Invitation To Bid

Louisville/Jefferson Co Metro Government

Bid Number:	1881

Revision:	0
Date:	20-AUG-09

Sealed bids will be received until 3:00 PM and publicly opened and all bid prices read aloud at that hour on date specified and under following conditions:

Bids received after 3:00 PM on Reply By Date will not be opened.

Bids must be signed by individuals or firms making bid. Samples to be submitted if requested. The right is reserved to select the lowest and best bid, also to reject any or all bids or any part thereof.

On proposals amounting to $2000.00 or over, successful bidder may be required to execute and give performance bond for full amount of same by a Surety Company authorized to do business in the Commonwealth of Kentucky before order is issued.

All items quoted are considered F.O.B. Delivered, unless otherwise stated.

Mark envelope with Bid Number, Reply By Date and Address to:
Office for Management & Budget - Division of Purchasing 611 West Jefferson Street Mezzanine Level Louisville, KY 40202

Reply By: 02-SEP-09

#	Description
1	**A Price Contract to provide a portion of Louisville Metro Government's need for LED Traffic Signal Modules, LED Traffic Signals, LED Pedestrian Signals and Miscellaneous Hardware for a period of twelve (12) months, as per the attached specificationS.**

DELIVERY TIME: _____
(# of days A.R.O.)

We guarantee all the above named goods to be first-class and equal in every particular to above specification. Delivery to be made immediately on advice of acceptance unless otherwise specified.

UNSIGNED BIDS WILL NOT BE CONSIDERED

FIRM NAME: Traffic Control Products

OFFICIAL'S SIGNATURE: [signature]

ADDRESS: 4565 Glenbrook Road
Willoughby, OH 44094

PHONE: 440-951-8929

DATE: 08/31/09

Invitation To Bid

Louisville/Jefferson Co Metro Government

Bid#: 1881

Standard Text

Please submit all factory literature and supporting documentation with each submitted copy of your Bid/RFP.
Any Kentucky Public Procurement Agency will have the option of making purchases using this bid / contract by issuing a separate Purchase Order.
If you have any questions concerning the Purchasing Requirements of this solicitation please call Senora Ford at (502) 574-5767.
RENEWAL OPTION:
Metro Government reserves the right to renew & extend contracts for a period of one (1) year and from year to year thereafter, upon the same terms and conditions, if such renewal or extension is agreed to by the contractor. Total contract period cannot exceed five (5) years. Written notice of Metro Government's intention to renew/extend will be sent prior to the expiration date.

Metro Government reserves the right to issue a separate bid for this product / service when it is in it's best interest.

Any Kentucky Public Procurement Agency will have the option of making purchases or establishing a Price Contract under the terms and conditions of this bid.

Contractor shall notify Louisville-Jefferson County Metro Purchasing of any change in their status within 30 days of the change.

The prices on the resulting contract shall be the maximum that will be charged for the covered products and/or services. Any requested increase of these prices shall be requested in writing to the Metro Division of Purchasing. The Division of Purchasing will either accept or decline the request. Increases shall not be effective until approval is received in writing.

Metro Government will accept no price increases for the first year of the annual price contract. All price increase requests after the first year must be submitted in writing to the Purchasing Division, 611 West Jefferson Street, Mezzanine Level, Louisville, KY 40202. Upon notification by the vendor of documented market increases, Purchasing may either accept the price change or cancel the contract.
Any inquiries on this Bid/RFP after the opening date shall be addressed in writing to:

Director of Purchasing
Office for Management & Budget - Division of Purchasing
611 West Jefferson Street - Mezzanine Level
Louisville, KY 40202

Invitation To Bid

Louisville/Jefferson Co Metro Government

The Successful Bidder will be required to furnish insurance coverage as stated in the specifications.

If you do not plan to sub-contract any of this work, you must complete and sign Form GFE-1 to indicate work will be self-performed.

SUBMIT BIDS WITH A COMPLETE UNBOUND ORIGINAL (please mark original) AND ONE COPY. The copy should be a complete copy of your original bid. Failure to submit ALL forms and information required in specifications may be reason for disqualification.
If the successful vendor agrees to extend the pricing for a twelve month period the Purchasing Department may purchase additional items from this bid by issuing a separate purchase order. The pricing and specifications for the new purchase shall be the same as those in the original bid and original purchase order.

STANDARD TEXT

Please indicate your Louisville/Jefferson County Metro Government Revenue Commission Number [redacted] and your Federal Tax Identification Number [redacted]. If you are a Metro Government vendor or you are doing business in Metro Louisville, you should already be registered with the Revenue Commission and have all of your required taxes paid. If you become the successful vendor, you must be properly registered with the Revenue Commission and have all of your required taxes paid prior to the award of this contract. For further information please call Lisa Finegan of the Revenue Commission at (502) 574-4860.

Ordinance #214, Series 2005, concerning the requirement for an Affirmative Action Plan for contractors and vendors doing business with Louisville/Jefferson County Metro Government, shall apply to this Notice for Bids. Any questions concerning the ordinance should be directed to the Human Relations Commission at (502) 574-3631.
All parties hereto acknowledge any agreement is subject to Metro Government Ordinances, relating to the requirement of an affirmative action plan or other equal employeement criteria for contractors and vendors to do business with the Metro Government. Failure to comply with the terms of said ordinances will be cause for suspension, termination or cancellation of any agreement.

All prices quoted are to be F.O.B. Delivered to Destination.

BID PRICES ARE TO BE FIRM FOR A MINIMUM OF Ninty (90) DAYS FROM BID/RFP OPENING DATE

Please include your FAX number 440-951-8203.

Time discounts or cash discounts shall not be considered in award evaluation. Delivery time may be an evaluation factor in award of the Invitation for Bid/Price Inquiry/Proposal.

Metro Government is not responsible for any cost incurred by bidders/proposers in the preparation of bids/proposals.

(1) It shall be a breach of ethical standards for any employee with procurement authority to participate directly in any proceeding or application; request for ruling or other determination; claim or controversy; or other particular matter pertaining to any contract , or subcontract, and any solicitation or proposal therefore, in which to his knowledge:
a. He, or any member of his immediate family has a financial interest therein; or
b. A business or organization in which he or any member of his immediate family has a financial interest as an officer, director, trustee, partner, or employee, is a party; or
c. Any other person, business or organization with whom he or any member of his immediate family is negotiating or has an arrangement concerning prospective employment is a party. Direct or indirect participation shall include but not be limited to involvement through decision, approval, disapproval, recommendation, preparation, of any purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity.
(2) It shall be a breach of ethical standards for any person to offer, give, or agree to give any employee or former employee, to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment, in connection with any decision, approval, disapproval, recommendation, preparation of any part of a purchase request, influencing the content of any specification or purchase standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling or other determination, claim or controversy, or other particular matter, pertaining to any contract or subcontract and any solicitation or proposal therefore.

(3) It is a breach of ethical standards for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier

subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.
(4) The prohibition against conflicts of interest and gratuities and kickbacks shall be conspicuously set forth in every local public agency written contract and solicitation therefore.
(5) It shall be a breach of ethical standards for any public employee or former employee knowingly to use confidential information for his actual or anticipated personal gain, or the actual or anticipated personal gain of any other person.

The mentioned manufacturer's names and model numbers are used only to indicate type and quality of merchandise needed and are in no way intended to limit bidding

Assignment of Contract: The bidder shall not assign or subcontract any portion of the contract without the express written consent of the Louisville/Jefferson County Metro Government. Any purported assignment or subcontract in violation hereof shall be void. It is expressly acknowledged that the Metro Government shall never be required or obligated to consent to any request for assignment or subcontract; and further that such refusal to consent can be for any or no reason, fully within the sole discretion of the Metro Government.

Payment Terms will be Net 30. Metro Government does not pay late fees or finance charges.

Submitted bids shall be for a firm, fixed price.

If the successful vendor agrees to extend the pricing for a twelve (12) month period additional items may be purchased from this bid by issuing a separate purchase order. The bid specifications must be met.

Inquiries on this Bid/RFP after the opening date shall be directed in writing to:
Director of Purchasing
611 West Jefferson Street - Mezzanine Level
Louisville, KY 40202

Louisville/Jefferson Co Metro Government CONDITIONS

1. Unless otherwise stated in the specifications, no bidder will be permitted to withdraw their bid until sixty calendar days after the opening date of this proposal.

2. Where this invitation covers two or more items for which unit prices are quoted, the Metro Government reserves the right to accept or reject any portion of the bid and to award purchase orders to the Metro Government's best advantage.

3. Prices quoted are to be exclusive of the State and Federal Excise Tax from which the Metro Government are exempt.

4. Explanation: Should a prospective bidder find discrepancy in or omissions from the specifications, or be in doubt as to their meanings, he/she shall at once notify the Metro Purchasing Director who shall send written instructions to all prospective bidders. The Metro Government will not be responsible for any oral instructions.

5. All commodities furnished are subject to inspection at the point of delivery by a representative of the Metro Government. All rejected supplies will be returned at vendor's expense.

6. By signature on the face of this bid the bidder expressly states that no fee/attorney's fee, commission, allowance, gratuity, reward, gift, promise or compensation of any kind has been made or paid or will be made or paid in connections with this transaction or any matters arising out of or pertaining to same.

7. The Bidder is requested to show both unit prices and lot prices. In the event of any error the unit price Bid shall prevail.

8. The Metro Purchasing Director reserves the right to waive any formality and/or technicality in any Bid if such waiver is to the Metro Government's advantage.

9. Bids shall be submitted on the forms provided and must be signed by the bidder or an authorized representative. Any corrections to entries made on bid forms should be initiated by the person signing the bid.

10. Bids must be submitted as directed in the Invitation for Bids.

11. Bids shall be submitted prior to the time fixed in the Invitation for Bids.

12. If more than one bid is offered on the same item by one party, or by any person or persons representating a party, all such bids shall be rejected.

13. The owner reserves the right to reject any and all bids.

14. The bidder to whom award is made may enter into a written contract with the Metro Government within the time specified in the Invitation. All insurance requirements including performance and payment bonds shall be furnished the time of signing the formal agreement.

15. The contractor agrees that in the performance of this agreement with the Metro Government, he/she will not discriminate against any workers because of race, creed, color, religion, national origin, handicap or sex and will comply with all applicable Federal, State or local laws and regulation prohibiting such discrimination. The aforesaid provision shall include, but not be limited to the following: Employment and upgrading, demolition or transfer, recruitment and recruitment advertising, lay-off or termination, rates of pay or other forms of compensation, selection for training including apprenticeship.The contractor agrees to post

thereafter in conspicuous places, available for employees and all applicants for employment, notices setting forth the provisions of the above non-discrimination clause. The contractor further agrees to insert the foregoing provision in all sub-contracts hereunder.

16. PATENT INFRINGEMENT - The supplier/contractor must indemnify the Metro Purchasing Department against all damages and expenses resulting from patent infringement.

PLEASE READ CAREFULLY

This Invitation for Bids contains a signature page at the end of the document. By signing the signature page, the Bidder agrees to be bound by the following terms and conditions:

Bidder agrees that this document shall become the final contract and shall be legally bound by the bid document including all terms, conditions and specifications contained in the Invitation for Bids.

Bidder acknowledges that the individual signing the bid document for the Bidder has the authority to contractually and legally bind Bidder to the bid document and all terms, conditions and specifications contained therein.

Once this Invitation for Bids document has been signed and received by the Purchasing Department of the Metro Government, Bidder will not be allowed to change, alter, amend or withdraw their bid except with the express permission of the Director of Purchasing or in accordance to law.

In accordance with Condition #2 attached to the Invitation, if the award is divided among or between vendors, written notification will be given to each vendor of the specific items covered on their respective contracts.

SIGNATURE PAGE

Contractor (Please sign here and type in company name on line immediately below. Please leave all other lines blank)

Traffic Control Products
Company Name

Director of Purchasing

Contract Term:
Effective: January 1, 2010
Expires: December 31, 2010

Items Covered:
All: ✓ * Primary *
See Attached: _____

The Invitation for Bid and response will become part of the contract

LIVING WAGE PREFERENCE

Ordinance 91, Series 2003 establishes a preference for businesses, which provide their employees a minimum wage equal to or exceeding the minimum wage set forth in Section I of the ordinance as of July 1, 2003. That amount is currently **$9.00/hour for all full time employees.**

If supplies or services are to be purchased by competitive sealed bidding, or by competitive negotiation, and the supplies or services are available from a minimum wage business, the bid price or cost quoted by each minimum wage business shall be reduced by 5% for the purpose of determining the lowest bid price; however nothing in the ordinance prohibits the awarding of contracts by Metro Government on the basis of evaluated bid price.

In order to qualify for the 5% preference under Section II of the ordinance, if a contract is for services, and a bidder or offeror uses subcontractors to perform all or part of the work required under the contract, the bidder or offeror shall not subcontract more than 20% of the work to non-minimum wage businesses unless such services are not available from minimum wage businesses.

If a business holds itself out as a minimum wage business by indicating so below, and is subsequently awarded a contract, then it is later discovered that such information was falsely provided, such business will be liable to the Metro Government equal to 30% of the amount of the contract awarded.

If a minimum wage business is awarded a contract under this ordinance, then such business shall post a sign of the applicable minimum wage rate set forth in this ordinance in a conspicuous place and manner so as to inform employees and the public alike that such business pays its employees wages at least commensurate with the applicable minimum wage rate established by this ordinance.

If you meet the requirements of this ordinance and wish to claim certification as a minimum wage business for this bid please sign in the space below.

I certify that my business meets the requirements of Ordinance 91, Series 2003 and wish to be certified as a minimum wage business for this bid. (This page shall be included with bid submission)

Company Name Traffic Control Products
Authorized Offical(Print) Kevin L. Durgin
Signature of Authorized Official [signature]
Title Vice President
Date August 31, 2009

LOCAL VENDOR PREFERENCE APPLICATION

To qualify for local vendor preference a business must:

- Have been established in the Louisville Metropolitan Statistical Area, as defined by the United States Census Bureau (MSA) for twelve (12) months and have an up to date local tax identification number on the date of the bid opening.
- Have its headquarters located in the Louisville MSA, or have a branch office currently located in the Louisville MSA for at least seven (7) years prior to the bid date.
- The city or county which the business is located in must have a reciprocal ordinance which recognizes businesses located in the Louisville MSA
  as a local business for the purpose of a procurement preference. A copy of the reciprocal ordinance shall be included with your bid.
- Utilizes local businesses to furnish at least 75% of the services under a contract unless such services are not available locally.
- **Submit this completed form with your submitted bid. Incomplete applications or applications submitted after the bid opening will not be considered.**

If you meet the above criteria and wish to apply for Local Vendor Preference on this bid please fill out the information at the bottom of this page. Incomplete applications will not be considered. The preference you will receive is 5% of your bid total or 5 points added to your evaluated bid total.

If a vendor is deemed a local vendor for the purposes of this preference on the basis of false information the vendor will be subjected to a fine equal to 25% of the contract price.

Any vendor who is denied local business status may petition the Director of Purchasing within 5 days of the denial. The petition shall outline the reasons why the local vendor status should be awarded. The Director of Purchasing will set a hearing for the petition. The decision of the Director will be final.

Any vendor may challenge in writing within three (3) business days following the day of in which a contract is awarded for a project the grant of a local vendor preference to another vendor. The challenge shall outline why the local vendor preference should not have been awarded. A hearing will be set by the Director of Purchasing who will hear the challenge and render a decision. The decision of the Director will be final.

You may request a complete copy of this Ordinance from the Louisville-Jefferson County Metro Purchasing Department.

Company: _____

Address: Street _____

City _____ County _____ State _____ Zip _____

Revenue Commission Number: _____

Official: _____

Signature: _____ Date: _____

HUMAN RELATIONS COMMISSION
Carolyn Miller-Cooper, Director

GOOD FAITH EFFORT ("GFE") REQUIREMENTS

Participation by certified female owned, certified handicapped owned, or certified minority owned business entities or utilization by contractors of certified female, certified handicapped, or certified minority owned business as subcontractors, if the contract requires or warrants the use of subcontractors, is strongly encouraged and will be a consideration in determining the award of a contract.

All contractors are to utilize their best good faith efforts to utilize subcontractors, certified female owned, certified handicapped owned, and certified minority owned businesses if the procurement situation requires or warrants the use of subcontractors. Good faith efforts by contractors shall be made to reach the goals established by Metro Code of Ordinances § 37.67.

Under Metro Code of Ordinances §37.67, Louisville Metro Government has adopted the following minimum utilization goals for its annual procurement expenditures with certified minority owned, female owned and handicapped owned business enterprises ("MFHBEs"):

- 15% for certified minority owned businesses;
- 5% for certified female owned businesses; and
- 0.5% for certified handicapped owned businesses.

Failure to meet such goals will not result in disqualification from participation in the particular procurement process. Contractors, however, will be expected to provide written explanations (See attached GFE Forms) to the Executive Director of the Human Relations Commission of efforts they have made to utilize as subcontractors from certified minority, female and handicapped owned businesses.

Good faith efforts of a potential bidder include, but are not limited to the following:

- Attendance at pre-bid meetings, if any, scheduled to inform MFHBEs of prime and subcontracting opportunities;
- Advertisement in general circulation media, trade association publications, and minority and female business enterprise media to provide notice of subcontracting opportunities;
- Communication with the Human Relations Commission Office seeking assistance and identifying available qualified MFHBEs;
- Efforts made to select portions of work for MFHBE subcontracting in areas with established availability or MFHBE subcontractors;
- Providing a minimum of ten days written notice to known qualified MFHBEs that their interest in prime and subcontracting opportunities or furnishing supplies is solicited;
- Efforts to negotiate with qualified MFHBEs for specific sub-bids, including reasons for rejection of any such sub-bids offered.
- Efforts made to assist qualified MFHBEs meet bonding, insurance, or other governmental contracting requirements.

These requirements are contractual obligations and will be included in the construction contract. Failure to comply may result in a finding of breach of contract, possible disqualification of the Bidder to bid on future contracts, or a claim for damages.

SUBCONTRACTOR AND SELF-PERFORM WORK LIST (FORM GFE-1)

FORM GFE-1 DUE DAY AFTER BID OPENING BY 4:00PM - FROM ALL BIDDERS - TO LOUISVILLE METRO HUMAN RELATIONS COMMISSION (Failure to timely submit Form GFE-1 will result in bid rejection)

- Bidders shall list ALL Subcontractors/Suppliers to be used on this contract regardless of the dollar amount on Form GFE-1. If this bid includes bid alternates for additional work, Bidders shall list ALL Subcontractors/Suppliers who will be used if Louisville Metro elects to contract the additional work.

- Bidders are required to make good faith efforts to subcontract with MFHBEs for every division of work available in this bid opportunity ("Divisions of Work") unless the work will be self-performed by the Bidder.

- Bidders shall list any GFE Divisions of Work they intend to self-perform and separately list any GFE Divisions of Work where the identity of the subcontractor who will perform the work is undetermined at bid time.

- Examples of Divisions of Work to be listed on Form GFE-1 include, but are not limited to: clearing/earthwork, site concrete, asphalt paving, framing, painting, flooring plumbing, electrical, and HVAC. The number of subcontracting opportunities or Divisions of Work for GFE purposes may be greater and/or different than the divisions of work that might be outlined in the technical specifications.

- Best good faith efforts require that Bidders make contact with each MFHBE at least ten (10) calendar days before bid opening and that MFHBEs be provided the same information as other subcontractors/suppliers.

- Bidders shall contact MFHBEs by letter, fax or email ("Written Communication") to advise them of potential subcontracting opportunities.

- Bidders should follow up the Written Communication with telephone calls to each MFHBE contacted to determine if a bid will be submitted or if further information is required. A MFHBE need not be contacted if that MFHBE responds to the Written Communication with a statement that the MFHBE will not bid on this project or if a MFHBE has already submitted a sub-bid.

MFHBE SUBCONTRACTOR GFE LOG (FORM GFE-2)

FORM GFE-2 WITH ATTACHED WRITTEN COMMUNICATIONS DUE DAY AFTER BID OPENING BY 4:00PM - FROM ALL BIDDERS - TO LOUISVILLE METRO HUMAN RELATIONS COMMISSION (Failure to timely submit Form GFE-2 will result in bid rejection and failure to timely submit the attached Written Communications may result in bid rejection, at the Metro Government's discretion)

- Each Bidder shall submit with the Form GFE-2 one copy of each Written Communication sent to a MFHBE Subcontractor/Supplier to solicit bids for this project.

- **Optional Good Faith Efforts**

  Bidders should consider public advertisements, attendance at pre-bid meetings, and technical and/or financial assistance to MFHBEs as part of their good faith efforts activities. Such activities should be listed on GFE-2 with written documentation of such activities attached.

SUBCONTRACTOR PAYMENT CERTFICATION (FORM GFE-3)

FORM GFE-3 DUE EACH MONTH OF THE CONTRACT PERIOD

- The reporting of subcontractor payments for all Louisville Metro Government contracts will be accomplished by using the Form GFE-3, which must be submitted monthly to the Louisville Metro Human Relations Commission.

- The Form GFE-3 requires the listing of invoice numbers sent to the responsible Metro departments for payment. The amounts listed on the form should equal the total amount billed to Louisville Metro Government for the applicable month.

All forms are available on the Louisville Metro Human Relations Commission website:
http://www.louisvilleky.gov/HumanRelations

Louisville Metro Human Relations Commission • 410 W. Chestnut Street, Suite 300A • Louisville, KY 40202
502-574-3631 phone • 502-574-3190 fax • 502- 574-4332 TDD

Form GFE-1

LOUISVILLE METRO GOVERNMENT
GOOD FAITH EFFORTS ("GFE")
SUBCONTRACTOR AND SELF-PERFORM WORK LIST

DUE DAY AFTER BID OPENING BY 4:00 PM TO THE HUMAN RELATIONS COMMISSION

Bidder Name: Traffic Control Produts
☐ MBE ☐ FBE ☐ HBE

Bid Number: 1881

Total Bid Amount: _____

Email Address: _____

Project Name: _____

Fax or mail this form to Louisville Metro Human Relations Commission • 410 W. Chestnut Street, Suite 300A • Louisville, KY 40202
502-574-3631 phone • 502-574-3190 fax • 502- 574-4332 TDD

DIVISIONS OF WORK (BIDDER WILL SELF-PERFORM)
Traffic Control Products is the supplier of traffic signal / controller equipment

DIVISIONS OF WORK (UNDETERMINED WHO WILL PERFORM)
NA

LEGAL NAME OF ALL SUBCONTRACTORS	SUPPLIER	DIVISION OF WORK	SUBCONTRACT AMOUNT	% of Total Bid	CERTIFIED SUBCONTRACTOR MBE	FBE	HBE
NA	☐				☐	☐	☐
	☐				☐	☐	☐
	☐				☐	☐	☐
	☐				☐	☐	☐
	☐				☐	☐	☐
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	☐				☐	☐	☐
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	☐				☐	☐	☐
	☐				☐	☐	☐
	☐				☐	☐	☐
	☐				☐	☐	☐
	☐				☐	☐	☐
		Total	$0.00				

Signature of Company Official: _____

Date: 08/31/09

Printed Name: Kevin L. Durgin

Form GFE-2

LOUISVILLE METRO GOVERNMENT
GOOD FAITH EFFORTS ("GFE")
MFHBE SUBCONTRACTOR GFE LOG

DUE DAY AFTER BID OPENING BY 4:00 PM TO THE HUMAN RELATIONS COMMISSION

Bidder Name: Traffic Control Products **Bid Total:** ______

Bid Number: 1881 **Project:** ______

Fax or mail this form to Louisville Metro Human Relations Commission • 410 W. Chestnut Street, Suite 300A • Louisville, KY 40202 502-574-3631 phone • 502-574-3190 fax • 502- 574-4332 TDD

NAME OF MFHBE SUBCONTRACTORS CONTACTED	DIVISION OF WORK	REQUEST FOR QUOTES (Attach)	BID ACTIVITY						Reason for Rejection
			No Response	Quote Received (Attach)	Quote Amount	% of Bid Total	Quote Used	Quote Rejected	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
N/A		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	
		☐	☐	☐			☐	☐	

Other Good Faith Efforts (Attach Supporting Documentation)

Signature of Company Official: ______ **Date:** ______

Printed Name:

Form GFE-3

LOUISVILLE METRO GOVERNMENT
GOOD FAITH EFFORTS ("GFE")
SUBCONTRACTOR PAYMENT CERTFICATION

DUE EACH MONTH OF THE CONTRACT PERIOD TO THE HUMAN RELATIONS COMMISSION

Bidder Name: Traffic Control Products **Total Bid Amount:** _____

Bid Number: 1881 **Project Name:** _____

REPORTING MONTH: _____

Fax or mail this form to Louisville Metro Human Relations Commission • 410 W. Chestnut Street, Suite 300A • Louisville, KY 40202
502-574-3631 phone • 502-574-3190 fax • 502- 574-4332 TDD

ALL SUBCONTRACTORS APPEARING ON FORM GFE-1	ORIGINAL CONTRACT AMOUNT ON FORM GFE-1	AMENDED CONTRACT AMOUNT	SUBCONTRACTOR PAYMENT TOTAL (Attach cancelled checks)		
			Date	Payment Amount	Retainage
N/A					

CONTRACTOR PAYMENT TOTAL (ATTACH INVOICES)		
Invoice Date	Payment Amount	Retainage

ALL SUBCONTRACTORS NOT LISTED OF FORM GFE-1	DIVISION OF WORK	CONTRACT AMOUNT	SUBCONTRACTOR PAYMENT TOTAL (Attach Canceled Checks)			Certified MFHBE
			Date	Payment Amount	Retainage	
						☐
						☐
						☐
						☐
						☐

CONTRACTOR PAYMENT TOTAL (Attach Invoices)		
Date	Payment Amount	Retainage

Signature of Company Official: _____ **Date:** _____

Printed Name: _____

Louisville Jefferson County
Metro Government

Public Works Electrical Maintenance

BID #1881

**LED Traffic Signal Modules, LED Traffic Signals,
LED Pedestrian Signals and Miscellaneous Hardware**

TABLE OF CONTENTS

REQUEST FOR COMPETITIVE SEALED BIDS

SECTION I.

INVITATION AND INSTRUCTION TO BIDDERS

1.0 Invitation: Louisville/Jefferson County Metro Government ("Metro Government") is now accepting bids for **LED Traffic Signal Modules, LED Traffic Signals, LED Pedestrian Signals and Miscellaneous Hardware.** The process of accepting bids and choosing the successful bidder shall be by Competitive Sealed Bidding. Sealed bids will be received at Louisville Metro Government Office for Management & Budget – Division of Purchasing until 3:00 PM September 2, 2009, 611 West Jefferson Street, Mezzanine Level, Louisville Kentucky, 40202. Prices for any bid item shall not be contingent upon the purchase of any other bid item included within this bid.

Bids received after the **3PM deadline on September 2, 2009** will be unopened.

Bidder Questions and Inquiries: Bidders having questions and inquiries on the specifications of this Competitive Sealed Bids shall be directed to:

Stephanie St. Clair – or - Pat Seifert
Electrical Maintenance
636 E Gray Street
Louisville, KY 40203
Phone: 502-574-3261

Any information provided is not official unless reduced to writing by the Metro Purchasing Department. Any unauthorized contact with any other city official or employee in connection with this CSB is prohibited and shall be cause for disqualification of the Bidder. No questions or inquiries will be allowed beyond the pre-bid conference date as stated in the cover letter (if one is scheduled).

Careful attention must be paid to all requested items contained in this Competitive Sealed Bid (CSB). Bidders are invited to submit bids in accordance with the requirements of this CSB. Please read the entire package before bidding. Bidders shall make the necessary entry in all blanks provided for the responses. The submitted bid shall be firm for an acceptance period of ninety (90) days from the date of the bid opening.

Submitted bid shall be for a firm, fixed price.

The entire set of documents constitutes the CSB. The Bidder must respond in total and in the same numerical order in which the CSB was issued. Bidder's notes and comments may be rendered on an attachment, provided the same format of this CSB text is followed. All notes and comments shall be made in ink or be typewritten. Mistakes may be crossed out and corrections typed or written in ink adjacent thereto and must be initialed in ink by the person signing the bid. All bids shall be returned in a sealed envelope with CSB number and opening date stated on the outside of the envelope.

By submitting a Bid, the bidder acknowledges and agrees to be bound by the terms and conditions of the solicitation. This Competitive Sealed Bid document including all terms, conditions and specifications contained herein shall become the contract if Metro Government awards the Bid to the bidder hereunder. The bidder agrees that a resulting contract is the complete and exclusive statement of the agreement between the parties, which supersedes all prior agreements, oral or written, and all other communications between the parties relating to the subject matter of this solicitation. It is further agreed between the parties, that any change of the contractual agreement must be formalized by issuance of a written modification from the Purchasing Department. The only terms and conditions acceptable to Metro Government are as

outlined in this CSB. Bids containing additional and/or inconsistent terms and conditions will be considered non-responsive and shall be rejected. Purchase or sales agreements, supplied by the bidder, making an offer in reply to this solicitation will not be accepted.

In the event a conflict exists between sections of this CSB, such conflict shall be brought to the attention of the Purchasing Department in writing for resolution.

Unless contractually provided, Metro Government agencies utilizing these contracts will not be required to enter into nor sign further agreements, leases, company orders or other documents to complete or initiate the terms of a delivery order resulting from these contracts. Any such documents so obtained will not be binding on the Metro Government or its agents and shall be cause for termination of the contract by the Metro Government.

As allowed by the Metro Government Finance Manual, Purchasing Policies, Section III, A, 3, multiple contracts may be issued and those contracts, if any, shall be ranked. A secondary or lower ranking contract may be used if the primary contractor is unable to perform. However, the primary contractor shall be given the first opportunity to provide the services required. Contracts shall be utilized in the order stated in the award.

1.1 Bid Opening: Sealed bids will be accepted in accordance with the instructions detailed in section 1.0. The bid opening is open to the public. The Bidder shall file all documents necessary to support its bid and include them with its bid. Bidders shall be responsible for the actual delivery of bids during business hours to the address indicated in the cover letter. It shall not be sufficient to show that the bid was mailed in time to be received before scheduled closing time for receipt of bids.

SECTION II.

GENERAL PROVISIONS

2.1 Each Bidder shall comply with all Federal, State & Local regulations concerning this type of service or good.

The Bidder agrees to comply with all statutes, rules, and regulations governing safe and healthful working conditions, including the Occupational Health and Safety Act of 1970, *29 U.S.C. 650 et.seq.*, as amended, and KRS Chapter 338. The Bidder also agrees to notify the Metro Government in writing immediately upon detection of any unsafe and/or unhealthful working conditions at the job site. Bidder agrees to indemnify, defend and hold the Metro Government harmless from all penalties, fines or other expenses arising out of the alleged violation of said laws.

2.2 Failure to submit ALL forms and information required in this CSB may be grounds for disqualification.

2.3 Addenda: All addenda, if any, shall be considered in making the bid, and such addenda shall be made a part of this CSB. Before submitting a bid, it is incumbent upon each Bidder to be informed as to whether any addenda have been issued, and the failure to cover in the bid any such addenda may result in disqualification of that bid.

2.4 Bid Reservations: Metro Government reserves the right to reject any or all bids, to award in whole or part, and to waive minor immaterial defects in bids. Metro Government may consider any alternative bid that meets its basic needs.

2.5 Liability: Metro Government is not responsible for any cost incurred by a Bidder in the preparation of bids.

2.6 Changes/Alterations: Bidder may change or withdraw a bid at any time prior to bid opening; however, no oral modifications will be allowed. Only telegrams, letters, or other formal written requests for modifications or corrections of a previously submitted bid which is addressed in the same manner as the bid, and received by Metro Government prior to the scheduled closing time for receipt of bids, will be accepted. The bid, when opened, will then be corrected in accordance with such written request(s), provided that the written request is contained in a sealed envelope which is plainly marked "modifications of bid".

2.7 Clarification of Submittal: Metro Government reserves the right to obtain clarification of any point in a bid or to obtain additional information from a Bidder.

2.8 Bribery Clause: By his/her signature on the bid, Bidder certifies that no employee of his/hers, any affiliate or Subcontractor, has bribed or attempted to bribe an officer or employee of the Metro Government.

2.9 Additional Information: While not necessary, the Bidder may include any product brochures, software documentation, sample reports, or other documentation that may assist Metro Government in better understanding and evaluating the Bidder's bid. Additional documentation shall not serve as a substitute for other documentation which is required by this CSB to be submitted with the bid.

2.15 Ambiguity, Conflict or other Errors in CSB: If a Bidder discovers any ambiguity, conflict, discrepancy, omission or other error in the CSB, they shall immediately notify Metro Government of such error in writing and request modification or clarification of the document.

2.16 Agreement to Bid Terms: In submitting this bid, the Bidder agrees that Bidder has carefully examined the specifications and all provisions relating to the work to be done attached hereto and

made part of this bid. By acceptance of a Contract under this Competitive Sealed Bid, Bidder states that it understands the meaning, intent and requirements of the Competitive Sealed Bids and agrees to the same. The successful Bidder shall warrant that it is familiar with and understands all provisions herein and shall warrant that it can comply with them. No additional compensation to Bidder shall be authorized for services or expenses reasonably covered under these provisions that the Bidder omits from its Bid.

2.17 Cancellation: If the services to be performed hereunder by the Bidder are not performed in an acceptable manner to the Metro Government, the Metro Government may cancel this contract for cause by providing written notice to the Bidder, giving at least thirty (30) days notice of the proposed cancellation and the reasons for same. During that time period, the Bidder may seek to bring the performance of services hereunder to a level that is acceptable to the Metro Government, and the Metro Government may rescind the cancellation if such action is in Metro Government's best interest.

A. Termination for Cause

(1) Metro Government may terminate a contract because of the contractor's failure to perform its contractual duties.

(2) If a contractor is determined to be in default, Metro Government shall notify the contractor of the determination in writing, and may include a specified date by which the contractor shall cure the identified deficiencies. Metro Government may proceed with termination if the contractor fails to cure the deficiencies within the specified time.

(3) A default in performance by a contractor for which a contract may be terminated shall include, but shall not necessarily be limited to:

(a) Failure to perform the contract according to its terms, conditions and specifications;

(b) Failure to make delivery within the time specified or according to a delivery schedule fixed by the contract;

(c) Late payment or nonpayment of bills for labor, materials, supplies, or equipment furnished in connection with a contract for construction services as evidenced by mechanics' liens filed pursuant to the provisions of KRS Chapter 376, or letters of indebtedness received from creditors by the purchasing agency;

(d) Failure to diligently advance the work under a contract for construction services;

(e) The filing of a bankruptcy petition by or against the contractor; or

(f) Actions that endanger the health, safety or welfare of Metro Government or its citizens.

B. At Will Termination

Notwithstanding the above provisions, the Metro Government may terminate this contract at will in accordance with the law upon providing thirty (30) days written notice of that intent. Payment for services or goods received prior to termination shall be made by the Metro Government provided those goods or services were provided in a manner acceptable to the Metro Government. Payment for those goods and services shall not be unreasonably withheld.

2.18 Assignment of Contract: The Bidder shall not assign or subcontract any portion of the Contract without the express written consent of Metro Government. Any purported assignment or subcontract in violation hereof shall be void. It is expressly acknowledged that Metro Government shall never be required or obligated to consent to any request for assignment or subcontract; and further that such refusal to consent can be for any or no reason, fully within the sole discretion of Metro Government.

2.19 No Waiver: No failure or delay by Metro Government in exercising any right, remedy, power or privilege hereunder, nor any single or partial exercise thereof, nor the exercise of any other right, remedy, power or privilege shall operate as a waiver hereof or thereof. No failure or delay by Metro Government in exercising any right, remedy, power or privilege under or in respect of this Contract shall affect the rights, remedies, powers or privileges of Metro Government hereunder or shall operate as a waiver thereof.

2.20 Authority to do Business: The Bidder must be a duly organized and authorized to do business under the laws of Kentucky. Bidder must be in good standing and have full legal capacity to provide the services specified under this Contract. The Bidder must have all necessary right and lawful authority to enter into this Contract for the full term hereof and that proper corporate or other action has been duly taken authorizing the Bidder to enter into this Contract. The Bidder will provide Metro Government with a copy of a corporate resolution authorizing this action and a letter from an attorney confirming that the Bidder is authorized to do business in the State of Kentucky if requested. All bids must be signed by a duly authorized officer, agent or employee of the Bidder.

2.21 Governing Law: This Contract shall be governed by and construed in accordance with the laws of the State of Kentucky. In the event of any proceedings regarding this Agreement, the Parties agree that the venue shall be the state courts of Kentucky or the U.S. District Court for the Western District of Kentucky, Louisville Division. All parties expressly consent to personal jurisdiction and venue in such Court for the limited and sole purpose of proceedings relating to this Agreement or any rights or obligations arising thereunder. Service of process may be accomplished by following the procedures prescribed by law.

2.22 Ability to Meet Obligations: Bidder affirmatively states that there are no actions, suits or proceedings of any kind pending against Bidder or, to the knowledge of the Bidder, threatened against Bidder before or by any court, governmental body or agency or other tribunal or authority which would, if adversely determined, have a materially adverse effect on the authority or ability of Bidder to perform its obligations under this Contract, or which question the legality, validity or enforceability hereof or thereof.

VIOLATIONS OF AND COMPLIANCE WITH KENTUCKY LAWS

The contractor shall reveal any final determination of a violation by the contractor or subcontractor with the previous five (5) year period pursuant to KRS Chapters 136, 139, 141, 337, 338, 341, and 342 that apply to the contractor or subcontractor. The contractor shall be in continuous compliance with the provisions of KRS Chapters 136, 139, 141, 337, 338, 341 and 342 the apply to the contractor or subcontractor for the duration of the contract.

COMPETITIVE SEALED BID
SUBMITTED BY:

By signing below you are agreeing to all Louisville Metro Government Terms & Conditions that are a part of this Request for Bid.

Include this page in your response to this bid.

Firm: Traffic Control Products

By: Kevin L. Durgin

Title: Vice President

E-Mail Address: [redacted]

Address: 4565 Glenbrook Road
Willoughby, OH 44094

Telephone 440-951-8929

Fax: 440-951-8203

Date: August 31, 2009

Metro Louisville Revenue Commission Number: [redacted]

Federal ID Number :

Please include a copy of your W-9 with your submitted bid. This must be submitted prior to the award of a contract.

I acknowledge receipt of the following Addendum:

Addendum #1: KD

Addendum #2: ____

Addendum #3: ____

Any Additional Addendum (write in numbers): ____

Vendor Signature (all items above have been read and completed)

SECTION III.

HOLD HARMLESS AND INDEMNIFICATION CLAUSE, AND INSURANCE REQUIREMENTS FOR INDEPENDENT CONTRACTORS

I. HOLD HARMLESS AND INDEMNIFICATION CLAUSE

The Contractor shall indemnify, hold harmless, and defend the Louisville/Jefferson County Metro Government, its elected and appointed officials, employees, agents and successors in interest from all claims, damages, losses and expenses including attorneys' fees, arising out of or resulting, directly or indirectly, from the Contractor's (or Contractor's Subcontractors, if any) performance or breach of the contract provided that such claim, damage, loss, or expense is: (1) attributable to personal injury, bodily injury, sickness, death, or to injury to or destruction of property, including the loss of use resulting therefrom, or breach of contract, and (2) not caused by the negligent act or omission or willful misconduct of the Louisville/Jefferson County Metro Government or its elected and appointed officials and employees acting within the scope of their employment. This Hold Harmless and Indemnification Clause shall in no way be limited by any financial responsibility or insurance requirements and shall survive the termination of this Contract.

II. INSURANCE REQUIREMENTS

Prior to award of contract and commencing work, Contractor shall obtain at its own cost and expense the following types of insurance through insurance companies licensed in the State of Kentucky. Insurance written by non-admitted carriers will also be considered acceptable, in accordance with Kentucky Insurance Law (KRS 304.10-040). Workers' Compensation written through qualified group self-insurance programs in accordance with Kentucky Revised Statutes (KRS 342.350) will also be acceptable. **The Contractor shall not commence work under this Contract until all insurance required under the Contract Document has been obtained and until copies of policies or certificates thereof are submitted to and approved by the Louisville/Jefferson County Metro Government's Department of Purchasing,** *(who may request review by Louisville/Jefferson County Metro Government's Risk Management Division).* The *Contractor shall not allow any subcontractor to commence work until the insurance required of such subcontractor has been obtained and copies of Certificates of Insurance retained by Contractor evidencing proof of coverages.*

Without limiting Contractor's indemnification requirements, it is agreed that Contractor shall maintain in force at all times during the performance of this agreement the following policy or policies of insurance covering its operations, and *require subcontractors, if subcontracting is authorized, to procure and maintain these same policies* until final acceptance of the work by the Louisville/Jefferson County Metro Government. The Louisville/Jefferson County Metro Government may require Contractor to supply proof of subcontractor's insurance via Certificates of Insurance, or at Louisville/Jefferson County Metro Government's option, actual copies of policies.

A. The following clause shall be added to the Contractor's (and approved subcontractors) Commercial General Liability Policies:

1. "The Louisville/Jefferson County Metro Government, its elected and appointed officials, employees, agents and successors are added as an

"Additional Insured" as respects operations of the Named Insured performed relative to the contract."

B. The insurance to be procured and maintained and **minimum** Limits of Liability shall be as follows, unless different limits are specified by addendum to the contract:

1. COMMERCIAL GENERAL LIABILITY, via the **Occurrence Form**, with a **$1,000,000** Combined Single Limit for any one Occurrence and $2,000,000 aggregate for Bodily Injury, Personal Injury and Property Damage, including:

   a. Premises - Operations Coverage
   b. Products and Completed Operations
   c. Contractual Liability
   d. Broad Form Property Damage
   e. Independent Contractors Protective Liability
   f. Personal Injury

2. AUTOMOBILE LIABILITY, insuring all Owned, Non-Owned and Hired Motor Vehicles. The minimum coverage Liability Limit is **$1,000,000** Combined Single Limit for any one accident. The Limit of Liability may be subject to increase according to any applicable State or Federal Transportation Regulations.

3. WORKERS' COMPENSATION insuring the employers' obligations under Kentucky Revised Statutes Chapter 342 at Statutory Limits, and EMPLOYERS' LIABILITY - **$100,000** Each Accident/**$500,000** Disease - Policy Limit/**$100,000** Disease - Each Employee.

III. ACCEPTABILITY OF INSURERS

Insurance is to be placed with Insurance Companies with an A. M. Best Rating of no less than "B+ VI", unless proper financial information relating to the Company is submitted to and approved by the Louisville/Jefferson County Metro Government's Risk Management Division.

IV. MISCELLANEOUS

A. The Contractor shall procure and maintain insurance policies as described herein and for which the Louisville/Jefferson County Metro Government Department of Purchasing shall be furnished Certificates of Insurance prior to the execution of the Contract. The Certificates shall include provisions stating that the policies may not be cancelled without the Louisville/Jefferson County Metro Government having been provided at least (30) thirty days written notice. The Certificates shall include the name and address of the person executing the Certificate of Insurance as well as the person's signature. If policies expire before the completion of the Contract, renewal Certificates of Insurance shall be furnished to the Louisville/Jefferson County Metro Government Department of Purchasing at least 30 days prior to the expiration of any policy(s).

B. Certificates of Insurance as required above shall be furnished, as called for:

1. No later than five (5) days after the successful bidder is notified of award by the Division of Purchasing to:

C. The Contractor agrees that it will not materially alter any of the insurance policies currently in force and relied on under this agreement. Further, the Contractor will not reduce any coverage amount below the limits required in this agreement

D. Approval of the insurance by the Louisville/Jefferson County Metro Government shall not in any way relieve or decrease the liability of the Contractor hereunder. It is expressly understood that the Louisville/Jefferson County Metro Government does not in any way represent that the specified Limits of Liability or coverage or policy forms are sufficient or adequate to protect the interest or liabilities of the Contractor.

SECTION IV.

GENERAL SPECIFICATIONS

LED Traffic Signal Modules, LED Traffic Signals, LED Pedestrian Signals and Miscellaneous Mounting Hardware

The purpose of the specification is to provide minimum design and performance requirements for the following Light Emitting Diode (LED) Modules for use in traffic control signal heads:

12 Inch Green, Yellow, & Red Ball (circular)
12 Inch Green, Yellow, & Red Arrow
Pedestrian Signal

The specification refers to the standard Vehicle Traffic Control Signal Head (VTCSH) from the ITE Publication "Equipment and Material Standards of the Institute of Transportation Engineers" Chapters 2 & 2A. All items stated in this specification supersede any items in the ITE specification VTCSH Chapters 2 & 2A.

Each module shall consist of an assembly that utilizes LED's as the light source to replace an incandescent lamp for use in traffic signal sections. The LED signal shall have a uniform light output throughout the life of the signal. The LED's shall utilize AlInGaP (Aluminum indium gallium phosphorus) technology for red and yellow indications and InGaN (Indium Gallium Nitride) for green indications, and shall be the rated for 100,000 hours of continuous operation from -40°C to +74°C. The modules shall be rated for a minimum life of 60 months. All modules shall meet all parameters of this specification during this period. LED modules will have EPA Energy Star Compliance ratings, if applicable to that shape, size and color.

Electrical

The modules shall be operationally compatible with currently used traffic signal controller assemblies, which include:

Model 200 Load Switches
Model 204 Flashers
Model 210E Conflict Monitors
Model 303, 332 & 336 Controller Cabinets

Maximum power consumption requirements for each indication are as follows (in Watts):

	Red		Yellow		Green	
Temperature (Celsius)	25	74	25	74	25	74
12 Inch circular	11	17	22	25	15	15
12 Inch arrow	9	12	10	12	11	11
	Portland Orange				Lunar White	
Pedestrian Signals, 16" x 18"	9.5				8.2	

The modules shall operate from a 60 HZ ±3 HZ AC line over a voltage ranging from 95 volts to 135 volts. The fluctuations of line voltage shall have no visible effect on the luminous intensity of the indications. Operating voltage of the modules shall be nominal 120 VAC. All parameters shall be measured at this voltage. The LED circuitry shall prevent perceptible flicker to the unaided eye over the voltage range specified above. The circuitry of the LED module shall be designed and operate so that the failure of single light emitting diode will not cause other light emitting diodes to be extinguished.

Each LED signal module shall be designed so that there is no noticeable light output when connected to rated voltage through an impedance of 15 Kohm (either resistive or capacitive). The signal module shall be designed so that, under normal operation, AC voltage of no greater than 10 volts RMS shall be developed across the unit when it is connected in series with any value of impedance greater than 15 Kohms and for any applied AC voltage between 95 and 135 volts RMS that is connected across this series combination. In addition, the signal module shall be designed so that the voltage across the module shall reduce in value to less than 10 volts RMS within 100 msec when the module is switched off by any solid state switch or switch pack having an impedance of 15 Kohms or greater.

Modules shall be fused using a time-delay fuse. The fuse shall be located so that it can be easily changed without the need to disassemble the module. If in-line fuses are added to module's wire leads they must be installed in the colored wires of the units. The power supply for the module shall be integral to the unit. The circuit board and power supply shall be contained inside the module.

Optical

The lens of the module shall be integral to the unit, shall be convex with a smooth outer surface and made of plastic or of glass. Optical assembly shall diffuse the light output and provide uniform illumination across the entire surface of the lens and eliminate the visibility of individual LEDs to the observer. This optical assembly shall be used for ball and arrow modules. The lens may be tinted or may use transparent film or materials with similar characteristics to enhance ON/OFF contrasts. The use of tinting or other materials to enhance ON/OFF contrasts shall not affect chromaticity and shall be uniform across the face of the lens. The LED signal module lens shall be UV stabilized and shall be capable of withstanding ultraviolet (direct sunlight) exposure for a minimum period of 60 months without exhibiting evidence of deterioration. If a polymeric lens is used, a surface coating or chemical surface treatment shall be used to provide front surface abrasion resistance. When mounted in a span mounted configuration, the module shall be visible according to the VTCSH Part 2 and 2A. An expanded view shall be required.

During swaying conditions, ensure that the module has a vertical view that meets ITE standards for visibility until obscured by the visor and the following expanded horizontal view angle requirements:

Minimum Expanded View Angle Requirements (12 Inch Ball Indications)

Vertical * (Degrees)	Horizontal Angle (Degrees)	Expanded Viewing Angle Intensity	
		Red Ball (Candelas)	Green/Yellow Ball (Candelas)
22.5	2.5 17.5	10 7	20 14
17.5	2.5 17.5	22 22	44 44
12.5	2.5 17.5	50 34	101 69
7.5	2.5 17.5	226 89	452 178

2.5	2.5 17.5	339 77	678 154
-2.5	2.5 7.5	220 58	441 115
-7.5	2.5 7.5	54 20	108 41
-12.5	2.5 7.5	20 14	41 27
-17.5	2.5 7.5	10 3	20 7

** Positive vertical angles are below the horizontal*

Assembly and Manufacturing

LED traffic signal modules and Pedestrian Signal shall be designed as retrofit replacements to replace existing optical configuration of signal/Pedestrian indications and shall not require special tools for installation. The LED signal/Pedestrian module shall be a single, self-contained device, not requiring on-site assembly for installation into an existing traffic signal housing.

Each module/Pedestrian Signal shall have the manufacturer's name, trademark, model number, serial number, date of manufacture (month-year), and lot number as identification permanently marked on the back of the module. Single units shall have identification markings as to the type and color of the module. The following operating characteristics shall be permanently marked on the back of the modules: rated voltage and rated power in Watts and Volt-Amperes. If a specific mounting orientation is required, each module shall have prominent and permanent marking(s) for correct indexing and orientation within a signal housing. The markings shall consist of an up arrow, or the word "UP" or "TOP".

The modules shall fit into existing traffic/pedestrian signal section housings built to the specifications detailed in VTCSH, without modification to the housing. Each module shall be designed to be installed in the doorframe of standard traffic signal housing/Pedestrian housing. The module/Pedestrian Signal shall be sealed in the doorframe with a one-piece EPDM (ethylene propylene rubber) gasket. The maximum weight of a module shall be 1.8 kg (4 lbs.). Each module shall be a sealed unit to include all parts necessary for operation (a printed circuit board, power supply, lens, and gasket, etc.), and shall be weatherproof after installation and connection.

12 Inch Arrows

The following specification requirements apply to the 12-inch arrow module only. All general specifications apply unless specifically superseded in this section.

The red arrow module shall meet specifications stated in the VTCSH Section 9.00 for arrow lenses. The LED's shall be spread evenly across the illuminated portion of the arrow area. Each module shall provide an average luminous intensity of at least 10,000 candela/m^2 for the red and 15,500 candela/m^2 for the green and yellow throughout the rated life over the operating temperature range.

Pedestrian Signal

Except where otherwise stated herein Pedestrian Signals shall conform to the requirements of Chapter 3 of the ITE Publication " Equipment and Material Standards". The Pedestrian Signal shall be designed to display both a full "Hand" and "Walking Man" symbol. The "Hand" and "Walking Man" symbols shall be designed so that the entire area comprising the symbols appear illuminated. The symbols shall be the side

by side. Pedestrian Signals with LED's arranged to form just an outline symbol will not be accepted. The Pedestrian signals shall be secured to existing pedestrian housing with the removal of the "eggcrate" on the front of the pedestrian signal. The Pedestrian Signal must meet or exceed the minimum luminous intensity output of 5300 candela/m2 for white and 3750 candela/m2 for the portland orange. It shall have sun phantom protection.

Production Quality Control Testing

The following Production Quality Assurance tests shall be performed on each new module prior to shipment. Failure to meet requirements of any of these tests shall be cause for rejection. The manufacturer shall retain test results for seven years.

Burn-in period shall consist of each signal module being energized at rated voltage for a 30-minute stabilization period before the measurement is made.

Each module shall be tested for rated initial intensity after burn-in.

A single point measurement, with a correlation to the intensity requirements of Section 1.04 of the VTCSH for circular modules, may be used.

The ambient temperature for this measurement shall be +25°C(+77°F).

Each module shall be tested for required power factor after burn-in.

Qualification Testing

After the price contracts have been awarded and upon delivery of any LED modules ordered, Louisville Jefferson County Metro Government plans to engage an independent testing lab to perform qualification testing on two units randomly selected from all the units furnished for each line item on the contract. Failure to meet the requirements of this specification by one or more sample units representing any line item will result in all the units furnished for that line item being rejected. The rejected units will be returned at the expense of the vendor. Any and all shipping costs shall be incidental to the amount of the contract.

Burn In

The sample modules shall be energized for a minimum of 24 hours, at 100 percent on-time duty cycle, at a temperature of +74°C (+165°F) before performing any qualification testing. Any failure of the module, which renders the unit non-compliant with the specification after burn-in, shall be cause for rejection.

For Qualification Testing, all specifications will be measured including, but not limited to:

Rated Initial Luminous Intensity

Measured over the operating temperature range.

Chromaticity (Color)

Measured over the operating temperature range.

LED COUNTDOWN PEDESTRIAN SIGNAL

Compliant (Full Hand/Full Person)

The ITE PTCSI Part 2 LED Pedestrian Traffic Signal Modules.

LED Lamps for Programmable View Modules

High efficiency & long life LED light source

Failure of single LED results in loss of light from only that LED

Moisture and dust resistant

Direct retrofit design

Regulated power supply

Conforms to Caltrans light intensity requirements

Electrical

All specified parameters shall be measured and used for quality comparison of production quality assurance on production modules. (rated power, etc)

Equipment Compatibility.

Modules shall be tested for compatibility with the controller unit, conflict monitor, and load switch. Each signal module shall be connected to the output of a standard load switch connected to an AC voltage supply between the values of 95 and 135 VAC with the input to the load switch in the "off" position. The AC voltage developed across each LED signal module so connected shall not exceed 10 Vrms as the input AC voltage is varied from 95 Vrms to 135 Vrms.

Production Quality Control Testing.

The following Production Quality Assurance tests shall be performed on each new module prior to shipment. Failure to meet requirements of any of these tests shall be cause for rejection. Test results shall be retained by the manufacturer for seven years.

Burn-in period shall consist of each signal module being energized at rated voltage for a 30 minute stabilization period before the measurement is made.

Each module shall be tested for rated initial intensity after burn-in.

A single point measurement, with a correlation to the intensity requirements of Section 1.04 of the VTCSH for circular modules, may be used.

The ambient temperature for this measurement shall be +25°C (+77°F).

Each module shall be tested for required power factor after burn-in.

Each module shall be measured for current flow in amperes after burn-in. The measured current values shall be compared against rated values resulting from qualification measurements under "Qualification Testing". The current flow shall not exceed the rated value.

Each module shall be visually inspected for any exterior physical damage or assembly anomalies. Careful attention shall be paid to the surface of the lens to ensure there are no scratches (abrasions), cracks, chips, discoloration, or other defects. Any such defect shall be cause for rejection.

Warranty for all LED's

The manufacturer shall provide a written warranty against defects in materials and workmanship for the modules for a minimum period of 60 months after acceptance of the modules. This shall include that each module must meet 80% of the minimum intensity requirements as defined in the ITE publication.

Polycarbonate Traffic Signal Housings

Signal indications shall be assembled in accordance with the latest revision of the Manual on Uniform Traffic Control Devices for Streets and Highways. Each signal face shall consist of an assembly of signal indications to provide the required number of indications. The sections shall be joined together in a manner that provides both mechanical integrity and maximum protection against intrusion of dust and weather. LED modules shall be fully installed and wired within the polycarbonate signal head replacing the standard lamp receptacles, reflectors, cover glasses or lenses.

Each signal section shall consist of a polycarbonate housing, a door, and an optical assembly together with the necessary gaskets. Each signal section shall be provided with a visor.

The 12-Inch polycarbonate traffic control signal head must be interchangeable with incandescent assemblies or LED modules and allow for a 180° door opening. Each traffic signal should consist of a number of identical signal sections rigidly fastened together to present a continuous, pleasing appearance. Each section shall have a separate and complete housing. The traffic signal shall meet or exceed the equipment standards of the Institute of Transportation Engineers' (ITE) latest revision. Signals shall be provided with hardware for span wire mounting. Balance adjustors shall be provided with each traffic signal head. Balance adjustors shall be Pelco No. SE-3219, SE-3220, SE-3221 or SE-3222 (whichever model is appropriate to accommodate the other span wire mounting hardware) or an approved equal. Pedestrian signals shall be supplied with brackets for banding to wood or metal poles.

Polycarbonate Housing

The housing of each section shall be a one-piece molded ultraviolet and heat stabilized polycarbonate unit. Two integral hinge/screw lugs shall be molded into each side of the housing. Each section shall be provided with a left hinge door opening assembly. The top and bottom of the housing shall have an opening to accommodate standard 1 1/2 inch pipe brackets. Each signal section shall be rigidly attached, one above the other, by means of corrosion resistant bolts and attaching washers in such a manner that any section may be rotated about a vertical axis and oriented with respect to an adjacent section. An alternate means for attaching sections together shall be available. It shall consist of four matching punch-out locations, top and bottom of each section, to allow the sections to be bolted with four 1" x 10-32 corrosion resistant screws. Each signal face shall be capable of being rotated 360 degrees about its axis, either vertical or horizontal, and shall be capable of being locked at 5-degree intervals. Locking shall be accomplished by the engagement of serrations in the end signal sections engaging with similar serrations in the mounting bracket assembly. Serrations shall be integral with the signal section and designed to permit interlocking of adjacent sections.

The back of each housing shall have the manufacturer's name clearly displayed. Each housing shall have provisions for easily adding a back plate. Hinge pins, door latching hardware, visor, backplate, and lens clip screws shall be high quality stainless steel.

Polycarbonate Housing Door

The housing door of each section shall be a one-piece molded ultraviolet and heat stabilized polycarbonate unit. Two hinge lugs shall be molded into one side and two latch jaws shall be molded on the other side. The door shall be attached to the housing by means of two stainless steel hinge pins. Two stainless steel "eye" bolts and wing nuts on one side of the door shall provide for opening and closing the signal door without the use of any special tools. A gasket groove on the inside of the door shall accommodate a weatherproof and mildew-proof resilient gasket which, when the door is closed, shall seal flat against the housing, making a positive seal.

The outer face of the door shall have four metal threaded inserts equally spaced about the circumference of the lens opening, with four screws to accommodate the signal head visors. The door and visor shall overlap to prevent light escaping between visor and door.

Terminal Block

Each complete signal head shall be provided with a terminal block. The terminal block shall be placed in the bottom section. The terminal block for a standard three-section head shall be a five-position, ten terminal, barrier type strip (a six-position terminal block could be used for a five section head). To one side of each FASTON terminal strip shall be attached the AC common, red, yellow, and green signal section leads, leaving the opposite screw-clamp terminal for field wires.

Visors

Visors shall be tunnel, full circle or cap, and a minimum of 10 inches long. Visors shall be molded from ultraviolet and heat stabilized polycarbonate. They shall have attaching tabs to facilitate installation.

Color

The housing and door shall be molded of one color polycarbonate material throughout. The color shall be Dull Black and shall match Federal Standard 595a-37038. The inside of the visors shall also be painted Dull Black. The stainless steel parts shall not be painted.

Polycarbonate Pedestrian Signal Housing

Pedestrian signal housings and doors shall be injection molded ultraviolet stabilized, permanently colored, flame retardant black polycarbonate. Visor shall be one piece injection molded. Doors shall be mounted through the use of stainless steel clevis pins and eyebolt/wingnut assemblies.

Aluminum Traffic Signals

The 12-Inch Aluminum Traffic Signal Head must be interchangeable with incandescent reflector assemblies or LED modules.

Each traffic signal shall consist of a number of identical signal sections rigidly fastened together to present a continuous, pleasing appearance. Each section shall have a separate and complete housing. The traffic signal shall meet or exceed the Equipment Standard of the Institute of Transportation Engineers' (ITE) latest version.

Aluminum Housing

The housing of each section shall be a one-piece corrosion resistant aluminum alloy die-casting. Two integrally cast hinge lugs and latch screw slots shall be on each side of the housing. Through a symmetrical concept each housing shall have a standard left-hinged door opening. The top and bottom of the housing shall have an opening to accommodate standard 11/2 inch pipe. Each signal section shall be rigidly attached, one above the other, by means of corrosion resistant bolts and attaching washers in such a manner that any section may be rotated about a vertical axis and oriented with respect to an adjacent section. The top and bottom opening of the signal housing shall have a Shurlock boss (or equal component) integrally cast into the housing. The radial angular grooves of the Shurlock boss, when used with Shurlock fittings, shall provide positive 5-degree increment positioning of the signal head to eliminate rotation or misalignment of the signal. Each housing shall have cast bosses for two five- or six-position terminal blocks. Each position shall be identified with both number and function cast on housing. Each aluminum traffic signal shall have a 5 inch aluminum backplate. Hinge pins, door latching hardware, visor backplate, and lens clip screws shall be high quality stainless steel.

Housing Door

The housing door of each section shall be a one-piece, corrosion resistant, aluminum alloy die casting. Two hinge lugs shall be cast on one side of the door, and two latch points shall be cast on the other side. The door shall be attached to the housing by means of two straight pins. Two "eye" bolts and wing nuts on one side of the door shall provide for opening and closing the signal door without the use of any special tools. A gasket groove on the inside of the door shall accommodate a weatherproof and mildew-proof resilient gasket which, when the door is closed, shall seal against a raised bead on the housing, making a positive seal. The outer face of the door shall have four holes equally spaced about the circumference of the lens opening, with four screws to accommodate the signal head visor. The door shall have at least two

index points to enable positive orientation of the lens. The door and visor shall overlap to prevent light escaping between the visor and door. The lenses shall be LED modules as specified above.

Visors

Visors shall be tunnel, full-circle or cap, and a minimum of 91/2 inches long. Visors shall be formed of corrosion-resistant aluminum alloy sheet. They shall have attaching tabs to facilitate installation.

Painting

All interior and exterior parts of the housing, door, backplate, and visor shall be pre-treated for painting in the following stages: De-grease, rinse, etch with an iron phosphate solution, rinse, final dionized water rinse, and then dry for 10 minutes at 300 degrees Fahrenheit. The parts shall then be painted with a single coat of environmentally safe, ultraviolet resistant, polyester powder coating, which will be applied electrostatically at 90 kV and baked for 20 minutes at 375 degrees Fahrenheit per ASTM D-3359, ASTM D-3363 and ASTM D-522. The signal head color shall be Dull Black -- and shall match Federal Standard 595a-37038. The inside of the visor and the front and back side of the backplate shall be painted Dull Black.

Clamshell Mounting Hardware

The clamshell shall consists of a two part mounting assembly and shall be a McCain Clamshell Mounting Hardware or approved equal with a black paint finish. The clamshell and its associated hardware must be warranted for two years from the date of shipment and it must cover material and workmanship.

Aluminum Pedestrian/Vehicle Signal Mounting Assembly

The aluminum pedestrian/vehicle signal mounting assembly shall be a McCain Quickmount II or approved equal with a black paint finish. The aluminum pedestrian/vehicle signal mounting assembly and its associated hardware must be warranted for two years from the date of shipment and it must cover material and workmanship.

Aluminum Pedestrian Signal Mounting Assembly w/12 position terminal block

The aluminum pedestrian/vehicle signal mounting assembly shall be a IDC Model 4835 or approved equal with a flat black paint finish. The aluminum pedestrian signal mounting assembly and its associated hardware must be warranted for two years from the date of shipment and it must cover material and workmanship.

Aluminum Pedestrian Signal Mounting Assembly w/3 position terminal block

The aluminum pedestrian/vehicle signal mounting assembly shall be a IDC Model 4805 or approved equal with a flat black paint finish. The aluminum pedestrian signal mounting assembly and its associated hardware must be warranted for two years from the date of shipment and it must cover material and workmanship.

Side of Pole Mounting Assembly and Hub Plates

Mounting hardware shall be made of a cast, corrosion resistant non-ferrous metal or approved superior alternative. Wire raceway areas within brackets and pole plates shall be a adequate size to carry all necessary wires without crowding, and raceway surfaces shall be free of sharp edges or protrusions which might damage insulation on wires. All components and their attachments shall assemble into a rigid, secure, entirely weather-tight pedestrian signal mounting.

Brackets and their fittings shall be 1 ½ inch IPS tubular pipe for pole mounting. Hollow cast pipes and elbows shall be of sufficient strength to support the maximum load imposed by the signal heads under peak wind conditions. The bracket connections to the signal housing and the pole plates shall form a weather-tight seal.

Brackets and fittings shall be configured to provide for one-way and two-way mounting as specified. The attachment to the housing shall allow rotation of the signal about a vertical line between the supporting brackets, with the capability of a secure fastening at increments of not more than 7 degrees of rotation.

The pole plates shall contain a 1 ½ inch bracket hub, and a 1 ¼ inch entrance hub, with a weatherproof cap to allow for non-use. The plates shall form a weather-tight mount flush with the curvature of the pole, with provision for attachment by bolting, banding, and lag crew.

Incandescent Pedestrian Signals (Hand/Man)

Pedestrian signal housings and doors shall be injection molded ultraviolet stabilized, permanently colored, flame retardant black polycarbonate. Visor shall be one piece injection molded. Doors shall be mounted through the use of stainless steel clevis pins and eyebolt/wingnut assemblies. The visor system must assure the pedestrian the optimum message display with the least obstruction. The lens shall have a message displayed when the signal is illuminated. The size and color shall conform to the latest ITE standards. The Hand display must be Portland Orange in color and the Walking Man must be Lunar White in color. The entire area around the legend must be blacked out and free of any light projecting through in areas other than the legend. The lens shall consist of a single piece of 1/8 inch clear polycarbonate plate with smooth inside surface for legend screening. The signal shall utilize a fail-safe design to positively prevent the display of an orange Hand or and orange Man separately. The reflector shall be one piece reflector made of high temperature non-ferrous material. The reflector shall be metalized silver and over-coated for endurance. There shall be no metal attached to the reflector. The reflector shall consist of two parabolic curves, one situated behind the Hand legend and one behind the Man legend. The two (2) lamp sockets shall be positioned to provide a light center at the focal point of the reflector. The sockets shall have a porcelain heat proof and moisture proof housing and shall be designed to accommodate A21 67-watt clear lamps. The center contact shall be spring activated. The brass fitted sleeve shall have a lamp grip to prevent the lamp from vibrating loose.

Each pedestrian signal shall be wired completely internally and shall be ready for connection to field wiring. Inside the housing shall be installed a four (4) point terminal block to which a wiring harness consisting of 19 AWG wiring shall be attached. The other end shall be attached directly to the sockets in the reflector. The wire length shall be sufficient to allow the reflector to be fully removed from the signal.

Mast Arm Mount Signal Bracket w/1-way Stainless Steel Band Mount

The Mast Arm Mount Signal Bracket w/1-way Stainless Steel Band Mount shall be a Pelco AB-0116 standard one-way assembly or approved equal.

Mast Arm Mount Signal Bracket - One-way OPS Assembly

The Mast Arm Mount Signal Bracket w/1-way OPS assembly shall be a Pelco AB-0103 or approved equal. This bracket shall be designed to allow rigid, completely adjustable mounting of optically programmed signal heads.

Mast Arm Mount Signal Bracket – Five-Section Cluster Cable Mount Assembly

The Mast Arm Mount Signal Bracket – Five-Section Cluster Cable Mount Assembly shall be a Pelco AB-0109 or approved equal. This bracket shall be designed to allow rigid, completely adjustable mounting of Five-section signal heads.

Mast Arm Mount Signal Bracket – Two-Way Variable Assembly

The Mast Arm Mount Signal Bracket – Two-way variable assembly shall be a Pelco AB-0111 or approved equal. This bracket shall be designed to allow rigid, completely adjustable mounting of 3M signal heads.

Pole Mount Two-Way Ped Head Assembly

The Pole Mount Two-Way Pedestrian Head Assembly shall be a Pelco AB-0131 or approved equal. This bracket shall allow for rigid, completely adjustable mounting of two pedestrian signals with a cable clamp.

Mast Arm or Pole Mounted Sign Bracket

The Mast Arm or Pole Mounted Sign Bracket shall be a Pelco AB-0105 or approved equal. This bracket shall be designed to facilitate mast arm and pole mountings of flat sheet signs.

Catalog Cuts

For this specific bid, catalog cuts and complete descriptive material shall be submitted with the Bid. The submission shall consist of catalog cuts for all of the items that the bidder submits bids for. This material shall be included in a bound GBC or ACCO binder labeled CATALOG CUTS, LED Traffic Signal Modules, LED Traffic Signals, LED Pedestrian Signals and Miscellaneous Mounting Hardware and shall include the bidders name.

Delivery

Upon notification of award by Louisville Jefferson County Metro Government, delivery of any ordered items shall be vendors guaranteed delivery period. Successful bidders will be required to furnish the material specified by Delivery Order within thirty (30) days of the receipt for same. All equipment including documentation shall be delivered pre-paid, insured to:

Louisville Jefferson County Metro Government
Department of Public Works
Electrical Maintenance Shop
636 East Gray Street
Louisville, KY 40202

Deliveries shall be made between the hours of 9:00 AM and 3:00 PM Monday through Friday and with notification to Electrical Maintenance at (502) 574-3261 at least 24 hours in advance. Successful bidders will be required to furnish the material specified

Bid Schedule

Number	Description	Unit Prices
1.	12" Circular Red LED Modules	$43.00
2.	12" Circular Yellow LED Modules	$69.00
3.	12" Circular Green LED Modules	$59.00
4.	12" Circular Green LED Modules w/left turn arrow	$53.00
5.	12" Circular Yellow LED Modules w/left turn arrow	$45.00
6.	LED International Pedestrian Symbol Modules	$96.00
7.	12" One-way, 3-section Poly Traffic Signals w/LED Modules	$347.00
8.	12" One-way, 3-section Poly Traffic Signals w/LED Modules with Left Turn Arrows	$315.00
9.	12" One-way, 5-section Poly Traffic Signals w/Left Turn Arrows and LED Modules	$562.00
10.	12" One-way, 3-section Alum Traffic Signals w/LED Modules	$386.00
11.	12" One-way, 3-section Alum Traffic Signals w/Left Turn Arrows and LED Modules	$355.00
12.	12" One-way, 5-section Alum Traffic Signals w/Left Turn Arrows and LED Modules	$625.00

13.	International Pedestrian Signals w/LED Modules	See Addendum #1
14.	Clamshell Mounting Hardware	See Addendum #1
15.	Aluminum Pedestrian Vehicle Signal Mounting Assembly	See Addendum #1
16	Aluminum Pedestrian Signal Mounting Assembly w/12 position terminal block	See Addendum #1
17.	Aluminum Pedestrian Signal Mounting Assembly w/3 position terminal block	See Addendum #1
18.	Side-of-Pole Mounting Assembly and Hub Plates	See Addendum #1
19.	Incandescent Pedestrian Signals (Hand/Man)	See Addendum #1
20.	Mast Arm Mount Signal Bracket w/l -way Stainless Steel Band Mount	See Addendum #1
21.	Mast Arm Mount Signal Bracket - One-way OPS Assembly	See Addendum #1
22.	Mast Arm Mount Signal Bracket — Five-Section Cluster Cable Mount Assembly	See Addendum #1
23.	Mast Arm Mount Signal Bracket — Two-Way Variable Assembly	See Addendum #1
24.	Pole Mount Two-Way Fed Head Assembly	See Addendum #1
25.	Mast Arm or Pole Mounted Sign Bracket	See Addendum #1

Al] material should be provided as per the attached technical specifications and in accordance with Louisville Jefferson County Metro Government standards for procurement of materials and supplies.

ADDENDUM No. 1

TO: All Proposers

FROM: Metro Purchasing

BID: 1881 - LED Traffic Signal Modules, LED Traffic Signals, LED Pedestrian Signals and Miscellaneous Hardware

DATE: August 26, 2009

Please note the following changes to bid 1881 (in the Bid Schedule section) - Delete numbers 13 —25 and replace with newly revised numbers below:

13.	International Pedestrian Maintenance housing Signal wI Hand /Man LED Module	$161.00
14.	Clamshell Mounting Hardware	$48.00
15.	Side —of-pole Mounting Assembly and Hub Plates	$62.00
16.	Incandescent Pedestrian Signals (Hand/Man)	$175.00
17.	Mast Arm Mount Signal Bracket w/1 -way Stainless Steel Band Mount	$47.00
18.	Mast Arm Mount Signal Bracket — One-Way OPS Assembly	$136.00
19.	Mast Arm Mount Signal Bracket- Five —Section Cluster Cable Mount Assembly	$67.00

20.	Mast Arm Mount Signal Bracket—Two Way Variable Assembly	$170.00
21.	Pole Mount Two-Way Ped Head Assembly	$188.00
22.	Mast Arm or Pole Mounted Sign Bracket	$70.00
23.	LED Pedestrian Countdown Module	$174.00
24.	LED Red lamp for Programmable. View Module	$60.00
25.	LED Yellow lamp for Programmable View Module	$62.00
26.	LED Green lamp for Programmable View Module	$99.00

All material should be provided as per the attached technical specifications and in accordance with Louisville Metro Government standards for procurement of materials and supplies.

All addenda must be acknowledged.

SECTION V

EVALUATION CRITERIA

The bids received pursuant to this Competitive Sealed Bid will be evaluated on the following selection criteria:

Single unit prices will be used in determining the total amount of the bid within the quantities of one to two-hundred (1-200). Metro Government shall have the right to order, at the unit price for each bid item, with the respective pricing, any quantity, during a twelve (12) month period. Prices for any bid item shall not be contingent upon the purchase of any other bid item included within this bid.

Proposals will be reviewed by a committee consisting of representatives from Metro Government Traffic Operations Staff.

Pricing ----------	90%
Quantity ----------	10%

Louisville/Jefferson Co Metro Government

BID #1881

CATALOG CUTS

LED Traffic Signal Modules
LED Traffic Signals
LED Pedestrian Signals
Misc Mounting Hardware

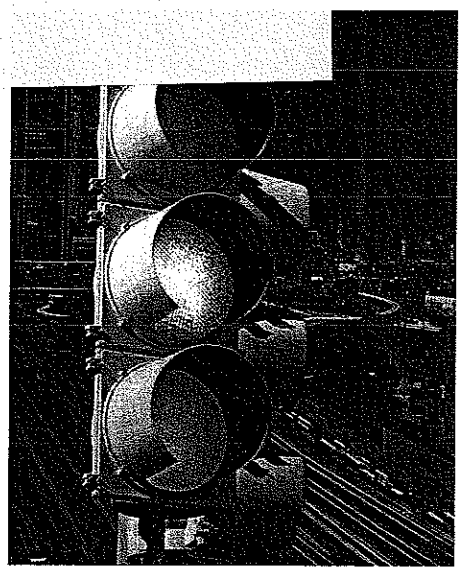
TRAFFIC
CONTROL
PRODUCTS

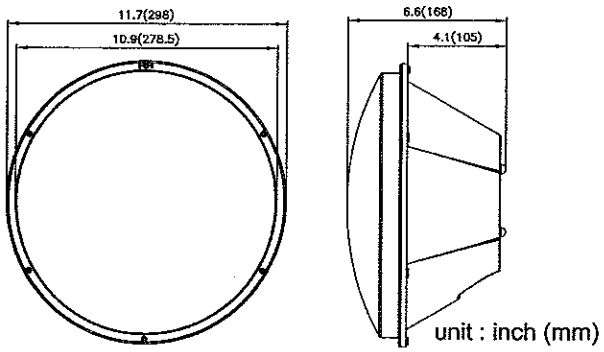
4565 Glenbrook Road • Willoughby, OH 44094
Tel: 440.951.8929 • Fax: 440.951.8203

Items 1-5

LED traffic signals business since 1996

12 Inches Incandescent Look LED Traffic Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

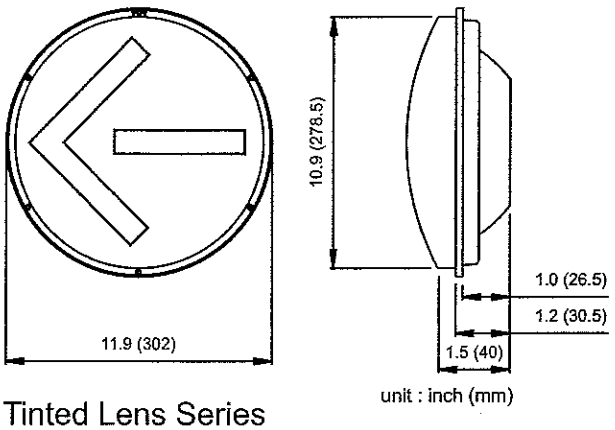
Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

EXCELLENCE OPTO. INC.
EOI Group

Address
1400 W. Lambert Road, Suite B, Brea, CA, 92821, U.S.A.
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoius.com http://www.eoi-us.com

LED traffic signals business since 1996

12 Inches Incandescent Look LED Arrow Signals



unit : inch (mm)

Features / Benefits

- Meets latest ITE 2007 standards
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN	12" / 300 mm	7.2	500	76	✓

Clear Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN-C	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN-C	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN-C	12" / 300 mm	7.2	500	76	✓

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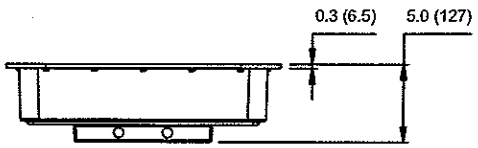
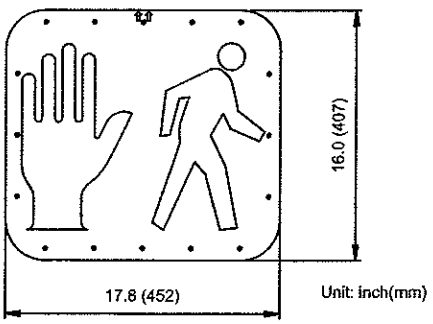
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoiusa.com http://www.eoiusa.com

LED traffic signals business since 1996

16" x 18" Incandescent Look LED Pedestrian Signal





Features / Benefits

- Meets the March 2004 PTCSI ITE, Caltrans Specifications and the 2003 MUTCD.
- High efficiency & long life LED light source.
- Failure of a single LED in the Hand and Man icons results in loss of light from that LED only.
- Easy to install with existing signal enclosure.
- Portland Orange for Hand and Lunar White for Man.

Specifications

- Operating Voltage Range: 80 VAC to 135VAC (120VAC nominal).
- Operating Temperature Range:-40°C to +74°C.
- Power Factor>0.9
- Total Harmonic Distortion <20%.
- Meets FCC Title 47, Subpart B, Section 15 regulations for electrical noise.
- Conforms to MIL-STD-810F for rain and blowing rain.
- Conforms to MIL-STD-883, Test Method 1010, for temperature cycling requirements.
- Conforms to MIL-STD-883, Test Method 2007, for mechanical vibration.

Item #6

Model Number	Color	Description	Dimension	Power Consumption Typical(Watt)		Hand	Person	Meet spec	
				Hand	Person	Symbol	Symbol	Caltrans	ITE
TRP-C45DG-W2	Portland Orange/ White	Combination Hand and Walking Person	16" x 18"	7.2	7.2	Full	Full	✓	✓

EXCELLENCE OPTO. INC.
EOI Group

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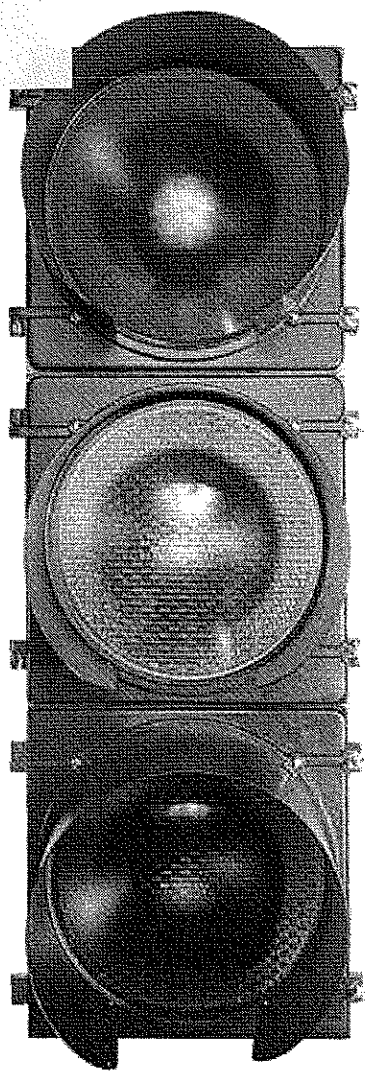
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoius.com http://www.eoi-us.com

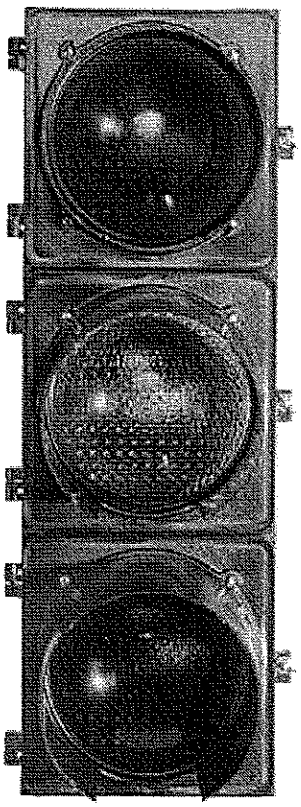
Vehicle Signals

Item #7



8 and 12 Inch
Aluminum and Polycarbonate

- *Low maintenance*
- *Increased durability*
- *Ability to interchange components*



Vehicle Signals

Our unique design permits the user to interchange all of the components in the 8 inch aluminum signal head with all of the components in the 8 inch polycarbonate signal head, as well as to interchange all the components in the 12 inch aluminum signal head with all the components in the 12" polycarbonate signal head. Both 8 and 12 inch housings combine for various configurations.

Exceptional grade die cast from aluminum alloy. McCain's in house die casting foundry allows us complete control in maintaining the highest quality.

Injection molded from ultraviolet and heat stabilized, flame retardant, and permanently colored polycarbonate resins. To provide added strength and durability unmatched by standard polycarbonate resins, specify the optional 10% glass fiber filled resin.

Exterior grade die cast aluminum or polycarbonate injected molded in one piece to provide strength and positive locking with other signals and mounting hardware. Each housing is molded with a 72 tooth serrated boss and reinforcing ribs on top and bottom. The top and bottom also features an opening to accept a standard 1.5 inch pipe mounting hardware. 10 percent fiberglass filled polycarbonate housing have four additional knockout locations to allow use of four 10-32 x 1.5 inch machine screws as an additional means of coupling sections. All housings have a cast boss provided for mounting a 5 or 6 position terminal strip. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment.

Exterior grade die cast aluminum or polycarbonate injection molded with two integrated hinge lugs mounted to the housing with two stainless steel hinge pins. Positive latching is achieved with stainless steel eyebolts and wing nut assemblies. A positive dust tight seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door. On polycarbonate signal doors four metal threaded inserts are molded in for added strength to the visor attachment screws.

Each signal is provided with a 5 or 6 position12 terminal barrier strip; one side with a quick disconnect terminal for socket leads; the opposite with a screw clamp terminal for field wiring.

All exterior surfaces of the housing, door, visors, and back plates are cleaned and "powder coated" to the highest industry standards Powder coating is a modern "dry painting" process with an exceptionally high resistance to impact and weather. The powder is applied electrostatically then melted and fused into a smooth coating in a baking oven.
Standard colors are: Dark Olive Green FS595A 14056; Fed Yellow FS595A 13538; Dull Black FS595A 37038. Color charts are available for custom colors upon request.

The entire design permits a positive contact of the door, lens, silicone reflector, and silicone socket gasket assemblies which create a moisture and dust tight atmosphere.

Either glass or polycarbonate as specified. Standard lenses, (red, amber, green) meet the latest **ITE** requirements. Lenses fit into specially extruded EPDM gaskets which are placed into the door with four stainless lens clips and stainless steel screws, to create a positive dust proof seal.

Your choice of bright specular alzak aluminum or silvered glass reflectors.

Phenolic body with serrated base socket to permit positive locking and adjustable positioning of lamp filament. Socket secured by reflector bail. For identification, the leads are color coded and have fast on leads to permit installation and removal without the use of any special tools. Wiring insulation conforms to conductor rating of 105°C and is 18 AWG.

Visor, backplates, and various mounting assemblies are available.

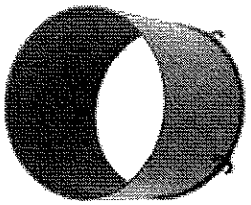
A die cast aluminum reflector ring is mounted in the signal housing using stainless steel dowel pins and a spring assembly, permitting hinging and removal of the reflector assembly without the use of any special tools.

The McCain Vehicle Signal is warranted against defects in materials and workmanship for a period of one (1) year from the date of original shipment.

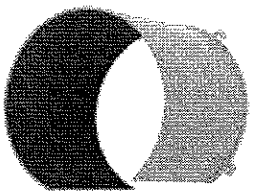
Signal Visors

Aluminum
Polycarbonate

45° Angle
Cap
Full Circle
Scoop
Tunnel

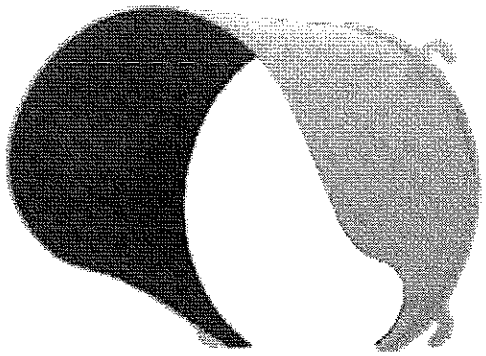


Full Circle

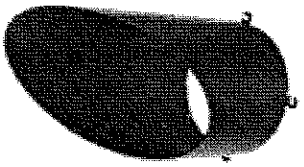


Tunnel

Scoop



Cap



45° Angle

Overview

McCain's Signal Visors increase signal visibility in sunlight while still allowing an unobstructed view for multiple lanes of approaching drivers and pedestrians. McCain produces a range of standard and angled visors including tunnel, full circle, and cap, that offer a variety of signal viewing angles. Whether you are looking for aluminum or polycarbonate, Federal yellow, signal green, black, or custom colors, McCain has the visors to meet your needs.

Benefits

- Increases signal visibility in sunlight
- Available in a variety of materials, sizes, styles, and angles to meet your specific requirements
- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

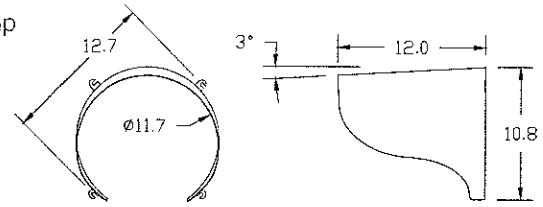
Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

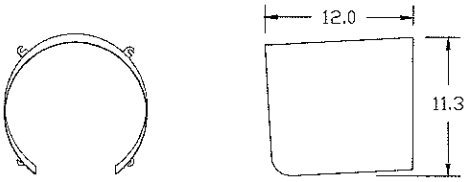
Signal Visors

Front Side

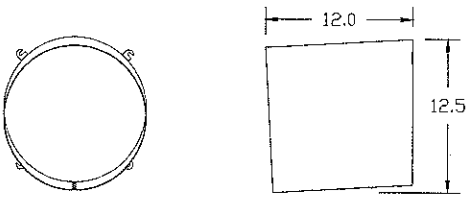
Cap



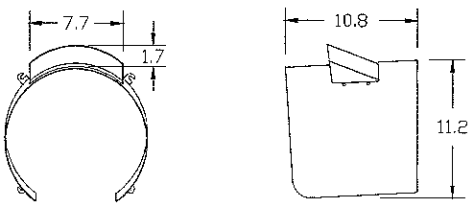
Tunnel



Full Circle



Scoop



Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

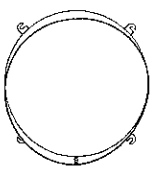
		Diameter	Depth
Dimensions:	Standard Visors:	8"	8"
		12"	12"
	45° Angle Visors:	8"	18"
		12"	18"
		12"	27"

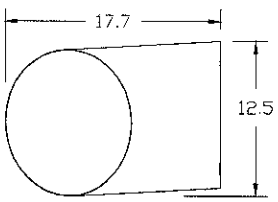
Degree of Tilt:	3° (down)
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050" thick
	Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black
Mounting:	Twist-on tabs
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style

Options

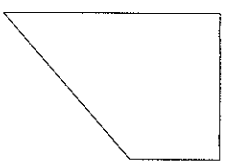
- Other lengths available
- Degree of tilt

45° (18" right angle version)





Top



Dimensions rounded to the nearest 0.1"
All visors shown are 12" signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

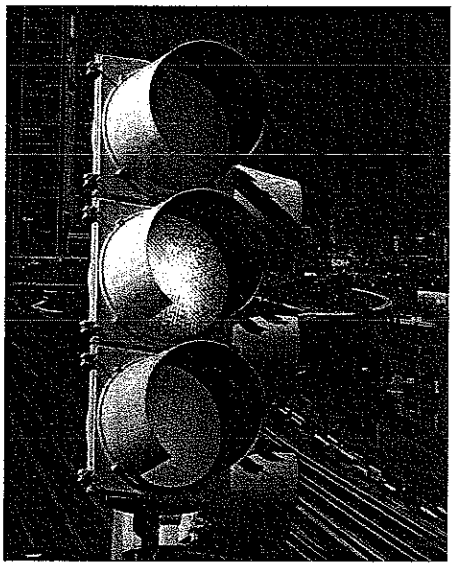
To learn more about McCain's Integrated Traffic Solutions, please contact ***info@mccain-inc.com*** *or call* ***(760) 727-8100***

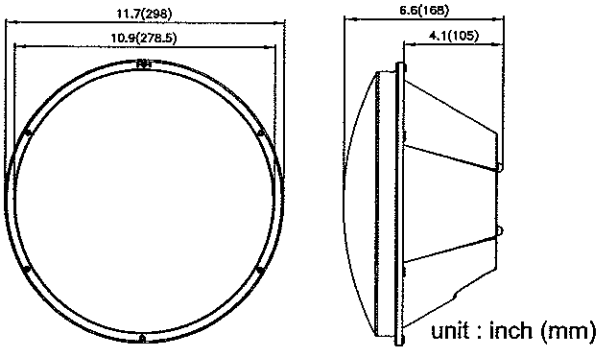
McCain®

2365 OAK RIDGE WAY VISTA, CALIFORNIA 92081 USA WWW.MCCAIN-INC.COM

LED traffic signals business since 1996

12 Inches Incandescent Look LED Traffic Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

EXCELLENCE OPTO. INC.
EOI Group

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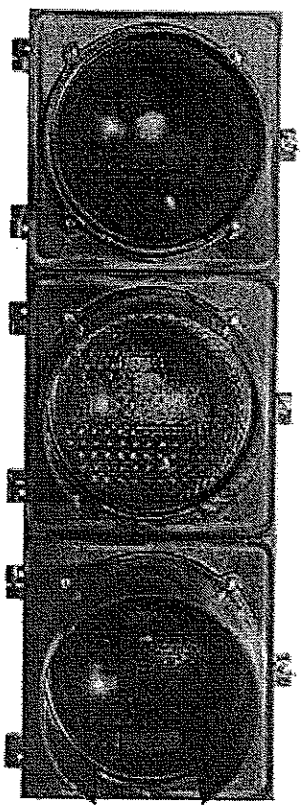
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoius.com http://www.eoi-us.com

Vehicle Signals

8 and 12 Inch
Aluminum and Polycarbonate

- *Low maintenance*
- *Increased durability*
- *Ability to interchange components*



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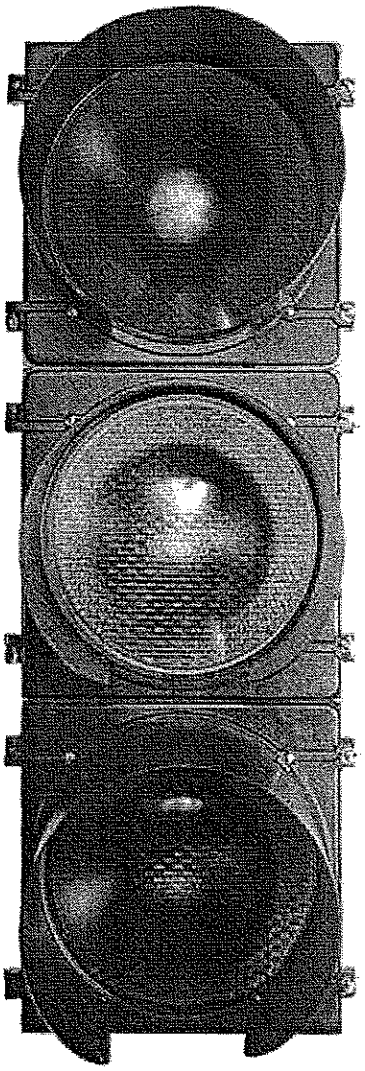


McCain
2365 Oak Ridge Way Vista, CA 92081, USA
Phone 760-727-8100 Fax 760-727-8264
www.mccain-inc.com

Vehicle Signals

Our unique design permits the user to interchange all of the components in the 8 inch aluminum signal head with all of the components in the 8 inch polycarbonate signal head, as well as to interchange all the components in the 12 inch aluminum signal head with all the components in the 12" polycarbonate signal head. Both 8 and 12 inch housings combine for various configurations.

Exceptional grade die cast from aluminum alloy. McCain's in house die casting foundry allows us complete control in maintaining the highest quality.

Injection molded from ultraviolet and heat stabilized, flame retardant, and permanently colored polycarbonate resins. To provide added strength and durability unmatched by standard polycarbonate resins, specify the optional 10% glass fiber filled resin.

Exterior grade die cast aluminum or polycarbonate injected molded in one piece to provide strength and positive locking with other signals and mounting hardware. Each housing is molded with a 72 tooth serrated boss and reinforcing ribs on top and bottom. The top and bottom also features an opening to accept a standard 1.5 inch pipe mounting hardware. 10 percent fiberglass filled polycarbonate housing have four additional knockout locations to allow use of four 10-32 x 1.5 inch machine screws as an additional means of coupling sections. All housings have a cast boss provided for mounting a 5 or 6 position terminal strip. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment.

Exterior grade die cast aluminum or polycarbonate injection molded with two integrated hinge lugs mounted to the housing with two stainless steel hinge pins. Positive latching is achieved with stainless steel eyebolts and wing nut assemblies. A positive dust tight seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door. On polycarbonate signal doors four metal threaded inserts are molded in for added strength to the visor attachment screws.

Each signal is provided with a 5 or 6 position12 terminal barrier strip; one side with a quick disconnect terminal for socket leads; the opposite with a screw clamp terminal for field wiring.

All exterior surfaces of the housing, door, visors, and back plates are cleaned and "powder coated" to the highest industry standards Powder coating is a modern "dry painting" process with an exceptionally high resistance to impact and weather. The powder is applied electrostatically then melted and fused into a smooth coating in a baking oven.
Standard colors are: Dark Olive Green FS595A 14056; Fed Yellow FS595A 13538; Dull Black FS595A 37038. Color charts are available for custom colors upon request.

The entire design permits a positive contact of the door, lens, silicone reflector, and silicone socket gasket assemblies which create a moisture and dust tight atmosphere.

Either glass or polycarbonate as specified. Standard lenses, (red, amber, green) meet the latest **ITE** requirements. Lenses fit into specially extruded EPDM gaskets which are placed into the door with four stainless lens clips and stainless steel screws, to create a positive dust proof seal.

Your choice of bright specular alzak aluminum or silvered glass reflectors.

Phenolic body with serrated base socket to permit positive locking and adjustable positioning of lamp filament. Socket secured by reflector bail. For identification, the leads are color coded and have fast on leads to permit installation and removal without the use of any special tools. Wiring insulation conforms to conductor rating of 105°C and is 18 AWG.

Visor, backplates, and various mounting assemblies are available.

A die cast aluminum reflector ring is mounted in the signal housing using stainless steel dowel pins and a spring assembly, permitting hinging and removal of the reflector assembly without the use of any special tools.

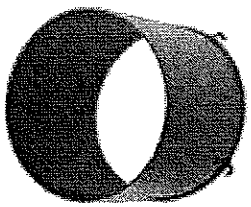
The McCain Vehicle Signal is warranted against defects in materials and workmanship for a period of one (1) year from the date of original shipment.

McCain
2365 Oak Ridge Way Vista, CA 92081, USA
Phone 760-727-8100 Fax 760-727-8264
www.mccain-inc.com

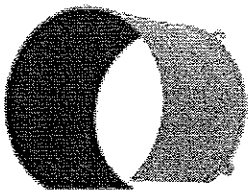
Signal Visors

Aluminum
Polycarbonate

45° Angle
Cap
Full Circle
Scoop
Tunnel



Full Circle



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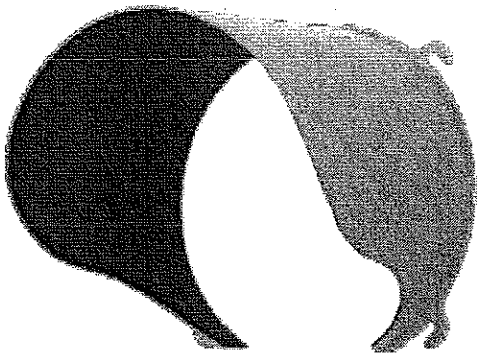
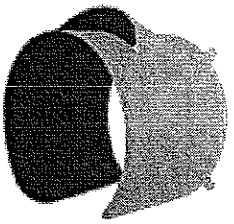
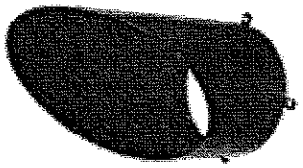


Cap



Scoop



45° Angle

Overview

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Benefits

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- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

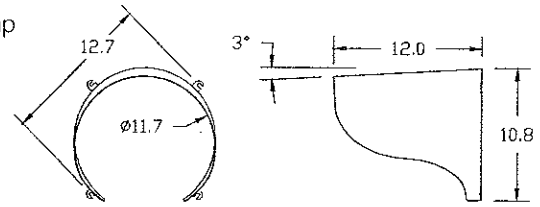
Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

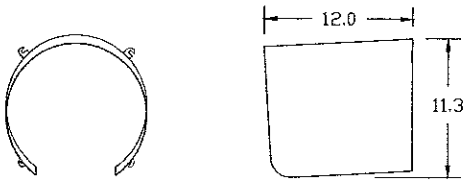
Signal Visors

Front Side

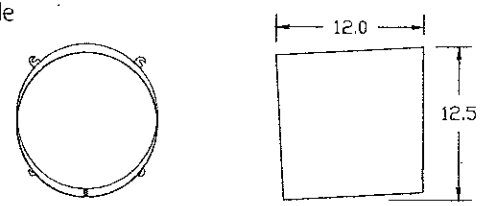
Cap



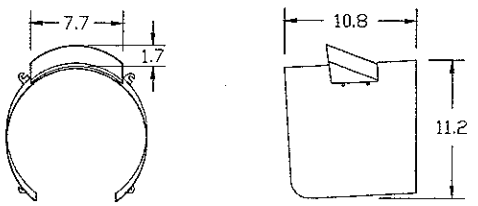
Tunnel



Full Circle



Scoop



Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

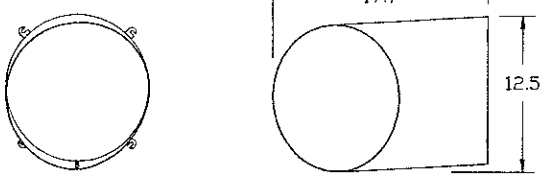
		Diameter	Depth
Dimensions:	Standard Visors:	8″	8″
		12″	12″
	45° Angle Visors:	8″	18″
		12″	18″
		12″	27″

Degree of Tilt:	3° (down)
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050″ thick
	Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10″ nominal thickness
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black
Mounting:	Twist-on tabs
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style

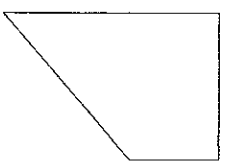
Options

- Other lengths available
- Degree of tilt

45° (18″ right angle version)



Top



Dimensions rounded to the nearest 0.1″
All visors shown are 12″ signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12″ visors

To learn more about McCain's Integrated Traffic Solutions, please contact ***info@mccain-inc.com*** *or call* ***(760) 727-8100***

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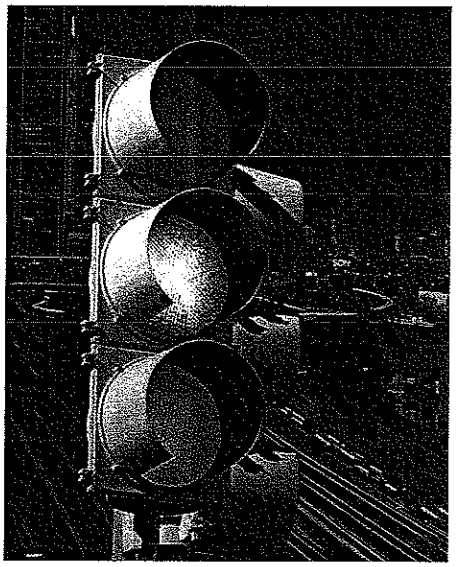
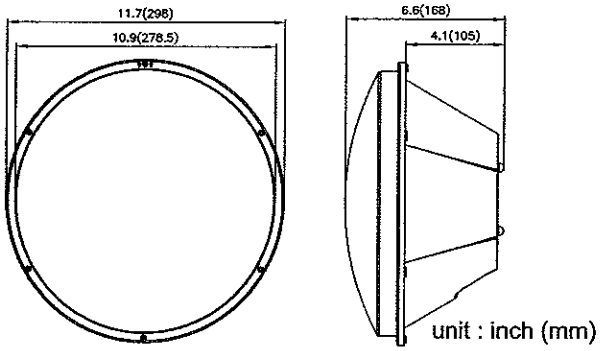
LED traffic signals business since 1996

12 Inches Incandescent Look LED Traffic Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

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EOI Group

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Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoius.com http://www.eoi-us.com

LED traffic signals business since 1996

12 Inches Incandescent Look LED Arrow Signals

Features / Benefits

- Meets latest ITE 2007 standards
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
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- UV stabilized scratch resistant shell
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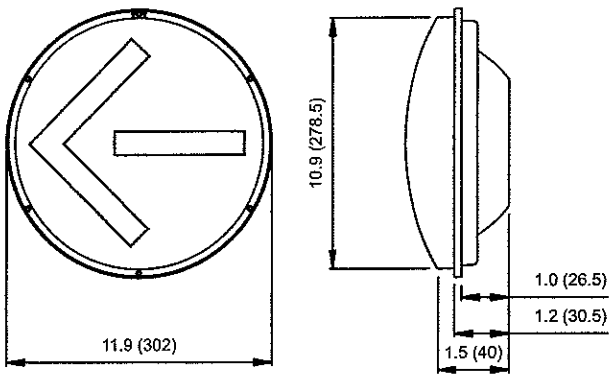


unit : inch (mm)

Tinted Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN	12" / 300 mm	7.2	500	76	✓

Clear Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN-C	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN-C	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN-C	12" / 300 mm	7.2	500	76	✓

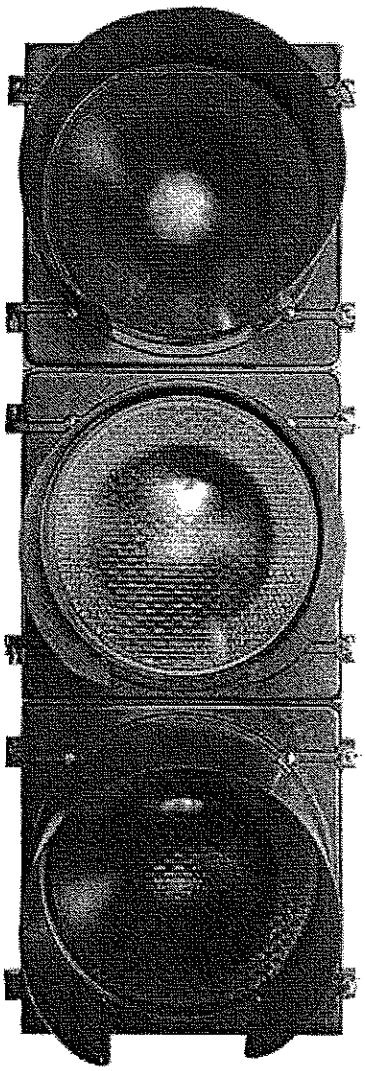
EXCELLENCE OPTO. INC.
EOI Group

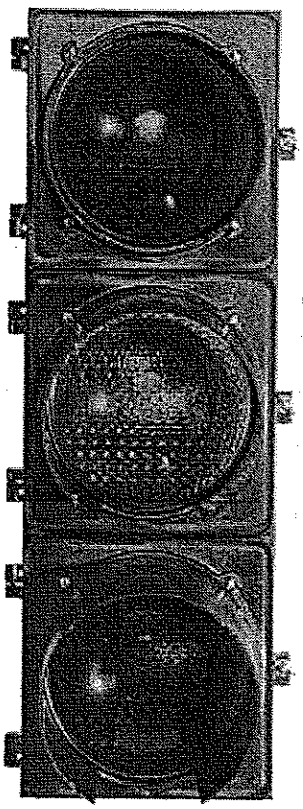
Address
1400 W. Lambert Road, Suite B, Brea, CA, 92821, U.S.A.
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoiusa.com http://www.eoi-us.com

Vehicle Signals

8 and 12 Inch
Aluminum and Polycarbonate

- *Low maintenance*
- *Increased durability*
- *Ability to interchange components*





Item #9

McCain
2365 Oak Ridge Way Vista, CA 92081, USA
Phone 760-727-8100 Fax 760-727-8264
www.mccain-inc.com

Vehicle Signals

Our unique design permits the user to interchange all of the components in the 8 inch aluminum signal head with all of the components in the 8 inch polycarbonate signal head, as well as to interchange all the components in the 12 inch aluminum signal head with all the components in the 12" polycarbonate signal head. Both 8 and 12 inch housings combine for various configurations.

Exceptional grade die cast from aluminum alloy. McCain's in house die casting foundry allows us complete control in maintaining the highest quality.

Injection molded from ultraviolet and heat stabilized, flame retardant, and permanently colored polycarbonate resins. To provide added strength and durability unmatched by standard polycarbonate resins, specify the optional 10% glass fiber filled resin.

Exterior grade die cast aluminum or polycarbonate injected molded in one piece to provide strength and positive locking with other signals and mounting hardware. Each housing is molded with a 72 tooth serrated boss and reinforcing ribs on top and bottom. The top and bottom also features an opening to accept a standard 1.5 inch pipe mounting hardware. 10 percent fiberglass filled polycarbonate housing have four additional knockout locations to allow use of four 10-32 x 1.5 inch machine screws as an additional means of coupling sections. All housings have a cast boss provided for mounting a 5 or 6 position terminal strip. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment.

Exterior grade die cast aluminum or polycarbonate injection molded with two integrated hinge lugs mounted to the housing with two stainless steel hinge pins. Positive latching is achieved with stainless steel eyebolts and wing nut assemblies. A positive dust tight seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door. On polycarbonate signal doors four metal threaded inserts are molded in for added strength to the visor attachment screws.

Each signal is provided with a 5 or 6 position12 terminal barrier strip; one side with a quick disconnect terminal for socket leads; the opposite with a screw clamp terminal for field wiring.

All exterior surfaces of the housing, door, visors, and back plates are cleaned and "powder coated" to the highest industry standards Powder coating is a modern "dry painting" process with an exceptionally high resistance to impact and weather. The powder is applied electrostatically then melted and fused into a smooth coating in a baking oven.
Standard colors are: Dark Olive Green FS595A 14056; Fed Yellow FS595A 13538; Dull Black FS595A 37038. Color charts are available for custom colors upon request.

The entire design permits a positive contact of the door, lens, silicone reflector, and silicone socket gasket assemblies which create a moisture and dust tight atmosphere.

Either glass or polycarbonate as specified. Standard lenses, (red, amber, green) meet the latest **ITE** requirements. Lenses fit into specially extruded EPDM gaskets which are placed into the door with four stainless lens clips and stainless steel screws, to create a positive dust proof seal.

Your choice of bright specular alzak aluminum or silvered glass reflectors.

Phenolic body with serrated base socket to permit positive locking and adjustable positioning of lamp filament. Socket secured by reflector bail. For identification, the leads are color coded and have fast on leads to permit installation and removal without the use of any special tools. Wiring insulation conforms to conductor rating of 105°C and is 18 AWG.

Visor, backplates, and various mounting assemblies are available.

A die cast aluminum reflector ring is mounted in the signal housing using stainless steel dowel pins and a spring assembly, permitting hinging and removal of the reflector assembly without the use of any special tools.

The McCain Vehicle Signal is warranted against defects in materials and workmanship for a period of one (1) year from the date of original shipment.

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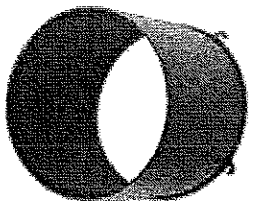
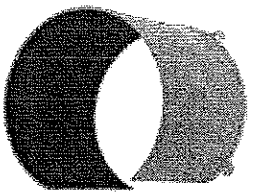
Signal Visors

Aluminum
Polycarbonate

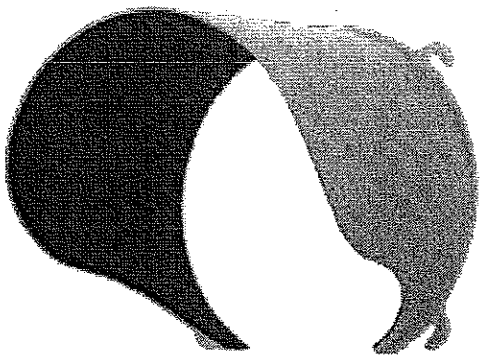
45° Angle
Cap
Full Circle
Scoop
Tunnel



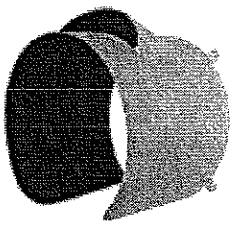
Full Circle



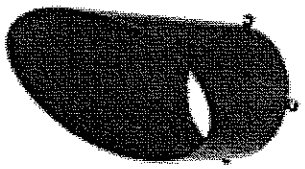
Tunnel



Cap



Scoop



45° Angle

Overview

McCain's Signal Visors increase signal visibility in sunlight while still allowing an unobstructed view for multiple lanes of approaching drivers and pedestrians. McCain produces a range of standard and angled visors including tunnel, full circle, and cap, that offer a variety of signal viewing angles. Whether you are looking for aluminum or polycarbonate, Federal yellow, signal green, black, or custom colors, McCain has the visors to meet your needs.

Benefits

- Increases signal visibility in sunlight
- Available in a variety of materials, sizes, styles, and angles to meet your specific requirements
- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

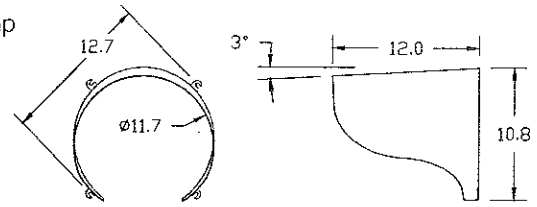
Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

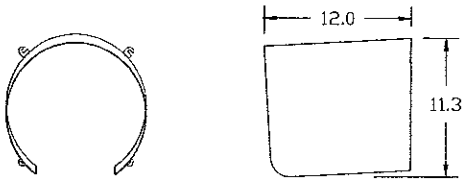
Signal Visors

Front Side

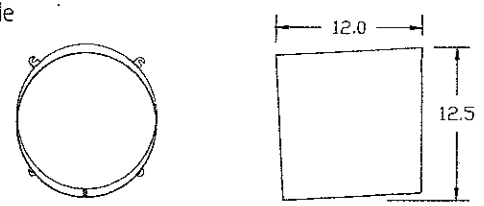
Cap



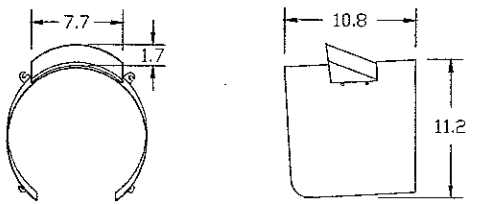
Tunnel



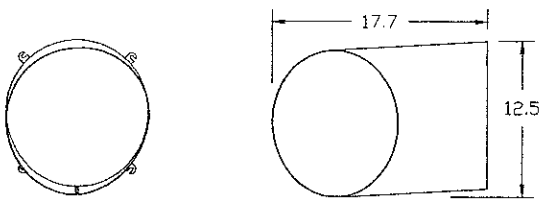
Full Circle



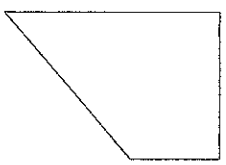
Scoop



45° (18" right angle version)



Top



Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

		Diameter	Depth
Dimensions:	Standard Visors:	8"	8"
		12"	12"
	45° Angle Visors:	8"	18"
		12"	18"
		12"	27"
Degree of Tilt:	3° (down)		
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050" thick		
	Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness		
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor		
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black		
Mounting:	Twist-on tabs		
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style		

Options

- Other lengths available
- Degree of tilt

Dimensions rounded to the nearest 0.1"
All visors shown are 12" signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

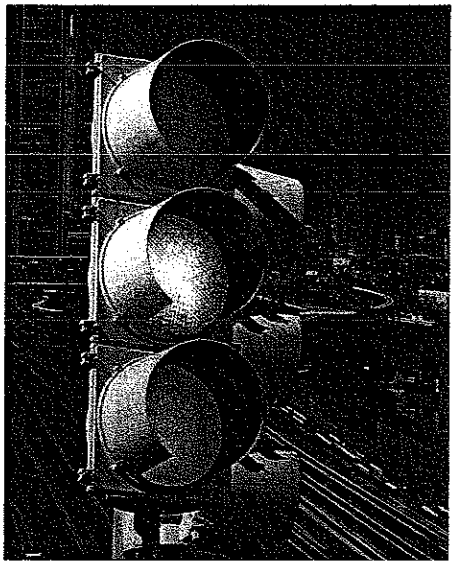
To learn more about McCain's Integrated Traffic Solutions, please contact ***info@mccain-inc.com*** *or call* ***(760) 727-8100***

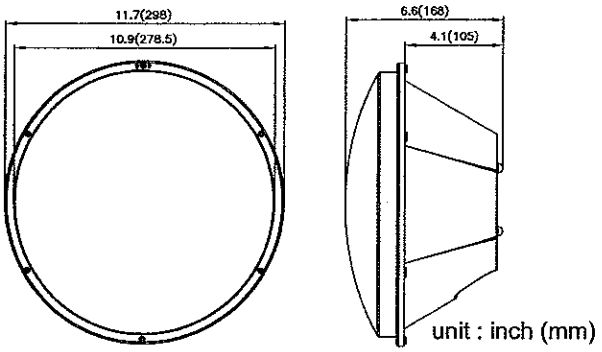
McCain®

2365 OAK RIDGE WAY · VISTA, CALIFORNIA 92081 · USA · WWW.MCCAIN-INC.COM

LED traffic signals business since 1996

12 Inches Incandescent Look LED Traffic Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

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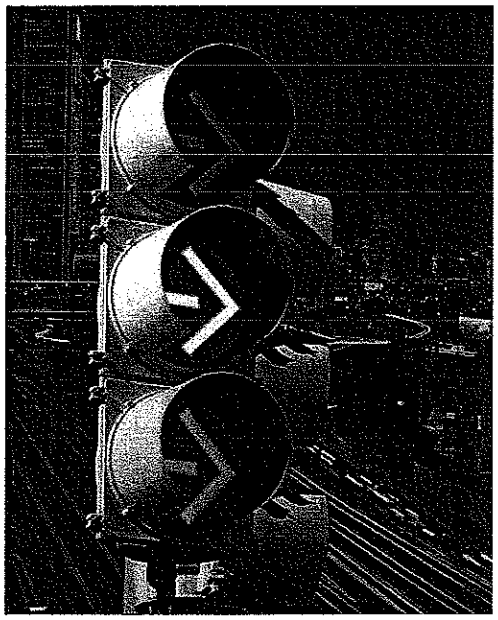
12 Inches Incandescent Look LED Arrow Signals



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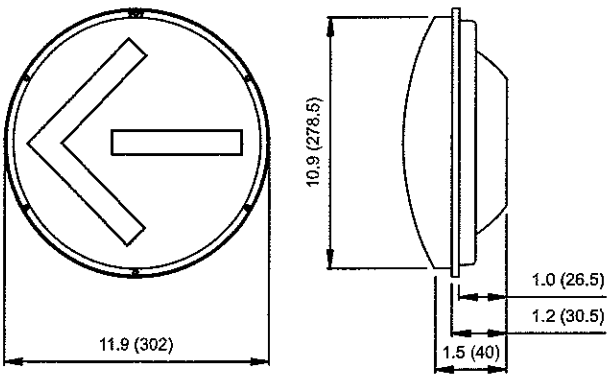

unit : inch (mm)

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Clear Lens Series

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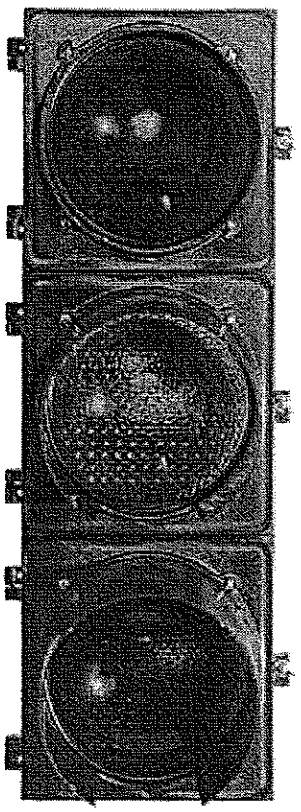

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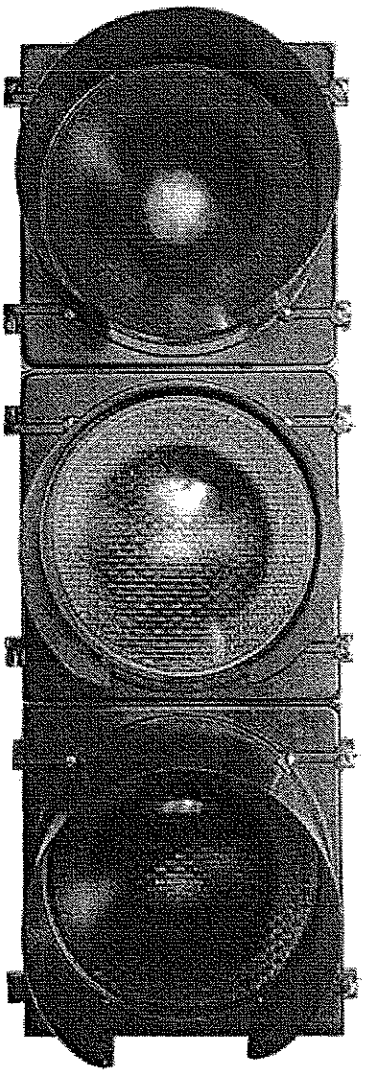

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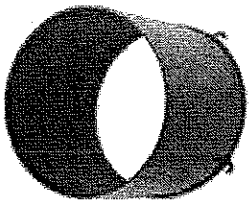
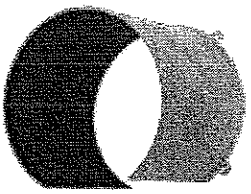
Aluminum
Polycarbonate

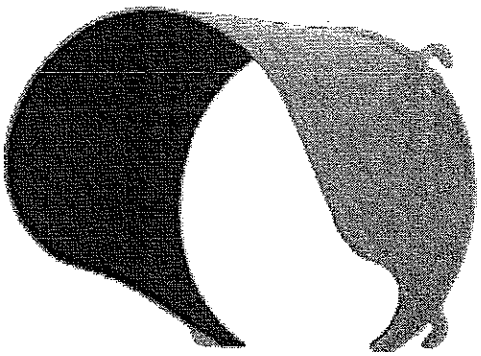
45° Angle
Cap
Full Circle
Scoop
Tunnel



Full Circle

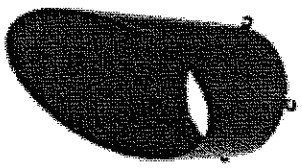


Tunnel



Cap

Scoop



45° Angle

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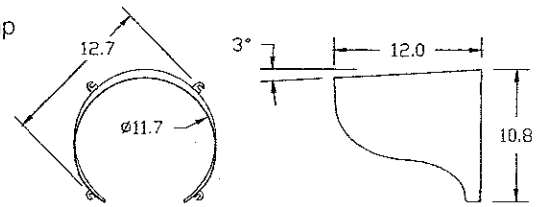
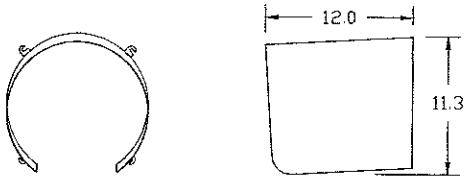
Signal Visors

Front Side

Cap



Tunnel



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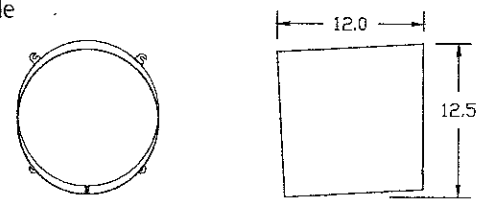
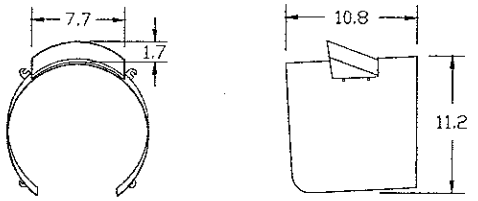
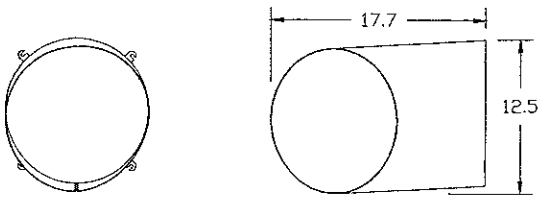


Scoop



45° (18" right angle version)



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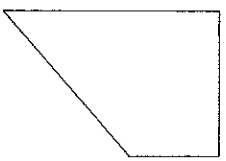

Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

		Diameter	Depth
Dimensions:	Standard Visors:	8"	8"
		12"	12"
	45° Angle Visors:	8"	18"
		12"	18"
		12"	27"
Degree of Tilt:	3° (down)		
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050" thick		
	Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness		
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor		
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black		
Mounting:	Twist-on tabs		
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style		

Options

- Other lengths available
- Degree of tilt

Dimensions rounded to the nearest 0.1"
All visors shown are 12" signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

To learn more about McCain's Integrated Traffic Solutions, please contact ***info@mccain-inc.com*** *or call* ***(760) 727-8100***

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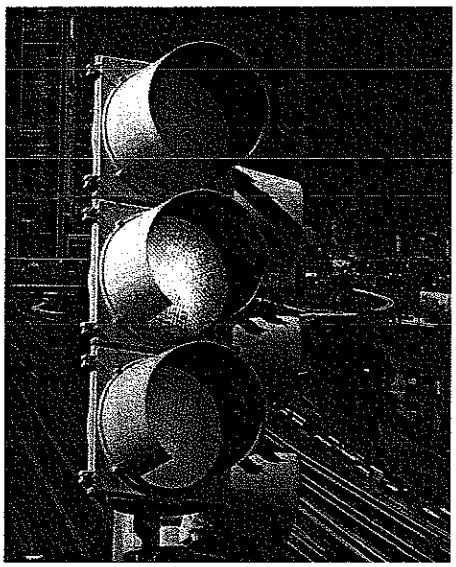
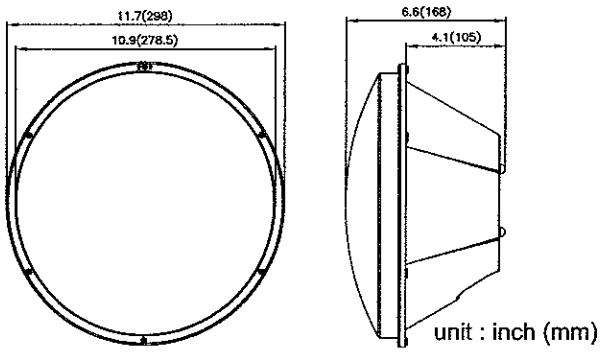
LED traffic signals business since 1996

12 Inches Incandescent Look LED Traffic Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
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- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

EXCELLENCE OPTO. INC.
EOI Group

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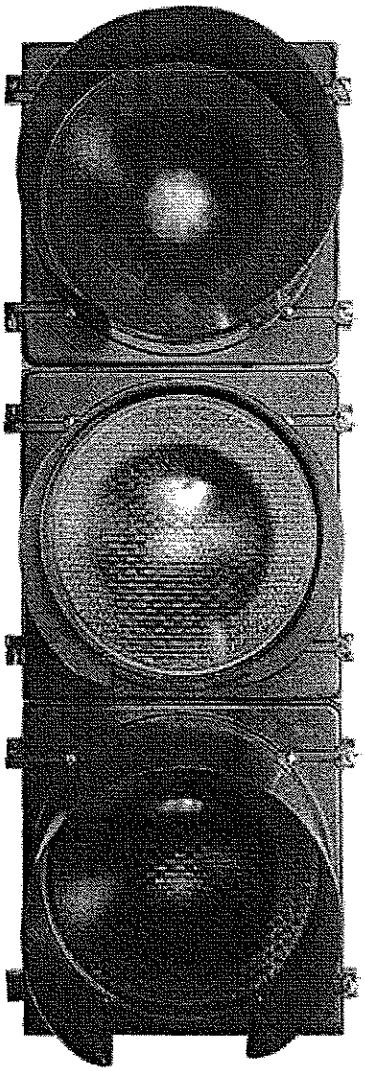
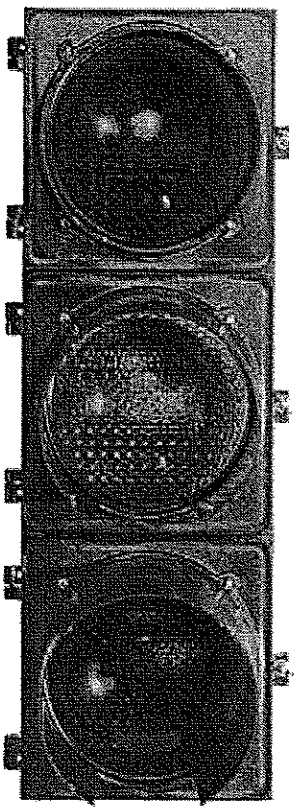
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoius.com http://www.eoi-us.com

Vehicle Signals

8 and 12 Inch
Aluminum and Polycarbonate

- *Low maintenance*
- *Increased durability*
- *Ability to interchange components*





Item #11

McCain reserves the right to change product specifications without notice. McCain 9/07

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Phone 760-727-8100 Fax 760-727-8264
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Vehicle Signals

Our unique design permits the user to interchange all of the components in the 8 inch aluminum signal head with all of the components in the 8 inch polycarbonate signal head, as well as to interchange all the components in the 12 inch aluminum signal head with all the components in the 12" polycarbonate signal head. Both 8 and 12 inch housings combine for various configurations.

Exceptional grade die cast from aluminum alloy. McCain's in house die casting foundry allows us complete control in maintaining the highest quality.

Injection molded from ultraviolet and heat stabilized, flame retardant, and permanently colored polycarbonate resins. To provide added strength and durability unmatched by standard polycarbonate resins, specify the optional 10% glass fiber filled resin.

Exterior grade die cast aluminum or polycarbonate injected molded in one piece to provide strength and positive locking with other signals and mounting hardware. Each housing is molded with a 72 tooth serrated boss and reinforcing ribs on top and bottom. The top and bottom also features an opening to accept a standard 1.5 inch pipe mounting hardware. 10 percent fiberglass filled polycarbonate housing have four additional knockout locations to allow use of four 10-32 x 1.5 inch machine screws as an additional means of coupling sections. All housings have a cast boss provided for mounting a 5 or 6 position terminal strip. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment.

Exterior grade die cast aluminum or polycarbonate injection molded with two integrated hinge lugs mounted to the housing with two stainless steel hinge pins. Positive latching is achieved with stainless steel eyebolts and wing nut assemblies. A positive dust tight seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door. On polycarbonate signal doors four metal threaded inserts are molded in for added strength to the visor attachment screws.

Each signal is provided with a 5 or 6 position12 terminal barrier strip; one side with a quick disconnect terminal for socket leads; the opposite with a screw clamp terminal for field wiring.

All exterior surfaces of the housing, door, visors, and back plates are cleaned and "powder coated" to the highest industry standards Powder coating is a modern "dry painting" process with an exceptionally high resistance to impact and weather. The powder is applied electrostatically then melted and fused into a smooth coating in a baking oven.
Standard colors are: Dark Olive Green FS595A 14056; Fed Yellow FS595A 13538; Dull Black FS595A 37038. Color charts are available for custom colors upon request.

The entire design permits a positive contact of the door, lens, silicone reflector, and silicone socket gasket assemblies which create a moisture and dust tight atmosphere.

Either glass or polycarbonate as specified. Standard lenses, (red, amber, green) meet the latest ITE requirements. Lenses fit into specially extruded EPDM gaskets which are placed into the door with four stainless lens clips and stainless steel screws, to create a positive dust proof seal.

Your choice of bright specular alzak aluminum or silvered glass reflectors.

Phenolic body with serrated base socket to permit positive locking and adjustable positioning of lamp filament. Socket secured by reflector bail. For identification, the leads are color coded and have fast on leads to permit installation and removal without the use of any special tools. Wiring insulation conforms to conductor rating of 105°C and is 18 AWG.

Visor, backplates, and various mounting assemblies are available.

A die cast aluminum reflector ring is mounted in the signal housing using stainless steel dowel pins and a spring assembly, permitting hinging and removal of the reflector assembly without the use of any special tools.

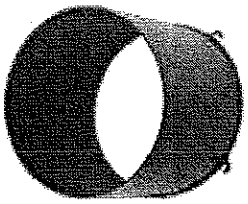
The McCain Vehicle Signal is warranted against defects in materials and workmanship for a period of one (1) year from the date of original shipment.

McCain
2365 Oak Ridge Way Vista, CA 92081, USA
Phone 760-727-8100 Fax 760-727-8264
www.mccain-inc.com

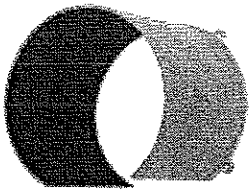
Signal Visors

Aluminum
Polycarbonate

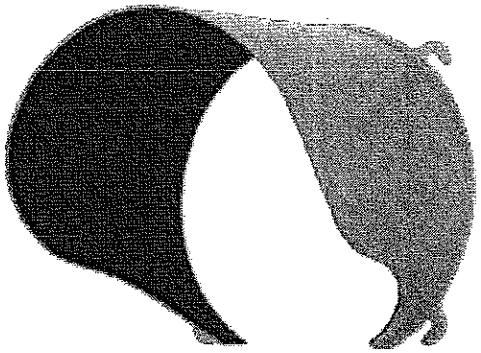
45° Angle
Cap
Full Circle
Scoop
Tunnel



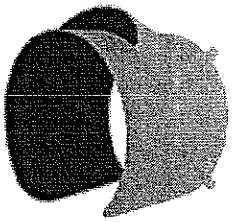
Full Circle



Tunnel



Cap



Scoop

45° Angle

Overview

McCain's Signal Visors increase signal visibility in sunlight while still allowing an unobstructed view for multiple lanes of approaching drivers and pedestrians. McCain produces a range of standard and angled visors including tunnel, full circle, and cap, that offer a variety of signal viewing angles. Whether you are looking for aluminum or polycarbonate, Federal yellow, signal green, black, or custom colors, McCain has the visors to meet your needs.

Benefits

- Increases signal visibility in sunlight
- Available in a variety of materials, sizes, styles, and angles to meet your specific requirements
- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

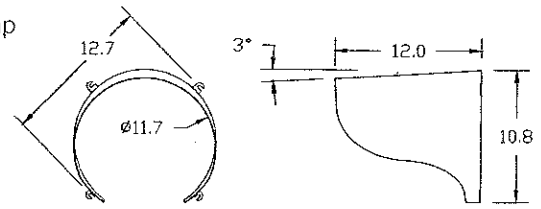
Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

Signal Visors

Front Side

Cap



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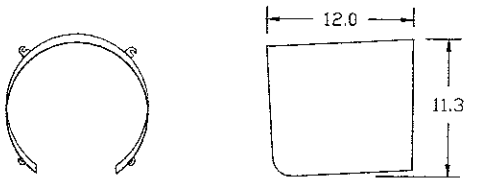

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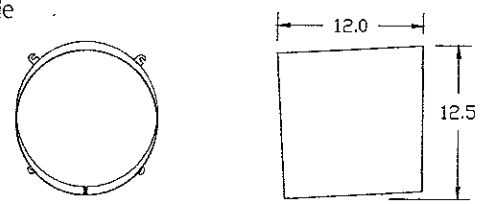
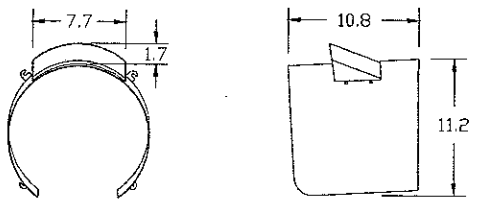
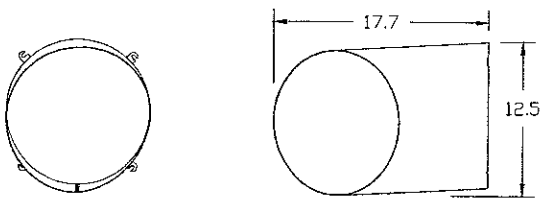


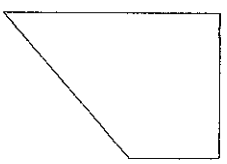
Scoop



45° (18" right angle version)



Top



Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

		Diameter	Depth
Dimensions:	Standard Visors:	8"	8"
		12"	12"
	45° Angle Visors:	8"	18"
		12"	18"
		12"	27"
Degree of Tilt:	3° (down)		
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050" thick		
	Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness		
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor		
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black		
Mounting:	Twist-on tabs		
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style		

Options

- Other lengths available
- Degree of tilt

Dimensions rounded to the nearest 0.1"
All visors shown are 12" signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

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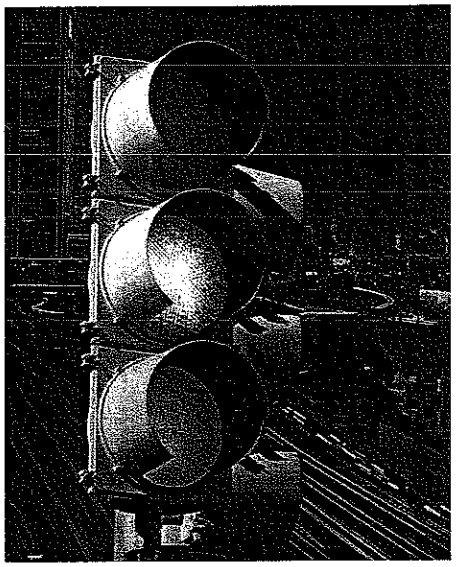
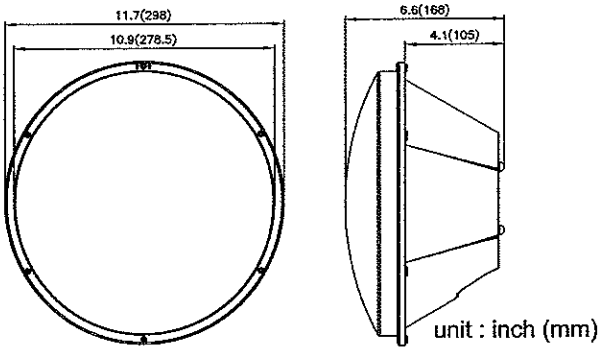
Your Reliable Partner
eoi
Energy Saving Pioneer

12 Inches Incandescent Look LED Traffic Signals





Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

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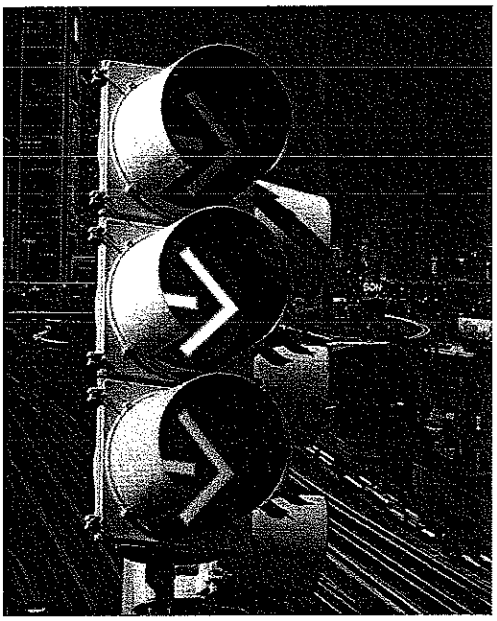
LED traffic signals business since 1996

12 Inches Incandescent Look LED Arrow Signals



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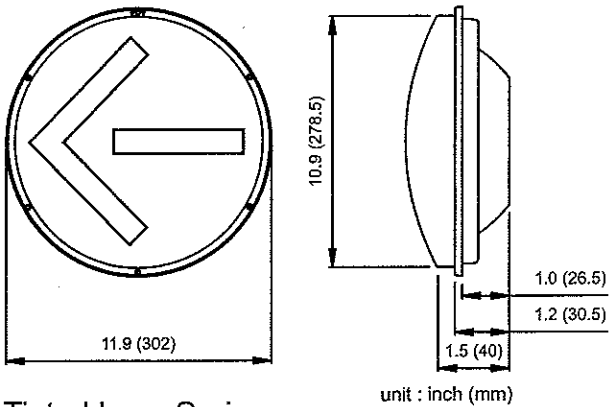

unit : inch (mm)

Tinted Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN	12" / 300 mm	7.2	500	76	✓

Clear Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN-C	12" / 300 mm	6.6	623	58	✓
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Vehicle Signals

8 and 12 Inch
Aluminum and Polycarbonate

- ***Low maintenance***
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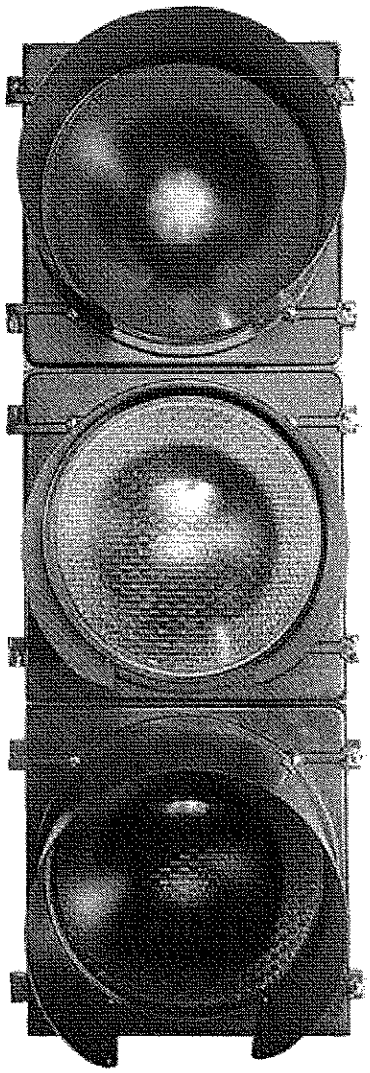

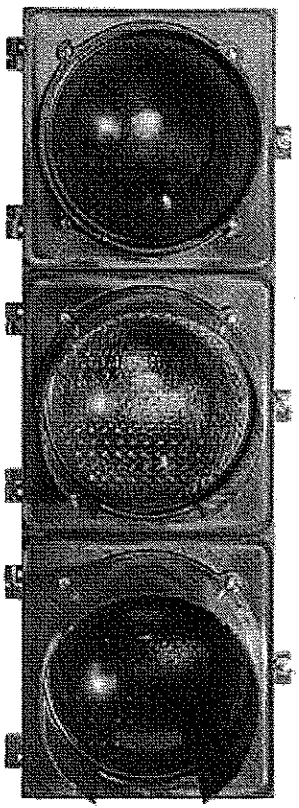

Item #12

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Exceptional grade die cast from aluminum alloy. McCain's in house die casting foundry allows us complete control in maintaining the highest quality.

Injection molded from ultraviolet and heat stabilized, flame retardant, and permanently colored polycarbonate resins. To provide added strength and durability unmatched by standard polycarbonate resins, specify the optional 10% glass fiber filled resin.

Exterior grade die cast aluminum or polycarbonate injected molded in one piece to provide strength and positive locking with other signals and mounting hardware. Each housing is molded with a 72 tooth serrated boss and reinforcing ribs on top and bottom. The top and bottom also features an opening to accept a standard 1.5 inch pipe mounting hardware. 10 percent fiberglass filled polycarbonate housing have four additional knockout locations to allow use of four 10-32 x 1.5 inch machine screws as an additional means of coupling sections. All housings have a cast boss provided for mounting a 5 or 6 position terminal strip. The words, red, amber, and green are cast next to each boss to identify socket lead wire attachment.

Exterior grade die cast aluminum or polycarbonate injection molded with two integrated hinge lugs mounted to the housing with two stainless steel hinge pins. Positive latching is achieved with stainless steel eyebolts and wing nut assemblies. A positive dust tight seal is assured with an E.P.D.M. rubber gasket fitted into the gasket channel cast in the perimeter of the door. On polycarbonate signal doors four metal threaded inserts are molded in for added strength to the visor attachment screws.

Each signal is provided with a 5 or 6 position12 terminal barrier strip; one side with a quick disconnect terminal for socket leads; the opposite with a screw clamp terminal for field wiring.

All exterior surfaces of the housing, door, visors, and back plates are cleaned and "powder coated" to the highest industry standards Powder coating is a modern "dry painting" process with an exceptionally high resistance to impact and weather. The powder is applied electrostatically then melted and fused into a smooth coating in a baking oven.
Standard colors are: Dark Olive Green FS595A 14056; Fed Yellow FS595A 13538; Dull Black FS595A 37038. Color charts are available for custom colors upon request.

The entire design permits a positive contact of the door, lens, silicone reflector, and silicone socket gasket assemblies which create a moisture and dust tight atmosphere.

Either glass or polycarbonate as specified. Standard lenses, (red, amber, green) meet the latest **ITE** requirements. Lenses fit into specially extruded EPDM gaskets which are placed into the door with four stainless lens clips and stainless steel screws, to create a positive dust proof seal.

Your choice of bright specular alzak aluminum or silvered glass reflectors.

Phenolic body with serrated base socket to permit positive locking and adjustable positioning of lamp filament. Socket secured by reflector bail. For identification, the leads are color coded and have fast on leads to permit installation and removal without the use of any special tools. Wiring insulation conforms to conductor rating of 105°C and is 18 AWG.

Visor, backplates, and various mounting assemblies are available.

A die cast aluminum reflector ring is mounted in the signal housing using stainless steel dowel pins and a spring assembly, permitting hinging and removal of the reflector assembly without the use of any special tools.

The McCain Vehicle Signal is warranted against defects in materials and workmanship for a period of one (1) year from the date of original shipment.

McCain
2365 Oak Ridge Way Vista, CA 92081, USA
Phone 760-727-8100 Fax 760-727-8264
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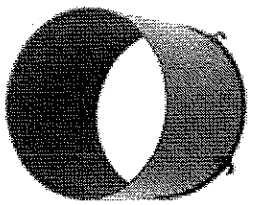
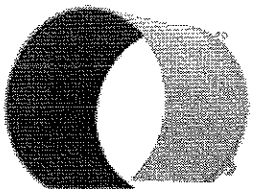
Signal Visors

Aluminum
Polycarbonate

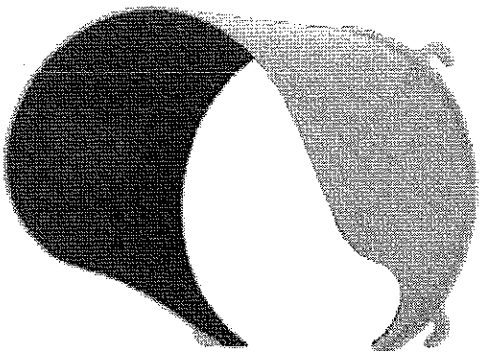
45° Angle
Cap
Full Circle
Scoop
Tunnel



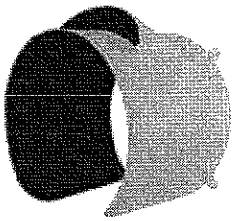
Full Circle



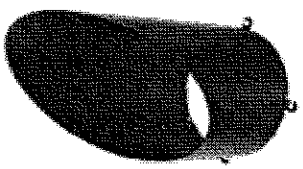
Tunnel



Cap



Scoop



45° Angle

Overview

McCain's Signal Visors increase signal visibility in sunlight while still allowing an unobstructed view for multiple lanes of approaching drivers and pedestrians. McCain produces a range of standard and angled visors including tunnel, full circle, and cap, that offer a variety of signal viewing angles. Whether you are looking for aluminum or polycarbonate, Federal yellow, signal green, black, or custom colors, McCain has the visors to meet your needs.

Benefits

- Increases signal visibility in sunlight
- Available in a variety of materials, sizes, styles, and angles to meet your specific requirements
- Twist-on tabs facilitate ease of installation
- One-piece construction (except Scoop Visor)

Product Description

McCain's Signal Visors, molded polycarbonate or stamped and formed aluminum, are available in eight inch and 12 inch signal configurations. Integrally formed, twist-on mounting tabs make installation and maintenance a snap, and a standard three degree downward tilt facilitates signal visibility.

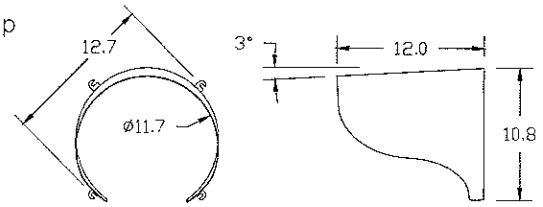
Specialty visors include the 45° Angle Visor and the Scoop Visor. The 45° Angle Visor comes in two standard lengths, 18" and 27" and in right and left versions. It is designed to narrow visibility for locations such as an angled intersection.

The Scoop Visor is designed to resist snow build-up on signal lenses in colder climates. A louvered vent on top and an open bottom contribute to the increased vertical movement of air across the face of the signal lens thereby increasing resistance to the deposit of snow.

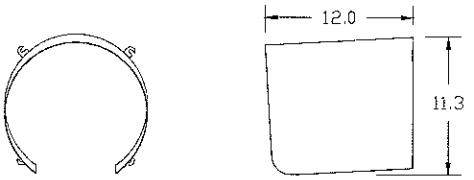
Signal Visors

Front Side

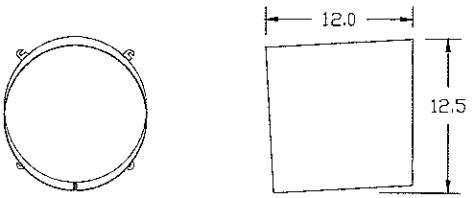
Cap



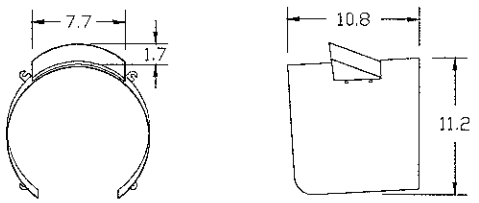
Tunnel



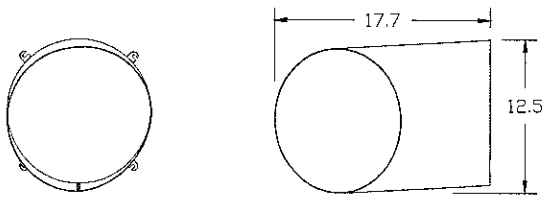
Full Circle



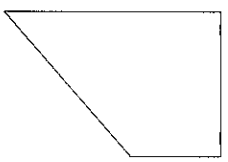
Scoop



45° (18" right angle version)



Top



Standard Features

- One-piece construction (except Scoop)
- Twist-on mounting tabs
- 3° downward tilt

General Specifications

		Diameter	Depth
Dimensions:	Standard Visors:	8"	8"
		12"	12"
	45° Angle Visors:	8"	18"
		12"	18"
		12"	27"
Degree of Tilt:	3° (down)		
Material:	Aluminum: Type 3003, very good corrosion resistance, 0.050" thick		
	Polycarbonate (standard visors only): Ultraviolet and heat stabilized, flame retardant, permanently colored, 0.10" nominal thickness		
Finish(es):	Aluminum: Powder coated Polycarbonate (standard visors only): Colored resins integral to visor		
Color(s):	Exterior: Federal yellow, signal green, black, or custom Interior: Flat black		
Mounting:	Twist-on tabs		
Shipping Weight:	1 - 4 lbs., varies based on material, size, and style		

Options

- Other lengths available
- Degree of tilt

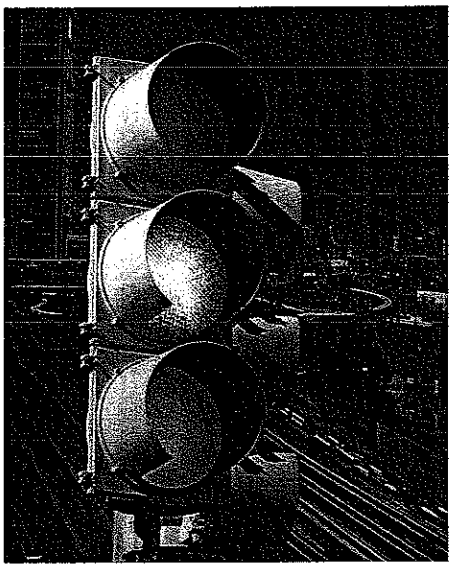
Dimensions rounded to the nearest 0.1"
All visors shown are 12" signal versions
Dimensions shown in Cap front view and degree of tilt shown in side view are typical of all 12" visors

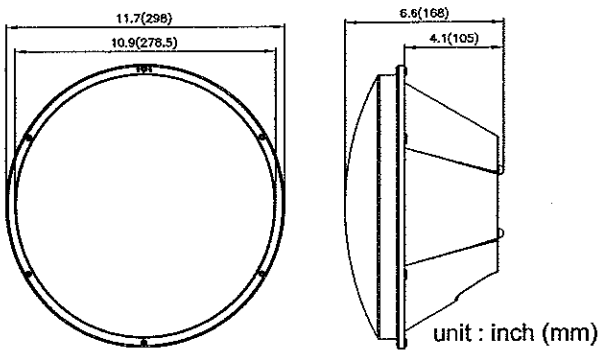
To learn more about McCain's Integrated Traffic Solutions, please contact ***info@mccain-inc.com*** *or call* ***(760) 727-8100***

McCain®

2365 OAK RIDGE WAY // VISTA, CALIFORNIA 92081 // USA // WWW.MCCAIN-INC.COM

12 Inches Incandescent Look LED Traffic Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2005 standards
- High-Flux LED Technology with high efficiency
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T	12" / 300 mm	80 ~ 135	10.6	500	> 475

Clear Lens Series

Color	Model Number	Dimension	Operation Voltage (VAC)	Power Consumption (Watt) (Typ.)	Dominant Wavelength (nm) (Typ.)	Peak Minimum Maintained Luminous Intensity (cd) (Min.)
Red	TRV-R12SG-D1T-C	12" / 300 mm	80 ~ 135	8.6	625	> 365
Amber	TRV-Y12SG-D1T-C	12" / 300 mm	80 ~ 135	17.5	590	> 910
Green	TRV-G12SG-D1T-C	12" / 300 mm	80 ~ 135	10.6	500	> 475

EXCELLENCE OPTO. INC.
EOI Group

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1400 W. Lambert Road, Suite B, Brea, CA, 92821, U.S.A.
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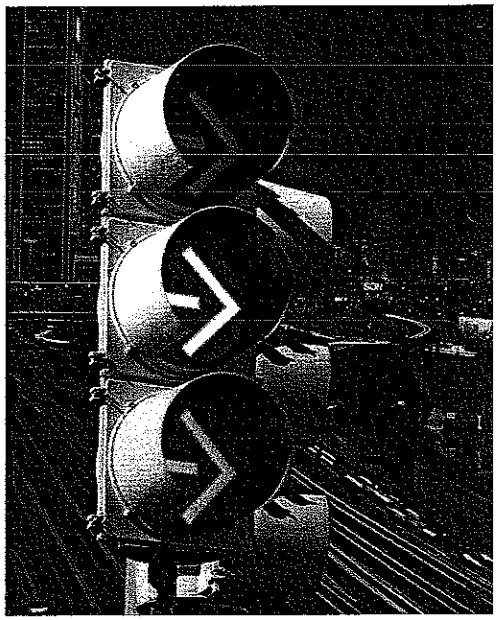
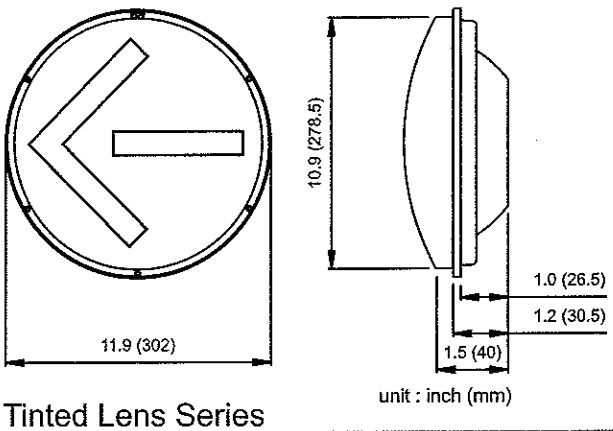
E-mail: Sales@eoius.com http://www.eoi-us.com

LED traffic signals business since 1996

12 Inches Incandescent Look LED Arrow Signals





unit : inch (mm)

Features / Benefits

- Meets latest ITE 2007 standards
- Uniform non-pixilated illumination with "incandescent look"
- 90% reduction in power consumption vs. incandescent
- Long life; up to 10 times longer than incandescent
- Expanded view light distribution pattern suitable for span wire and fixed wire
- Easy to install with existing signal enclosure

Specifications

- Operation temperature range: -40°C to +74°C
- Operation voltage from 80 to 135 VAC RMS
- Power factor greater than 0.9
- Total Harmonics Distortion < 20%
- Turn on/ Turn off time < 75 msec
- Luminous Intensity and Color conforms with ITE VTCSH-LED
- Circular Signal Supplement
- Conform to MIL-STD-810F for blowing rain
- Conform to MIL-STD-883, Test Method 2007 for mechanical vibration
- Conform to MIL-STD-883, Test Method 1010, for temperature cycling requirements
- Meet FCC Title 47, Subpart B Section 15 Regulations for electrical noise
- UV stabilized scratch resistant shell
- Fuse and transient suppressor incorporated for line and load protection

Tinted Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN	12" / 300 mm	7.2	500	76	✓

Clear Lens Series

Color	Model Number	Dimension	Power Consumption Typical(Watt)	Dominant Wavelength Typical(nm)	Peak Minimum Maintained Luminous Intensity (cd)	Meet ITE/Caltrans Spec.
Red	TRA-R12DG-IN-C	12" / 300 mm	6.6	623	58	✓
Amber	TRA-Y12DG-IN-C	12" / 300 mm	9	590	146	✓
Green	TRA-G12DG-IN-C	12" / 300 mm	7.2	500	76	✓

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E-mail: Sales@eoius.com http://www.eoi-us.com

Incandescent Pedestrian Signal

Item #13

The McCain Incandescent Pedestrian Signal is designed to meet and exceed ITE standards, and offer low maintenance and increased durability. Components are compatible with standard signal hardware and are interchangeable with existing units of similar construction.

HOUSING
The housing is die cast aluminum alloy or injection molded ultraviolet stabilized, permanently colored, flame retardant polycarbonate resins. Two equally spaced mounting lugs are integrally cast into the top and bottom, permitting the door to hinge from either direction. All interior mounting locations will be symmetrically positioned, allowing the rotation of components when using the bi-directional McCain "Quickmount II" or Clamshell. Each housing has a 72 tooth serrated boss at each end for use with standard signal hardware. Each boss has reinforcing ribs projecting the load bearing stress to the entire housing.

VANTAGE DOOR™
Injection molded from ultraviolet stabilized, flame retardant, permanently colored, black polycarbonate. Our unique design incorporates the Vantage Visor™ with the signal door to create a one piece superior system. The Vantage System™ assures the pedestrian the optimum message display with the least restriction. The Vantage Visor is a network of horizontal and diagonal louvers equally spaced which in turn create precisely shaped cells that provide optimum sun and vandal protection. Unlike formed and chemically welded, crate type visors, the Vantage Visor is one piece injection molded. This process assures superior uniformity and strength, essential under changing conditions. The entire Vantage System provides the user with a single piece corrosion proof and vandal resistant signal face that will be maintenance free for many years of service.

LAMP SOCKET ASSEMBLY
The lamp socket assembly consists of two porcelain lamp sockets, an aluminum heat dissipating mounting plate, and a terminal block. The lamp sockets are precisely located to align the filament of an A21 traffic signal lamp in the prefocused position of the parabolic reflector. The Man/Don't Walk socket leads have one orange in color and one white in color. The Walking Man/Walk leads have one blue in color and one white in color. The white wires are connected together as the common. The terminal block is a three position barrier type.

ALUMINUM DOOR
Cast from aluminum alloy. The signal doors are machined and powder coated as described in the painting specification.

Mounting of the Vantage Door and Aluminum Door will be through the use of stainless steel detent type clevis pins and eyebolt/wingnut assemblies. The door and eyebolt assemblies can be removed and rotated without the use of any tools. This function becomes apparent when using the "Quick Mount" bi-directional hardware, thus eliminating the need for left or right mountings.

LENS
The lens has a message displayed when the signal is illuminated. The size and color conforms to the latest ITE standards. The international symbols and word legend are available. The Hand/Don't Walk is Portland Orange in color and the Walking Man/Walk is Lunar White in color. The entire area around the legend is blacked out and free of any light projecting through in areas other than the legend. There are two types of lens materials available.

A. STANDARD - 0.187" tempered glass with one side textured for even light distribution. This lens has a ceramic fired mask to ensure permanent adhesion to the glass.
B. OPTIONAL - 0.250" Protect-a-Glaze® Lexan® with a textured finish for even light distribution. This lens has an organic painted mask to ensure proper adhesion to the lens.

Both lenses are fitted into the Vantage System and fitted with a one piece EPDM Sponge Gasket.

REFLECTOR
The reflector is a polycarbonate double parabolic type which is injection molded. Reflective coating is applied by vacuum metal deposition. After aluminum deposition, a clear hard coating is applied to resist wear and scratching. The two parabolic cavities are separated by a divider which is part of the reflector and silicone gasket. The divider mates with the lens to prevent false illumination of the unlit message.

McCain
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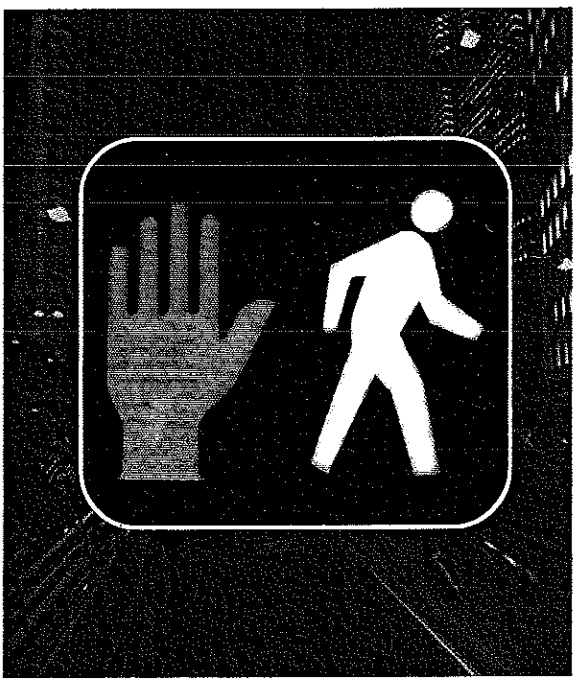
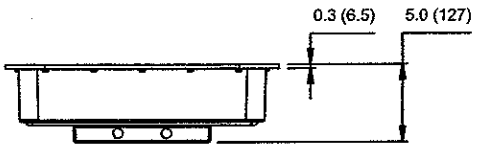
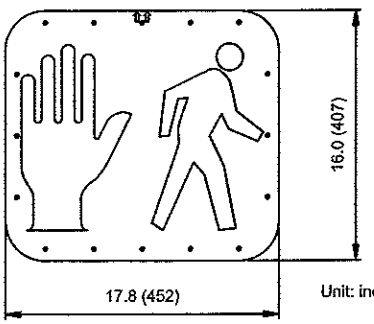
www.mccain-inc.com

LED traffic signals business since 1996

16" x 18" Incandescent Look LED Pedestrian Signal







Features / Benefits

- Meets the March 2004 PTCSI ITE, Caltrans Specifications and the 2003 MUTCD.
- High efficiency & long life LED light source.
- Failure of a single LED in the Hand and Man icons results in loss of light from that LED only.
- Easy to install with existing signal enclosure.
- Portland Orange for Hand and Lunar White for Man.

Specifications

- Operating Voltage Range: 80 VAC to 135VAC (120VAC nominal).
- Operating Temperature Range:-40°C to +74°C.
- Power Factor>0.9
- Total Harmonic Distortion <20%.
- Meets FCC Title 47, Subpart B, Section 15 regulations for electrical noise.
- Conforms to MIL-STD-810F for rain and blowing rain.
- Conforms to MIL-STD-883, Test Method 1010, for temperature cycling requirements.
- Conforms to MIL-STD-883, Test Method 2007, for mechanical vibration.

Model Number	Color	Description	Dimension	Power Consumption Typical(Watt)		Hand	Person	Meet spec	
				Hand	Person	Symbol	Symbol	Caltrans	ITE
TRP-C45DG-W2	Portland Orange/ White	Combination Hand and Walking Person	16" x 18"	7.2	7.2	Full	Full	✓	✓

EXCELLENCE OPTO. INC.
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E-mail: Sales@eoius.com http://www.eoi-us.com

LEOTEK

GREEN Technology

LED Pedestrian Signal Module 16" Indications

DIL, DP, HM Series

The Leotek LED Advantage

Both incandescent and pixelated looks, with "Fail-State Impedance" design to ensure controller and monitor compatibility in the event of loss of light output.

DIL Series | DP Series | HM Series

Features and Benefits

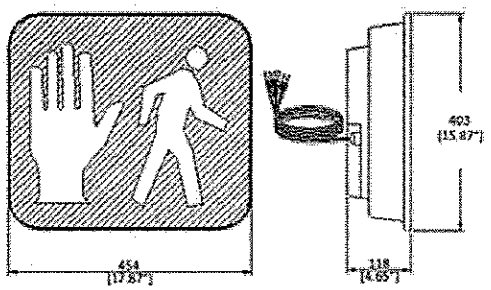
- Environmentally friendly
- Significant energy and maintenance savings
- Multiple connections available for specific applications
- Exceptional color uniformity and readability
- Excellent moisture and dust resistance through complete O-ring sealing
- Engineered aluminum heat sink for optimum thermal management
- Robust hard-coated and UV-stabilized polycarbonate lens for increased longevity against the elements
- Built-in Constant Current Source (CCS) provides uniform light output from the first to the last modules
- Maintains 70% of the initial lumen intensity after 50,000 hours of operation
- 5-Year Limited Warranty

Technical Data

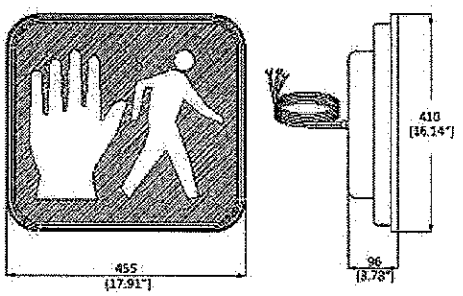
LED Color/Type:	Portland Orange ● /AlInGaP, Lunar White ○ /InGaN		
Operating Temperature:	-40°F to 165°F (-40°C to 74°C)	Total Harmonic Distortion (THD):	<20%
Operating Voltage:	80 -135Vac	Turn-On/Turn-Off Time:	<75msec
Power Factor:	>0.90	Turn-Off Voltage:	35Vac

Mechanical Dimensions [mm(in)]

DIL, DP, HM Digit Height - 9"



DIL Series



DP Series

Model Specifications and Ordering Options

Model Number	Description	Wattage Drawn	Standard
16 inch Incandescent Look Dual Pedestrian			
TSL-PED-16-DIL	Full Symbol	Lunar White Hand – 7W Portland Orange Man – 8W	ITE PTCSI-STD Part 2 - March 2004 / ETL[1]
16 inch Dual Pedestrian			
TSL-PED-DP-16-FS	Full Symbol	Lunar White Hand – 7W Portland Orange Man – 7W	ITE PTCSI-STD Part 2 - March 2004
TP16C-HM	Outline	Lunar White Hand – 6W Portland Orange Man – 6W	ITE PTCSI-STD Part 2 - March 2004
TP16G-HM	Overlay Outline	Lunar White Hand – 5W Portland Orange Man – 5W	ITE PTCSI-STD Part 2 - March 2004
TP16H-HM	Overlay Full Symbol	Lunar White Hand– 6W Portland Orange Man– 6W	ITE PTCSI-STD Part 2 - March 2004

[1]Intertek ETL Verified

Standard Conformance

- FCC Compliant for Electrical Noise
- MIL-STD-810F Moisture Resistant
- MIL-STD-883 Mechanical Vibration
- NEMA TS2 Transient Voltage Protection over 2000V

LEOTEK USA
1330 Memorex Drive
Santa Clara, CA 95050
Toll Free: (888) 806-1188
Fax: (408) 980-0538

LEOTEK TAIWAN
No. 50 Lung-Yuan 7th Road
Lung-Tan, Tao-Yuan Hsien 325
Taiwan
Telephone: 866-3-4995939
Fax: 866-3-4995930

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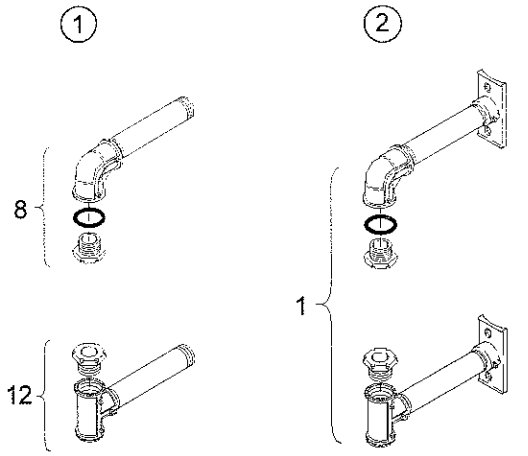
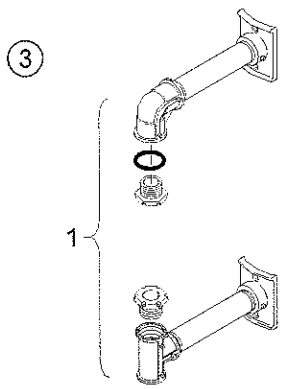
V7.080509

RIGID SIGNAL MTGS
Aluminum Side-of-Pole, 1½"

PELCO PRODUCTS, INC.



ITEM	DESCRIPTION	PART NO.
	UPPER & LOWER ARM ASSY:	
1	1-Way w/ 10" Nipples, Alum.	SE-3036
2	1-Way w/ 10" Nipples & Universal Hubs, Alum.	SE-3215
3	1-Way w/ 10" Nipples & Large Pole Hubs, Alum.	SE-3148
4	1-Way ICC Ped Hd w/ 12" Nipples, Alum.	SE-3146
5	1-Way ICC Ped Hd w/ 12" Nipples & Universal Hubs, Alum.	SE-3214
6	2-Way Tandem w/ 10" Nipples, Alum.	SE-3100
7	2-Way 16½" CTC, Alum.	SE-3075
	UPPER ARM ASSY:	
8	1-Way w/ 10" Nipple, Alum.	SE-3000
9	1-Way w/ 12" Nipple, Alum.	SE-3144
10	2-Way Tandem w/ 10" Nipples, Alum.	SE-3098
11	2-Way W/ 10" Nipples, Alum.	SE-3014
	LOWER ARM ASSY:	
12	1-Way w/ 10" Nipple, Alum.	SE-3001
13	1-Way w/ 12" Nipple, Alum.	SE-3145
14	2-Way Tandem w/ 10" Nipples, Alum.	SE-3099
15	2-Way 16½" CTC, Alum.	SE-3015

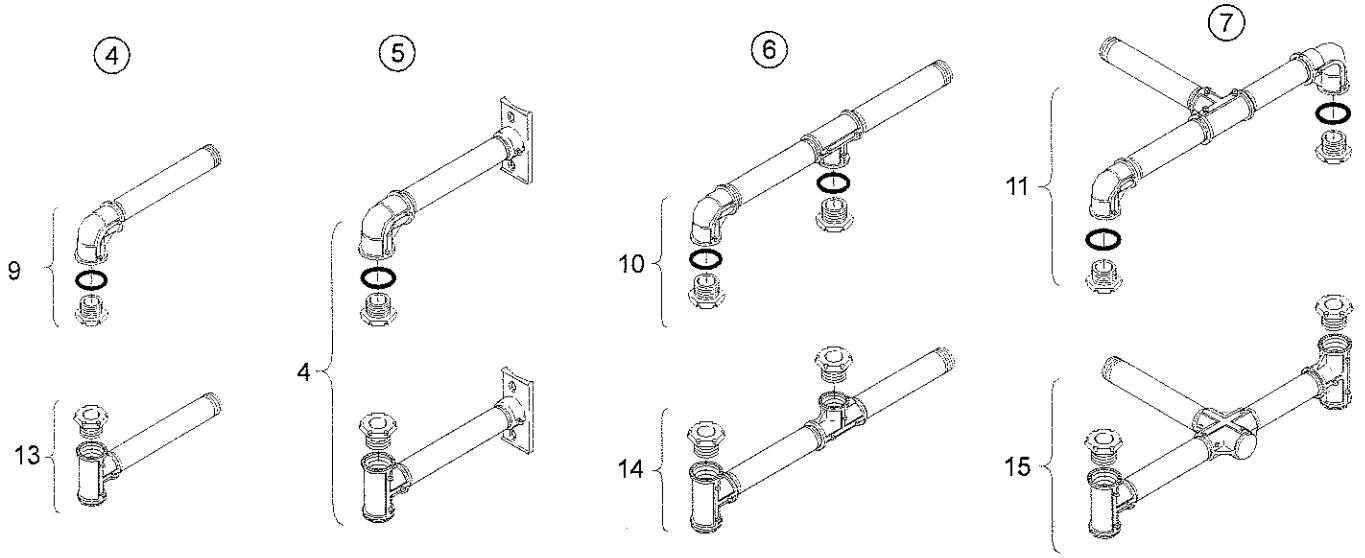


Item #15

Notes:

1. All assemblies are supplied standard with stainless steel fasteners.
2. See section T11 for additional hub choices.
3. Please specify options when ordering.

OPTIONS
PAINT



320 W. 18th St., Edmond OK 73013 • 405-340-3434 • FAX: 405-340-3435 • E-mail: pelco@pelcoinc.com • www.pelcoinc.com

Incandescent Pedestrian Signal

Item # 16

The McCain Incandescent Pedestrian Signal is designed to meet and exceed ITE standards, and offer low maintenance and increased durability. Components are compatible with standard signal hardware and are interchangeable with existing units of similar construction.

HOUSING
The housing is die cast aluminum alloy or injection molded ultraviolet stabilized, permanently colored, flame retardant polycarbonate resins. Two equally spaced mounting lugs are integrally cast into the top and bottom, permitting the door to hinge from either direction. All interior mounting locations will be symmetrically positioned, allowing the rotation of components when using the bi-directional McCain "Quickmount II" or Clamshell. Each housing has a 72 tooth serrated boss at each end for use with standard signal hardware. Each boss has reinforcing ribs projecting the load bearing stress to the entire housing.

VANTAGE DOOR™
Injection molded from ultraviolet stabilized, flame retardant, permanently colored, black polycarbonate. Our unique design incorporates the Vantage Visor™ with the signal door to create a one piece superior system. The Vantage System™ assures the pedestrian the optimum message display with the least restriction. The Vantage Visor is a network of horizontal and diagonal louvers equally spaced which in turn create precisely shaped cells that provide optimum sun and vandal protection. Unlike formed and chemically welded, crate type visors, the Vantage Visor is one piece injection molded. This process assures superior uniformity and strength, essential under changing conditions. The entire Vantage System provides the user with a single piece corrosion proof and vandal resistant signal face that will be maintenance free for many years of service.

LAMP SOCKET ASSEMBLY
The lamp socket assembly consists of two porcelain lamp sockets, an aluminum heat dissipating mounting plate, and a terminal block. The lamp sockets are precisely located to align the filament of an A21 traffic signal lamp in the prefocused position of the parabolic reflector. The Man/Don't Walk socket leads have one orange in color and one white in color. The Walking Man/Walk leads have one blue in color and one white in color. The white wires are connected together as the common. The terminal block is a three position barrier type.

ALUMINUM DOOR
Cast from aluminum alloy. The signal doors are machined and powder coated as described in the painting specification.

Mounting of the Vantage Door and Aluminum Door will be through the use of stainless steel detent type clevis pins and eyebolt/wingnut assemblies. The door and eyebolt assemblies can be removed and rotated without the use of any tools. This function becomes apparent when using the "Quick Mount" bi-directional hardware, thus eliminating the need for left or right mountings.

LENS
The lens has a message displayed when the signal is illuminated. The size and color conforms to the latest ITE standards. The international symbols and word legend are available. The Hand/Don't Walk is Portland Orange in color and the Walking Man/Walk is Lunar White in color. The entire area around the legend is blacked out and free of any light projecting through in areas other than the legend. There are two types of lens materials available.

A. STANDARD - 0.187" tempered glass with one side textured for even light distribution. This lens has a ceramic fired mask to ensure permanent adhesion to the glass.
B. OPTIONAL - 0.250" Protect-a-Glaze® Lexan® with a textured finish for even light distribution. This lens has an organic painted mask to ensure proper adhesion to the lens.

Both lenses are fitted into the Vantage System and fitted with a one piece EPDM Sponge Gasket.

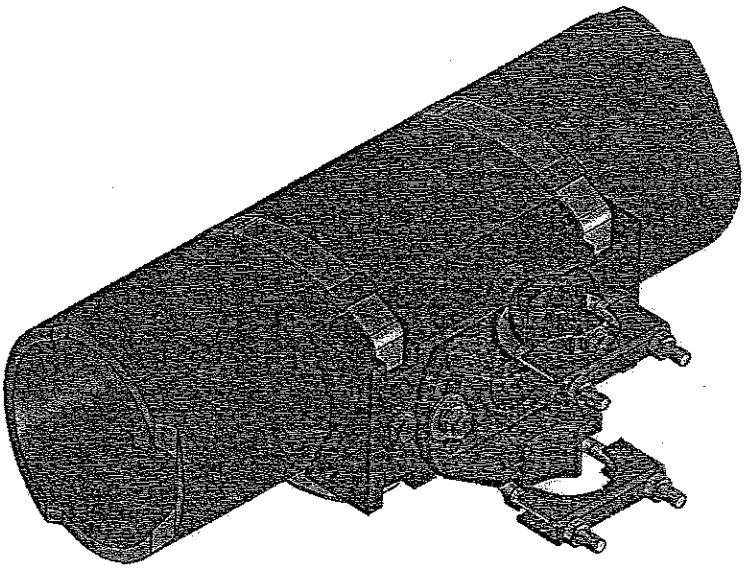
REFLECTOR
The reflector is a polycarbonate double parabolic type which is injection molded. Reflective coating is applied by vacuum metal deposition. After aluminum deposition, a clear hard coating is applied to resist wear and scratching. The two parabolic cavities are separated by a divider which is part of the reflector and silicone gasket. The divider mates with the lens to prevent false illumination of the unlit message.

McCain
2365 Oak Ridge Way, Vista, CA 92081, USA
Phone 760-727-8100 Fax 760-727-8264
www.mccain-inc.com

SKY BRACKET®

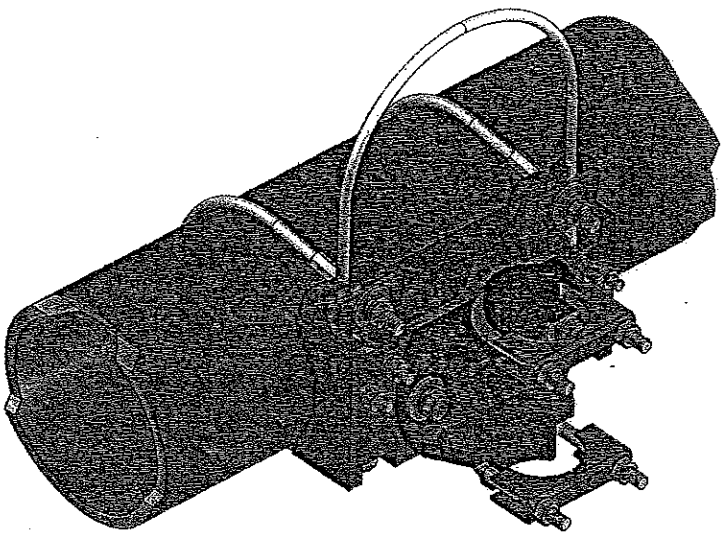
Covered by one or more U.S Patents Patent 4,860,985

CLAMP KITS



Item # 17

STANDARD CLAMP KIT
SB29-SCK

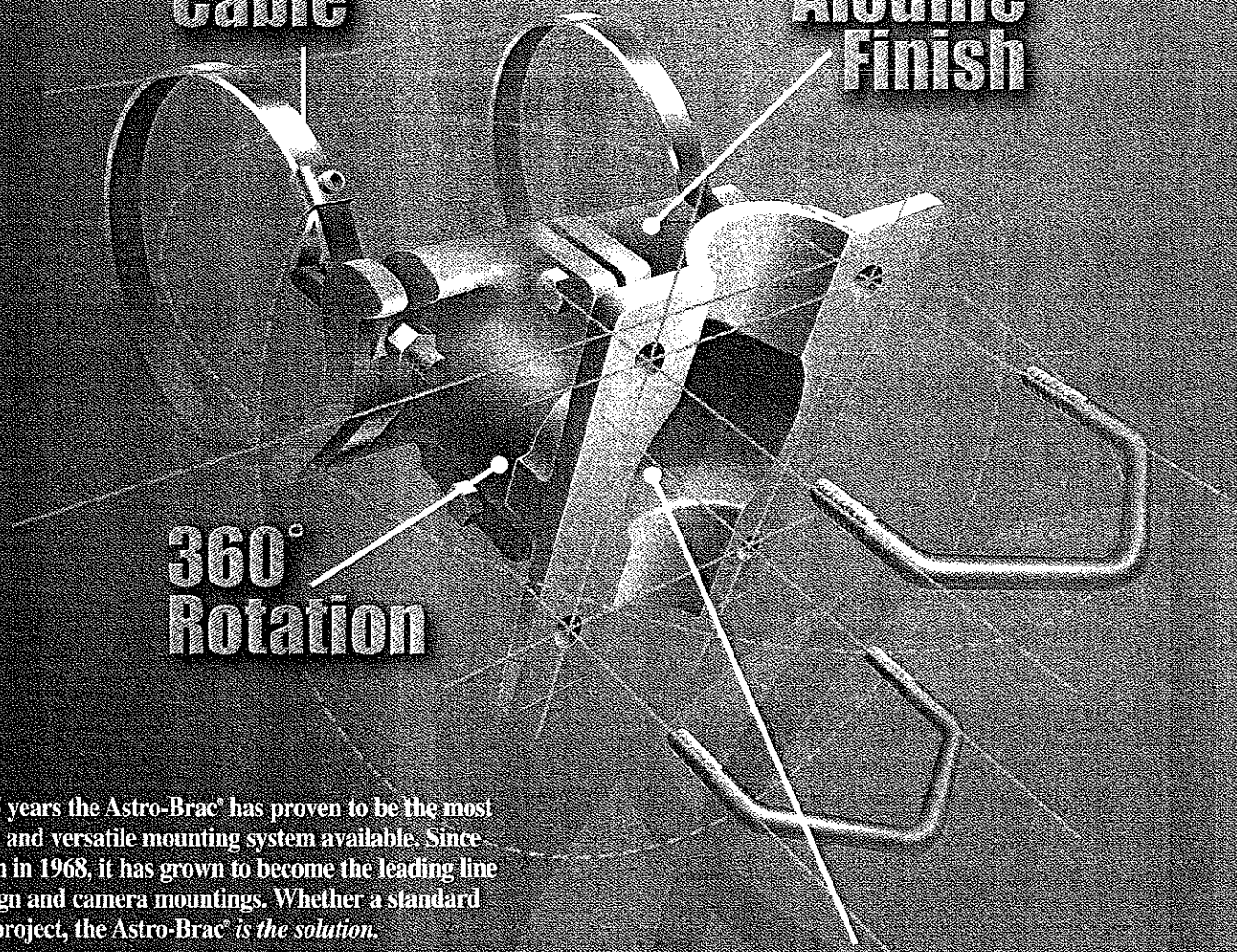


CABLE CLAMP KIT
SBC64-CCK

OLSON ALUMINUM CASTINGS P.O. BOX 6106 ROCKFORD, IL 61125 PHONE 815-229-3292 FAX 815-229-7082

A Pelco Original Astro-Brac

Item # 18, 20, 21, 22



For over 35 years the Astro-Brac® has proven to be the most dependable and versatile mounting system available. Since its inception in 1968, it has grown to become the leading line of signal, sign and camera mountings. Whether a standard or custom project, the Astro-Brac® *is the solution.*

pelco®

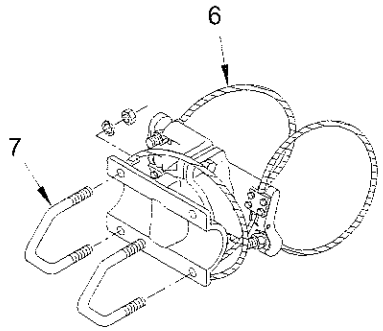
Innovative Traffic Solutions

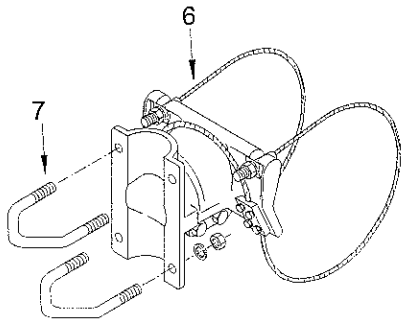
For your local distributor, contact us at *sales@pelcoinc.com*
405-340-3434 • 320 W. 18th St. • Edmond, OK 73013 • www.pelcoinc.com

Astro-Brac®
Cable Mount Clamp Kits

These high tensile aluminum alloy clamp kits provide strength with maximum adjustability and complete clamping versatility. They feature high strength galvanized aircraft cable and stainless steel swaged fittings. Supplied complete with all necessary attaching hardware.

ITEM	DESCRIPTION	PART NO.
	ASTRO-BRAC CLAMP KIT:	
①	Stellar Series Cable Mount	AS-3009
②	Cable Mount	AB-3009
③	Free-Swinging Cable Mount, 3/4" Clevis	AB-3014
④	1½" Threaded Cable Mount	AB-3034
⑤	2" Threaded Cable Mount	AB-3035
6	CABLE ASSEMBLY, Galv. Screw & Stainless Hdwr.	AB-0280
7	U-BOLT KIT, 5/16"-18, Stainless	AB-0256

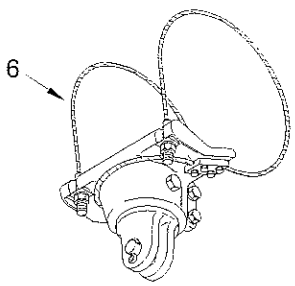
① 

② 

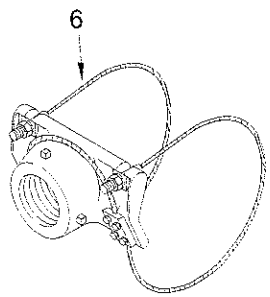
Notes:

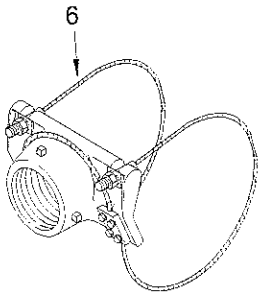
1. All assemblies are supplied standard with stainless fasteners and natural aluminum alodine coating.
2. Please specify options when ordering.

OPTIONS
CABLE LENGTH: 62" fits 4"-8.6" dia. pole 84" fits 4"-11.6" dia. pole 96" fits 4"-14.6" dia. pole
PAINT

③ 

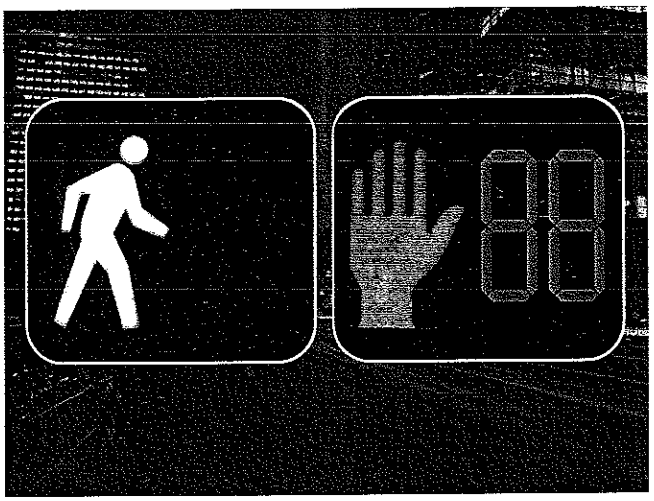
Item #19

④ 

⑤ 

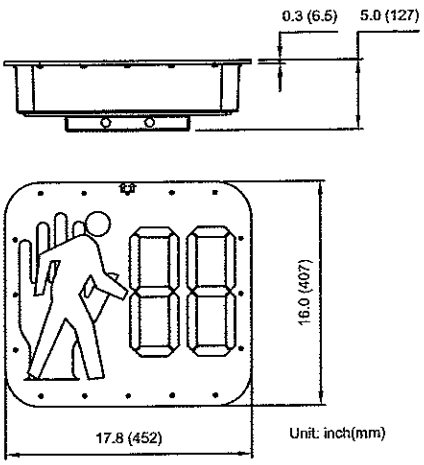
LED traffic signals business since 1996

16" x 18" Incandescent Look Pedestrian Countdown Signa



Features / Benefits

- Meets the March 2004 PTCSI ITE, Caltrans Specifications and the 2003 MUTCD.
- High efficiency & long life LED light source.
- Failure of a single LED in the Hand and Man icons results in loss of light from that LED only.
- Automatically adjusts to the programmed intervals of the traffic controller.
- Easy to install with existing signal enclosure.
- Remain time counter is smart learning type with programmed software to recognize preemption and reaction time by pedestrian recycling.
- 9 inches 2-row countdown digits, 2-digit, for maximum visibility.
- Portland Orange for Hand and Countdown digits, Lunar White for Man.



Specifications

- Operating Voltage Range: 80 VAC to 135VAC (120VAC nominal).
- Operating Temperature Range:-40°C to +74°C.
- Power Factor>0.9
- Total Harmonic Distortion <20%.
- Meets FCC Title 47, Subpart B, Section 15 regulations for electrical noise.
- Conforms to MIL-STD-810F for rain and blowing rain.
- Conforms to MIL-STD-883, Test Method 1010, for temperature cycling requirements.
- Conforms to MIL-STD-883, Test Method 2007, for mechanical vibration.

Model Number	Dimension	Hand		Person		Countdown	
	Inches	Symbol	Luminance (cd/m^2)	Symbol	Luminance (cd/m^2)	Symbol (2 Rows)	Luminance (cd/m^2)
TRP-C45D3154C10	16 x 18	Full	1400~4200	Full	2200~6600	9 Inches	>1400

Model Number	Power Consumption Typical(Watt)			Meet spec	
	Hand	Person	Countdown(Digit)	Caltrans	ITE
TRP-C45D3154C10	9	9	7.5	✓	✓

Item #23

EXCELLENCE OPTO. INC.
EOI Group

Address
1400 W. Lambert Road, Suite B, Brea, CA, 92821, U.S.A.
Tel : 562-694-1246 Fax: 562-691-3087
E-mail: Sales@eoius.com http://www.eoi-us.com

"The Leader in Electro-Optics Technology"

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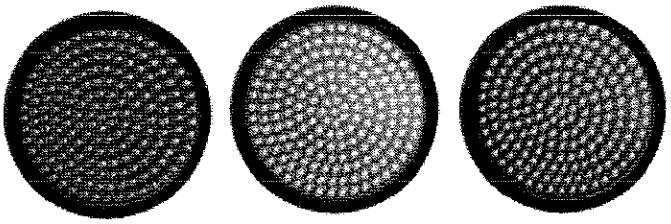
LEOTEK

GREEN Technology

LED Traffic Signal Module
Programmable Visibility Retrofit
PV Series

The Leotek LED Advantage

An easy to install "plug-in" module for retrofitting Programmable Visibility signal housings. No modification required.



Features and Benefits

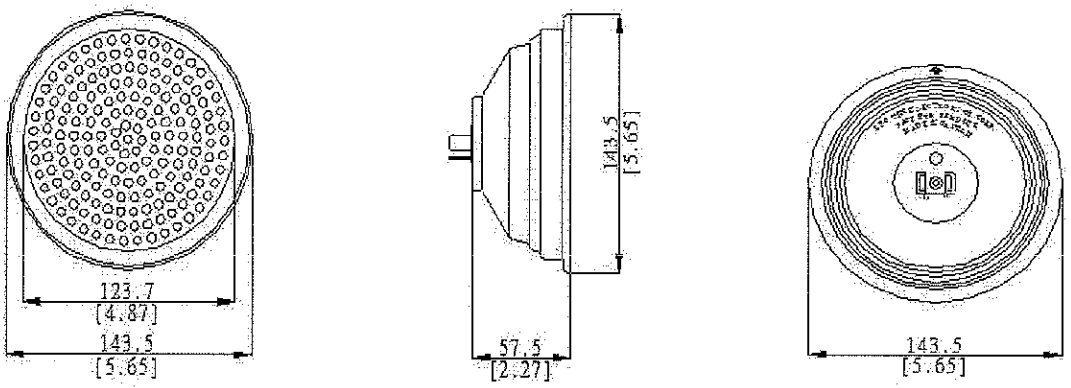
- Environmentally friendly
- Significant energy and maintenance savings
- 5" ball modules
- Simple and fast installation
- Exceptional color uniformity and readability
- Excellent moisture and dust resistance through complete O-ring sealing
- Engineered aluminum heat sink for optimum thermal management
- Robust hard-coated and UV-stabilized polycarbonate lens for increased longevity against the elements
- Built-in Constant Current Source (CCS) provides uniform light output from the first to the last modules
- Maintains 70% of the initial lumen intensity after 50,000 hours of operation
- 5-Year Limited Warranty

Item # 24,25 & 26

Technical Data

Operating Temperature:	-40°F to 165°F (-40°C to 74°C)	Turn-On/Turn-Off Time:	<75msec
Operating Voltage:	80 -135Vac	Turn-Off Voltage:	35Vac
Power Factor:	>0.90	Total Harmonic Distortion (THD):	<20%

Mechanical Dimensions [mm(in)]



Model Specifications and Ordering Options

Model Number and Color	Wattage Drawn	Voltage	Dominant Wavelength	Standard
5 inch				
T05R-A-6100	10	80-135Vac	526	Caltrans
T05Y-A-6100	15	80-135Vac	589	Caltrans
T05G-A-CA01	12	80-135Vac	500	Caltrans

Available with clear lens only.

Standard Conformance

RoHS Compliant

- FCC Compliant for Electrical Noise
- MIL-STD-810F Moisture Resistant
- MIL-STD-883 Mechanical Vibration
- NEMA TS2 Transient Voltage Protection over 2000V

[redacted]