1-01A

Figure B

PS6-CFL3-01A

Figure C

PS6-CFC5-01A

Figure D

PS6-PFD2-01A

Figure E

PS6-WFM1-01A

Web Site:www.gelcore.com • E-mail:signals@gelcore.com

Americas/Canada P:216.606.6555 • F:216.606.6599 • Europe P:++32.2.679.0116

Publication No:SSUS009E • R:11/18/02 • GELcore is a joint venture between GE Lighting and EMCORE Corporation

Products by GELcore

LED Countdown Pedestrian Signal Modules

1 Features

- High efficiency & long life LED light source
- Designed to conform to applicable ITE specifications
- Failure of single LED results in loss of light from only that LED
- Automatically adjusts to the programmed intervals of the traffic controller
- UV stabilized shell
- All products shipped with installed gasket
- Moisture and dust resistant
- Direct retrofit design

2 Performance Standards

Characteristic	Rating
Chromaticity (Color)	ITE PTCSI-STD
Moisture Ingress	NEMA STD 250 Type IX - 1991
Vibration Resistance	MIL-STD-883 Method 2007
Electronic Noise	FCC Title 47 Sub. Sec.15*
Transient Protection	ITE PTCSI-STD

*Class A

3 Operating Specifications

Parameter	Rating
Operating Temperature	-40°C (-40°F) to +74°C (165°F)
Operating Voltage Range	80V to 135V (60Hz AC)
Power Factor (P.F.)	>90%
Total Harmonic Distortion (T.H.D.)	<20%

Information provided is subject to change without notice. All values are designed or typical when measured under laboratory conditions.

GELcore LLC markets and distributes the GE brand of LED products and uses the GE trademarks under license from the General Electric Company.

4 Product Characteristics

Model Number	Size		Operating Mode	Symbol			Voltage (AC)	Power (W)			Figure
	(inches)	(mm)		Hand	Person	Countdown	Typical	Hand	Person	Countdown	
PS7-CFC9-01A	16x18	407x450	Clearance Cycle	Outline	Outline	2 Digits/2 Rows	120V-60Hz	9	12	17	A
PS7-CFC9-01A-20	16x18	407x450	Full Cycle	Outline	Outline	2 Digits/2 Rows	120V-60Hz	9	12	17	A
PS6-PFD2-01A	12x12	300x300	Clearance Cycle	N/A	N/A	2 Digits/2 Rows	120V-60Hz	N/A	N/A	8	B
PS6-PFD2-01A-20	12x12	300x300	Full Cycle	N/A	N/A	2 Digits/2 Rows	120V-60Hz	N/A	N/A	8	B

5 Dimensions Dimensions in inches. (mm) indicates metric equivalent

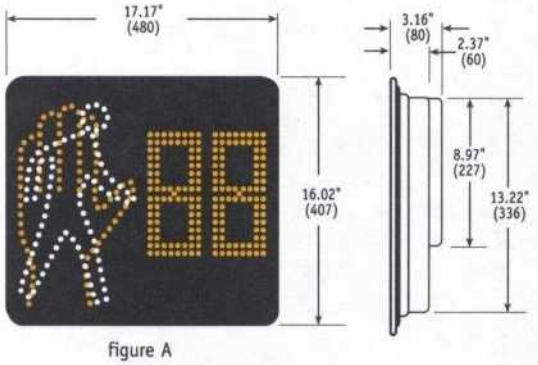


figure A

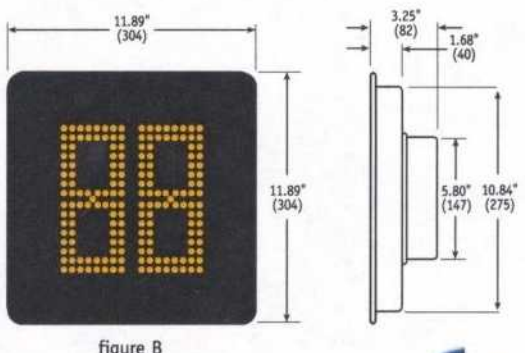


figure B

Web Site:www.gelcore.com • E-mail:signals@gelcore.com

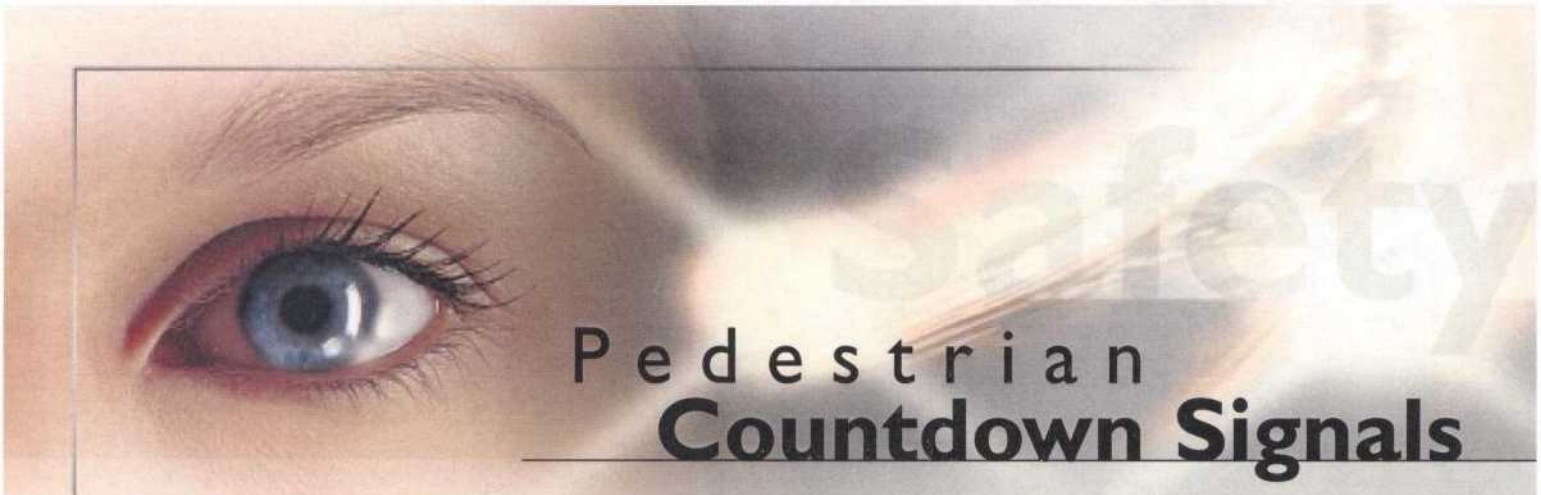
Americas/Canada P:216.606.6555 • F:216.606.6599 • Europe P:++32.2.679.0116

Publication No:SSUS009E • R:10/22/02 • GELcore is a joint venture between GE Lighting and EMCORE Corporation

Products by GELcore

Attachment E

Pictures and Specifications of Pedestrian Countdown Signals
Manufactured by Tassimco Technologies Canada Inc.



Pedestrian Countdown Signals

Taking some of the stress out of city streets!

Studies show that many pedestrians are confused by the flashing hand indication used on conventional signals. Some will cross when there isn't enough time left while others will rush hectically across when there is plenty of time. In other words, pedestrians have no reliable point of reference.

The original countdown signal!

In 1992, ***Tassimco*** developed and introduced the first LED countdown timer for pedestrians. The added real-time display made conventional signals much clearer and easier to understand. 10 years later, the ***Tassimco*** countdown signal is still the most advanced product of it's kind.

Proven efficiency!

With thousands of installations across North America, the ***Tassimco*** countdown signal successfully proved it's efficiency. Site surveys and studies reveal that 90% of pedestrians interviewed think it's a good idea and that it makes them feel safe to know how much time they actually have. Studies also concluded that pedestrians were less likely to begin crossing when there is little time left and less than 1% were still in the crosswalk when the flashing hand became solid.

Product Characteristics

- Portland orange hand, White person
- High efficiency & long life LED light source
- Sealed polycarbonate enclosure (NEMA)
- Conforms to applicable ITE specifications
- Regulated for line voltage fluctuations
- Transients & voltage surge protection
- Meets FCC regulations for electronic noise
- Temp. operating range: -40°C to +74°C
- Compatible with all traffic controllers
- Standard 3 wire installation (Wlk, D/Wlk, N)
- Automatic dimming with built-in time delay
- Internal conflict monitoring
- Fixed time or Coordinated operation
- Recognition of emergency preemption
- Recognition of recycling ped. phases
- User selectable options (dip switches)

Models Available: Retrofit modules for 9", 12" & 16" enclosures, with or without Time display. See models and configurations list.

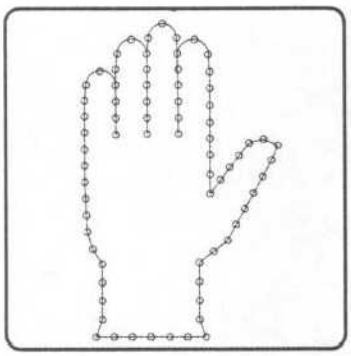
Distributed by:

www.Tassimco.com
Technologies

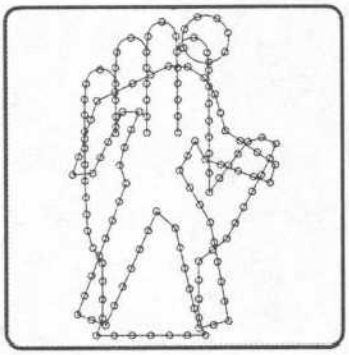
TEL: 1-800-363-5913 • FAX: (450) 477-0047

TASSIMCO TECHNOLOGIES CANADA INC.
3100 Jacob Jordan, Terrebonne (Québec) J6X 4J6
1-800-363-5913

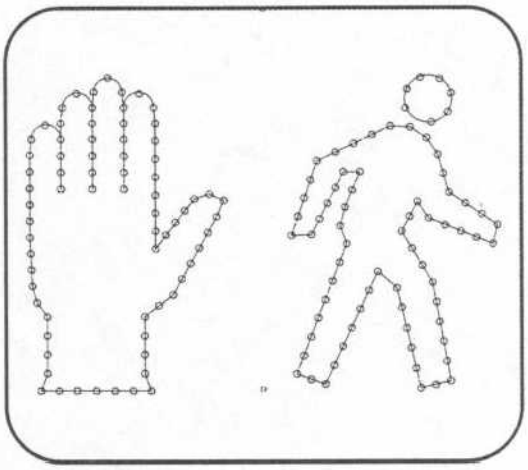
LED Pedestrian Signal Configurations
(Sealed Retrofit Modules)



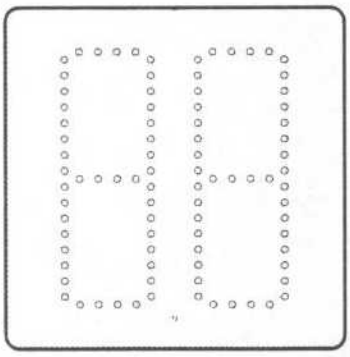
Model – PLS 110
12" Hand



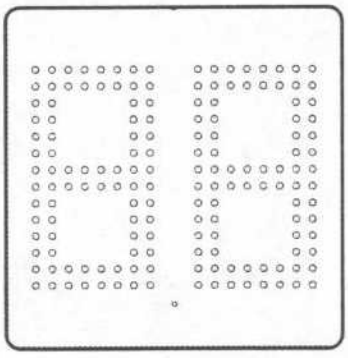
Model – PLS 120
12" Hand/Man Combo



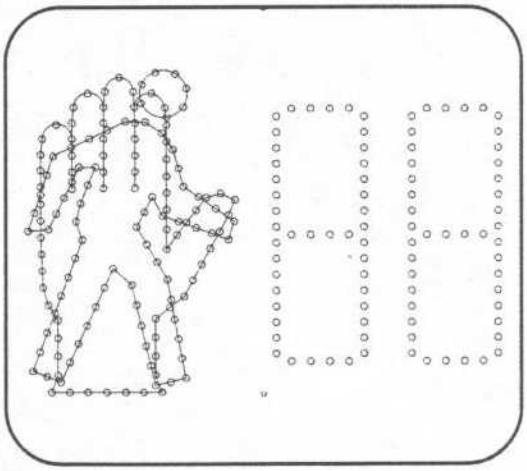
Model – PLS 160
16" Hand/Man Combo



Model – PCS 120
12" Countdown
(single stroke)



Model – PCS 123
12" Countdown
(double stroke)



Model – PCS 160
16" Ped Signal w/countdown

See corresponding product specifications

PED.US.CONFIG

TASSIMCO TECHNOLOGIES CANADA INC.
3100, JACOB JORDAN, TERREBONNE (QUEBEC) J6X 4J6
1-800-363-5913

12" PEDESTRIAN LED SIGNAL MODULE
MODEL NO. PLS 120

"SPECIFICATIONS"

1.0 General

1.1 LED Pedestrian signal module designed as retrofit replacements for existing signal lamps shall not require special tools for installation.

1.2 LED modules shall fit into existing 12" traffic signal housings built to VTCSH standards without modification to the housing.

2.0 Environmental

2.1 The LED Signal module shall be rated for use in the ambient operating temperature range of -40°C (-40°F) to +74°C (+165°F).

2.2 The LED module shall be completely sealed against dust and moisture intrusion per the requirements of NEMA Standard 250 - 1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal components.

3.0 Construction

3.1 The LED signal module shall be a single, self-contained device, not requiring on-site assembly for installation into existing traffic signal housing.

3.2 The assembly of the LED module shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

3.3 Three secured, color coded (blue, red, white), 36 inches long, 600V, 16 AWG jacketed wires, rated for service at +105°C, are to be provided for electrical connections.

4.0 Chromaticity

4.1 The measured chromaticity coordinates for the "lunar white" walking man and the "Portland orange" hand shall conform to the chromaticity requirements of section 8.04 and figure 1 of the VTCSH standard.

4.2 The chromaticity measurements shall remain unchanged over the input line voltage range of 80 VAC to 135 VAC.

5.0 Display

5.1 The LED signal module shall consist of a double message overlay combining the symbols of a hand and walking man.

5.2 The LED's shall be arranged in a manner to form an outline of the symbols. The shape of the outline shall conform to the standard symbols for pedestrian signals.

5.3 The LED's shall be distributed evenly along the message outline. The distance between each LED shall not vary more than 10%.

5.4 The hand/man symbols shall be not less than 10" in height and 6.5" in width.

5.5 The display shall be made of at least 72 high intensity LED's for each one of the hand/man symbols in order to assure adequate luminous intensity.

5.6 The "Portland orange" LED's shall be of the latest AlIn GaP technology and the "lunar white" LED's of the latest In GaN technology.

5.7 The individual LED light sources shall be interconnected so that a catastrophic failure of a single LED will result in a total loss of not more than 3 LED's or 5% of the signal light output.

5.8 There shall be no electronic components visible on the front of the display face. The display face shall consist solely of LED's mounted on a mat black PCB.

6.0 Drive circuitry

6.1 The driver board shall drive the LED's at a DC current not exceeding the maximum rating recommended by the LED manufacturer (20ma).

6.2 The driver board shall regulate the LED drive current on both hand/man messages to compensate for line voltage fluctuations over the range of 80VAC to 135 VAC. The luminous output shall not vary more than 10% over the voltage range and shall not be perceptible to the human eye.

6.3 The drive circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in section 2.1.6, NEMA Standard TS-2, 1992.

6.4 The on-board circuitry shall meet FCC title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.

6.5 The circuitry shall ensure compatibility and proper triggering and operation of load switches and conflict monitors in signal controllers currently in use by the procuring traffic authority.

7.0 Dimming

7.1 In order to reduce long term degradation to LED's, the signal modules shall be designed to reduce the intensity of light output by 30% in response to diminished ambient light level

7.2 The dimming circuit shall have a 30 sec. Delay to prevent interference caused by shadows or headlights.

7.3 LED drive current shall be regulated just as effectively when in the "dimmed" state.

7.4 A switch or jumper connector shall be provided to allow user to disable the dimming feature.

8.0 Warranty

8.1 LED signal modules shall be replaced or repaired if fails to function as intended due to workmanship or material defects within the first 60 months from date of delivery.

TASSIMCO TECHNOLOGIES CANADA INC.
3100, JACOB JORDAN, TERREBONNE (QUEBEC) J6X 4J6
1-800-363-5913

12" COUNTDOWN SIGNAL MODULE
MODEL NO. PCS 120

"SPECIFICATIONS"

1.0 General

1.1 LED countdown module designed as retrofit replacements for existing signal lamps shall not require special tools for installation.

1.2 LED countdown modules shall fit into existing 12" traffic signal housings built to VTCSH standards without modification to the housing.

2.0 Environmental

2.1 The LED countdown module shall be rated for use in the ambient operating temperature range of -40°C (-40°F) to +74°C (+165°F).

2.2 The LED countdown module shall be completely sealed against dust and moisture intrusion per the requirements of NEMA Standard 250 - 1991 sections 4.7.2.1 and 4.7.3.2 for type 4 enclosures to protect all internal Components.

3.0 Construction

3.1 The LED countdown module shall be a single, self-contained device, not requiring on-site assembly for installation into existing traffic signal housing.

3.2 The assembly of the LED countdown module shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.

3.3 Three secured, color coded (blue, red, white), 36 inches long, 600V, 16 AWG jacketed wires, rated for service at +105°C, are to be provided for electrical connections.

4.0 Chromaticity

4.1 The measured chromaticity coordinates for the "Portland orange" digits shall conform to the chromaticity requirements of section 8.04 and figure 1 of the VTCSH standard.

4.2 The chromaticity measurements shall remain unchanged over the input line voltage range of 80 VAC to 135 VAC.

5.0 Display

5.1 The LED countdown signal module shall consist of two 7 segment digits.

5.2 The LED's shall be distributed evenly along the message outline. The distance between each LED shall not vary more than 10%.

5.3 The countdown digits shall be 8" high and shall be made of at least 88 LED's .

5.4 The "Portland orange" LED's shall be of the latest AlIn GaP technology

5.5 There shall be no electronic components visible on the front of the display face. The display face shall consist solely of LED's mounted on a mat black PCB.

6.0 Drive circuitry

6.1 The driver board shall drive the LED's at a DC current not exceeding the maximum rating recommended by the LED manufacturer (20ma).

6.2 The drive circuitry shall include voltage surge protection to withstand high-repetition noise transients and low-repetition high-energy transients as stated in section 2.1.6, NEMA Standard TS-2, 1992.

6.3 The on-board circuitry shall meet FCC title 47, Sub-Part B, Section 15 regulations concerning the emission of electronic noise.

6.4 The circuitry shall ensure compatibility and proper triggering and operation of load switches and conflict monitors in signal controllers currently in use by the procuring traffic authority.

7.0 Countdown

7.1 The countdown timer module shall have a micro-processor capable of setting it's own time when connected to a traffic controller.

7.2 The countdown timer module shall continuously monitor the traffic controller for any changes to the pedestrian phase time and re-program itself automatically if needed.

7.3 The countdown module shall be compatible with all types of traffic controllers in existence.

7.4 The countdown module shall have two "user selectable" operating modes: 1- "FIXED TIME", in this mode the timer shall count down the entire duration of the walk and clearance time. 2- "COORDINATED", in this mode the timer shall count down the duration of the clearance time only.

7.5 The countdown module shall have an internal conflict monitor to prevent any possible conflicts between the hand/man signals and the countdown signals.

7.6 For safety purposes in the case of emergency, pre-emption or any possible malfunction, the countdown shall automatically clear to "O" if a flashing hand becomes solid for more than .750 sec.

7.7 In the case of a power failure, when power is re-established the countdown display shall blank-out during the initial cycle for automatic re-programming.

7.8 The countdown module shall be equipped with a test switch to turn on all 7 segments of both digits for verification purposes.

7.9 The micro-processor shall be monitored by a watch dog circuit with flashing LED for confirmation of proper operation.

8.0 Dimming

8.1 In order to reduce long term degradation to LED's, the signal modules shall be designed to reduce the intensity of light output by 30% in response to diminished ambient light level

8.2 The dimming circuit shall have a 30 sec. Delay to prevent interference caused by shadows or headlights.

8.3 LED drive current shall be regulated just as effectively when in the "dimmed" state.

8.4 A switch or jumper connector shall be provided to allow user to disable the dimming feature.

9.0 Warranty

9.1 LED signal modules shall be replaced or repaired if fails to function as intended due to workmanship or material defects within the first 60 months from date of delivery.

TASSIMCO TECHNOLOGIES INC.

LED Countdown Signals
(version 4.13 - July 4, 2002)

COUNTDOWN OPERATION UNDER PRE-EMPTION

Features

- Requires 1 cycle to set initial program, requires 2 cycles to reset initial program.
- Will automatically re-program itself within 1 cycle, only if time is extended
- Will not re-program to a reduced time unless time is identical for 2 consecutive cycles.
- Will ignore consecutive cycles of 0 or 1 second.

Description of Operation

The countdown signal shall recognize pre-emption calls at the exact time when they occur and skip the pre-empted time to either display the clearance time or "0" depending on the type of pre-emption (emergency vehicle or train pre-emption).

At the cycle following a pre-empted time, the countdown signal shall display the correct time as initially programmed and not be affected by the reduced time. However if the time was extended, the countdown shall automatically re-program itself and display the new extended time at the following cycle.

The countdown shall re-program automatically to a reduced time only if the reduced time remains the same for 2 consecutive cycles. However if the reduced time is equal to either 0 or 1 second, the countdown signal shall ignore it and continue to display the correct time as initially programmed

If the signal controller needs to be re-programmed to a reduced time, the service person can either power down the countdown signals to reset the program or run 2 cycles for the signals to re-program automatically.

Summary

This new firmware version is designed to prevent countdown signals from displaying incorrect time at the cycle following a pre-emption call. At the same time, the countdown signals maintain the ability to re-program automatically if the controller timing is modified. Tassimco firmware version 4.13 differentiates between a pre-empted time and a reduced timing by comparing 2 consecutive cycles. This version will also ignore phase times of 0 or 1 second which can only be attributed to pre-emption calls.

TASSIMCO TECHNOLOGIES CANADA INC.
3100 Jacob Jordan, Terrebonne (Quebec) J6X 4J6
1-800-363-5913

LED Pedestrian Signals
(Product Features)

- All LED Hand/Man pedestrian retrofit module
- HAND: Portland orange high intensity LED's
- MAN: Lunar white high intensity LED's
- Regulating power supply on both hand + man displays
- Less than 5% light intensity fluctuation from 85VAC to 135 VAC
- No flickering at any input voltage within range
- No chromaticity variation at any input voltage within range
- Equipped with phototransistor for automatic dimming
- 30 sec. Delay on dimming to prevent interference from headlights and shadows
- Dimming feature provided on both hand + man displays
- Protected against voltage spikes + transients
- Both channels individually fused
- Loss of one LED will affect less than 5% of display (3 LED's)
- Self contained module requires no pre-assembly
- Totally sealed against water and dust intrusions by polymeric moulded back cover, non-glare lexan lens, interior and exterior gasket
- 3 color coded 16 gauge wires for easy connections