



## INVITATION FOR SEALED BID

**BID 02-729**

**Description: Retroreflectometer**

**Department: PUBLIC WORKS**

**NIGP Commodity Code(s): 845-49-00-000-0**

**Total pages including this page is 16**

**FAXING OF BID WILL NOT BE ACCEPTED**

**Important Instruction – Read Carefully:**

If you have obtained these bid specifications from either of:  
City of Tulsa's Fax-on-Demand (918-596-1171) or  
City of Tulsa's Website : <http://www.cityoftulsapurchasing.org/>

you must notify the buyer **Patricia Cummings** of your intent to bid by e-mail at [pcummings@ci.tulsa.ok.us](mailto:pcummings@ci.tulsa.ok.us) in order to receive addenda. The buyer will always acknowledge your e-mail for your records. All addenda will be posted on fax-on-demand and the website.

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**Pay special attention to those pages with a reference to the following notes:**

**Note #1: Signature of authorized agent required**

**Note #2: Signature of an authorized agent and notarized required**

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**Your bid response should follow the same format listed above plus any additional format requested in the body of the bid invitation.**

**INVITATION FOR SEALED BIDS  
TO  
City of Tulsa**

200 CIVIC CENTER, ROOM 109, TULSA, OKLAHOMA 74103

Bid number and date of bid opening must appear on the lower  
left outside corner of bid envelopes and all related containers.

**DATE OF OPENING:** January 9, 2003

**BID NUMBER:** BID 02-727

**BID MUST BE IN THE CITY CLERK'S OFFICE AT THE ABOVE ADDRESS BY 5:00 P.M. THE DAY  
PRECEDING THE "DATE OF OPENING" SHOWN ABOVE.**

**BIDS WILL BE OPENED AT 8:30 A.M. IN THE CITY COUNCIL ROOM ON THE DAY SPECIFIED UNDER "DATE OF OPENING."**

PUBLISHED IN THE TULSA DAILY COMMERCE AND LEGAL NEWS: December 19, 2002

Bid must be accompanied by bidder's bond, cashier's check or certified check in the amount of: NONE

PLEASE READ TERMS AND CONDITIONS ON THE NEXT PAGE BEFORE COMPLETING BID DOCUMENTS

\*\*\*\*\*

**THE FOLLOWING SECTION MUST BE COMPLETED BY BIDDER**

\*\*\*\*\*

Delivery will be made in not more than \_\_\_\_\_ days after receipt of order.

Payment terms \_\_\_\_\_% \_\_\_\_\_ days.

City of Tulsa may increase quantity of order at the unit price bid for \_\_\_\_\_ days. (Bidder to Specify Days) I have examined the terms and specifications and the instructions to bidders herein and agree, provided I am awarded a contract, to provide the above described items for the sum shown in accordance with the terms and specifications stated herein. All deviations are in writing and attached hereto.

Enclosed is a  BID BOND ;  CASHIER'S CHECK;  Certified Check in the amount of \$ \_\_\_\_\_, which I agree the City of Tulsa may retain as liquidated damages in the event of my failure to comply with the terms of this bid.

**MUST BE SIGNED BY AUTHORIZED AGENT TO BE VALID**

FIRM NAME \_\_\_\_\_ by \_\_\_\_\_  
SIGNATURE OF AUTHORIZED AGENT

STREET \_\_\_\_\_ TITLE \_\_\_\_\_

CITY STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_ PHONE NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

## GENERAL TERMS AND CONDITIONS OF SEALED BIDS

THESE ITEMS APPLY TO AND BECOME A PART OF THE BID.

**NO EXCEPTIONS TO THESE TERMS & CONDITIONS WILL BE CONSIDERED.**

1. **BIDS MUST BE SUBMITTED ON THIS FORM ONLY INCLUDING A SIGNATURE OF AN AUTHORIZED AGENT.** Each bid shall be placed in a separate envelope. Be sure envelope is completely and properly identified and sealed, showing the bid number and date in the lower left hand corner. Bids must be time stamped in the office of the City Clerk by 5:00 P.M. on the day before date of opening.
2. No bidder may withdraw his proposal for a period of thirty (30) days after the date and hour set for the opening of bids.
3. All prices shall be quoted F.O.B. Tulsa, Oklahoma, and delivery to City of Tulsa location shall be without additional charge.
4. The bidder shall attach the manufacturer's name of the equipment or material to be furnished, type, model numbers, manufacturer's descriptive bulletins and specifications. All guarantees and warranties should be clearly stated. This data shall be in sufficient detail to describe accurately the equipment or material to be furnished. Manufacturer's specifications, in respect to the successful bidder, shall be considered as part of his contract with the City of Tulsa.
5. The bidder shall show in the proposal both the unit prices and total amount, where required, of each item listed. In the event of error or discrepancy in the mathematics, the unit prices shall prevail.
6. Any exceptions or deviations from written specifications shall be shown in writing and attached to the bid form.
7. Each bidder agrees to comply with the terms of Title 5, Chapter 1, of Tulsa, Oklahoma Charter and revised ordinances relating to equal employment opportunity.
8. **THE ENCLOSED FORMS REGARDING NON-COLLUSION AND FINANCIAL INTEREST MUST BE SIGNED, NOTARIZED, AND RETURNED WITH THE BID.**
9. The City of Tulsa reserves the right to reject any and all bids, to waive any technicalities in the bidding, and to award each item to different bidders or all items to a single bidder.
10. All bids must be accompanied by bidders bond, cash, certified or cashier's check in the amount shown on the face of the bid form. This amount shall be retained by the City of Tulsa as liquidated damages in the event the successful bidder (or bidders) fails to execute a contract, if required. The bidder agrees that said amount is presumed to be the damages sustained by the City due to the impracticability and extreme difficulty in fixing the actual damages. The office of the City Clerk will return the bid deposits to the unsuccessful bidders, after a contract has been awarded or all bids have been rejected.
11. In the event cash discounts are offered by the bidder, the discount date shall begin with the date of invoice, the date of receipt of all material covered by the purchase order, or the date of receipt by the City of Tulsa of the original copy of the purchase order with properly executed Affidavit of Claimant, whichever is the later date.
12. Direct purchase of certain items of equipment or material by the City of Tulsa are exempt from Federal Excise Tax and Oklahoma Sales Tax. In such cases the bidder shall quote prices which do not include Federal Excise Tax and Oklahoma Sales Tax. The City of Tulsa will furnish executed exemption certificates upon presentation by the bidder at the time of purchase.
13. Bid must show number of days required for delivery under normal conditions. Failure to state delivery time obligates bidder to complete delivery in fourteen (14) calendar days. Unrealistically short or long delivery promises may cause bid to be disregarded. Contractor must keep Purchasing Department advised at all times of status of order. Default in promised delivery or failure to meet specifications authorizes the Purchasing Agent to purchase supplies elsewhere and charge full increase of cost and handling to defaulting contractor. Consistent failure to meet delivery promises without valid reason may cause removal from bid list.
14. Bidder agrees to defend and save City of Tulsa from and against all demands, claims, suits, costs, expenses, damages and judgments based upon infringement of any patent relating to goods specified in this order or the ordinary use or operation of such goods by City or use or operation of such goods in accordance with bidders direction.
15. If the bid requires a written contract, the successful bidder shall execute a written contract with the City of Tulsa and return the required bonds and insurance certificates within ten (10) days after submission of contracts to said bidder by the City.

**INTEREST AFFIDAVIT**

STATE OF \_\_\_\_\_ }  
  } ss  
COUNTY OF \_\_\_\_\_ }

\_\_\_\_\_, of lawful age, being first duly sworn, states that s(he) is the agent authorized by the bidder to submit the attached bid. Affiant further states that no officer or employee of the City of Tulsa either directly or indirectly, owns a twenty-five percent (25%) interest in the bidder's business or such a percentage which constitutes a controlling interest. Affiant further states that the following officers and/or employees of the City of Tulsa have some direct or indirect interest in the bidder's business:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

By \_\_\_\_\_ (Signature)

\_\_\_\_\_ (Title)

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_

NOTARY PUBLIC SIGNATURE

My Commission Expires:

\_\_\_\_\_

**The Interest Affidavit must be completed, signed by an authorized agent, and notarized.**

# BIDDER AFFIDAVIT - TITLE 74 O.S. (1974 SUPP.) 85.22-85.25

STATE OF \_\_\_\_\_ COUNTY OF \_\_\_\_\_

\_\_\_\_\_, of lawful age, being first duly sworn on oath says  
**Authorized Agent**

1. (s)he is the duly authorized agent of \_\_\_\_\_, the bidder submitting the competitive bid which is attached to this statement, for the purpose of certifying the facts pertaining to the existence of collusion among bidders and between bidders and municipal officials or employees, as well as facts pertaining to the giving or offering of things of value to government personnel in return for special consideration in the letting of any contract pursuant to the bid to which this statement is attached.
2. (s)he is fully aware of the facts and circumstances surrounding the making of the bid to which this statement is attached and has been personally and directly involved in the proceedings leading to the submission of such bid; and
3. neither the bidder nor anyone subject to the bidder's direction or control has been a party;
  - a. to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding,
  - b. to any collusion with any municipal official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of such prospective contract, nor
  - c. in any discussions between bidders and any municipal official concerning exchange of money or other thing of value for special consideration in the letting of a contract.

\_\_\_\_\_  
SIGNATURE OF AUTHORIZED AGENT

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Signature of Notary Public

\_\_\_\_\_  
MY COMMISSION EXPIRES

**The Bidder Affidavit must be completed, signed by an authorized agent, and notarized.**

# CONTRACTOR/BIDDER INFORMATION SHEET

To be completed by all Bidders  
For Contracts with the City of Tulsa  
(Please print or type)

Project No. or Description \_\_\_\_\_  
\_\_\_\_\_

Full Name of Bidder \_\_\_\_\_

Legal Identity  
(Corporation, Partnership,  
Individual, etc.) \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

Telephone No. \_\_\_\_\_

FAX No. \_\_\_\_\_

Taxpayer Identification Number \_\_\_\_\_

Contact Person \_\_\_\_\_

Phone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

E-mail address \_\_\_\_\_

Webpage Address \_\_\_\_\_

## Price Sheet Summary

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Vendor Name: \_\_\_\_\_ Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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**You will be able to obtain a copy of the Bid Summary on the City of Tulsa's Purchase-Net Fax-on-Demand and Website shortly after bid opening.**

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# **BID 02-729 Retroreflectometer Public Works Department**

**(1) 30 Meter Pavement Marking Retroreflectometer**

\$ \_\_\_\_\_

Brand \_\_\_\_\_

Model \_\_\_\_\_

**BID 02-729**  
**Retroreflectometer**  
**PUBLIC WORKS DEPARTMENT**

**INTENT:**

THE INTENT OF THESE SPECIFICATIONS IS TO SECURE, ON A COMPETITIVE BASIS, A SOURCE TO SUPPLY A RETROREFLECTOMETER.

**BIDDER'S AFFIDAVIT:**

EACH BIDDER SHALL ACCOMPANY THEIR BID WITH A FULLY EXECUTED AND NOTARIZED COPY OF THE ATTACHED **NON-COLLUSION AFFIDAVIT** AND THE **INTEREST AFFIDAVIT**. FAILURE TO DO SO MAY BE CAUSE FOR REJECTION OF THE BID.

**BIDDERS ARE TO SUBMIT ONE (1) ORIGINAL WITH TWO (2) COPIES OF BID. FAILURE TO DO SO MAY RESULT IN REJECTION OF BID.**

**SCOPE:**

VENDORS ARE TO QUOTE PRICES INCLUDING ANY APPLICABLE FREIGHT CHARGES. NO ADDITIONAL FREIGHT CHARGES WILL BE ACCEPTED. VENDORS ARE TO HOLD THEIR PRICES FIRM FOR AT LEAST 90 DAYS AFTER BID OPENING DATE.

**METHODS OF SAMPLING, INSPECTIONS & TESTS:**

1. AFTER BID RESULTS ARE TABULATED, THE CITY OF TULSA PURCHASING DIVISION RESERVES THE RIGHT TO REQUIRE SAMPLES OF SELECTED EQUIPMENT AND/OR PRODUCTS FOR INSPECTION AND EVALUATION.
2. UNLESS OTHERWISE SPECIFIED IN THE CONTRACT OR PURCHASE ORDER, THE SUPPLIER SHALL BE RESPONSIBLE FOR THE PERFORMANCE OF ALL INSPECTION AND TEST REQUIREMENTS NECESSARY TO INSURE COMPLIANCE WITH REQUIREMENTS FOR THIS SPECIFICATION. THIS DOES NOT PRECLUDE SUBSEQUENT INSPECTION AND TESTIMONY BY THE CITY OF TULSA TO FURTHER DETERMINE CONFORMANCE WITH SPECIFICATION REQUIREMENTS OF QUALITY STANDARDS OF WORKMANSHIP, MATERIAL AND CONSTRUCTION TECHNIQUES.

**SECONDARY OR BACK-UP SOURCE:**

THE CITY RESERVES THE RIGHT TO PURCHASE FROM A SECONDARY OR BACK-UP SOURCE TO BE USED IN THE EVENT OF FAILURE OF THE PRIMARY SOURCE(S) ABILITY TO SUPPLY THE FULL NEEDS OF THE CITY.

THE BIDDER WILL MAKE A CONCERTED EFFORT TO MEET THE CITY'S NEEDS ON A DAILY BASIS. THE BIDDER WILL GIVE THE CITY AS MUCH ADVANCE NOTICE AS POSSIBLE WHENEVER THEY ARE UNABLE TO SUPPLY THE MATERIALS REQUIRED.

**ADDENDA AND INTERPRETATIONS:**

IF IT BECOMES NECESSARY TO REVISE ANY PART OF THIS BID, A WRITTEN ADDENDUM WILL BE PROVIDED TO ALL THE BIDDERS. THE CITY OF TULSA IS NOT BOUND BY ANY ORAL REPRESENTATION, CLARIFICATIONS OR CHANGES MADE IN THE WRITTEN SPECIFICATIONS BY CITY OF TULSA EMPLOYEES UNLESS SUCH CLARIFICATION OR CHANGE IS PROVIDED TO BIDDERS IN WRITTEN ADDENDUM FORM FROM THE PURCHASING DIVISION.

**ALTERING BIDS:**

BIDS CANNOT BE ALTERED OR AMENDED AFTER SUBMISSION DEADLINE. ANY INTERLINEATION, ALTERATION, OR ERASURE MADE BEFORE OPENING TIME AND DATE MUST BE INITIALED BY THE SIGNER OF THE BID, GUARANTEEING AUTHENTICITY. BIDS MUST BE SUBMITTED IN INK OR TYPEWRITTEN, PENCILING WILL NOT BE ACCEPTED.

**RIGHT TO AUDIT:**

BIDDER FULLY UNDERSTANDS AND HEREBY AGREES BY THE SUBMISSION OF THIS BID THAT SHOULD BIDDER BE AWARDED THIS BID AND SUBSEQUENTLY ENTER INTO CONTRACT WITH THE CITY TO FURNISH THE GOODS, SERVICES, MATERIALS AND/OR SUPPLIES CALLED FOR HEREUNDER, THE BIDDER SHALL, UPON ANY REASONABLE REQUEST BY CITY AND DURING BIDDER'S NORMAL BUSINESS HOURS, GRANT CITY STAFF INGRESS ONTO BIDDER'S PREMISES WHERE BIDDER'S BOOKS AND RECORDS ARE KEPT AND FURTHER AGREES THAT BIDDER SHALL PROVIDE CITY STAFF PERSONNEL REASONABLE ACCESS TO AND SUCH CLERICAL ASSISTANCE AS CITY'S STAFF MAY REQUIRE FOR EXAMINATION AND AUDIT OF BIDDER'S BOOKS AND RECORDS AS RELATE TO GOODS, SERVICES, MATERIALS AND/OR SUPPLIES FURNISHED CITY DURING THE TERM OF ANY CONTRACT RESULTING BETWEEN BIDDER AND CITY PURSUANT TO THIS BID.

## **TESTS:**

THE CITY RESERVES THE RIGHT TO SUBJECT ALL PRODUCTS OFFERED, PRIOR TO AWARD OF BID, TO WHATEVER PHYSICAL AND OR CHEMICAL TESTS ARE DEEMED NECESSARY TO SATISFY THE PURPOSE FOR WHICH THEY ARE REQUIRED.

IF ADDITIONAL SAMPLES ARE REQUIRED TO COMPLETE SUCH TESTS, THEY SHALL BE SUPPLIED BY THE BIDDER AT NO ADDITIONAL COST.

## **DESCRIPTIVE LITERATURE:**

EACH BIDDER IS REQUIRED TO FURNISH WITH THEIR BID, CATALOG CUTS AND/OR DESCRIPTIVE LITERATURE, PROPERLY LABELED WITH THE BID NUMBER AND BIDDER'S NAME, WITH FULL ILLUSTRATIONS AND DETAILED SPECIFICATIONS FOR EACH ITEM OFFERED AS EQUAL TO THE BRAND NAME SPECIFIED. IN ADDITION, **ALL DIFFERENCES IN SPECIFICATIONS FROM THE SPECIFICATIONS STATED HEREIN MUST BE SO MARKED.** DESCRIPTIVE LITERATURE IS REQUIRED TO ESTABLISH, FOR THE PURPOSE OF BID EVALUATION AND AWARD, DETAILS OF THE PRODUCT(S) THE BIDDER PROPOSES TO FURNISH AS TO DESIGN, MATERIALS, METHOD OF MANUFACTURE, CONSTRUCTION, ASSEMBLY OR OPERATION, AS APPROPRIATE. **FAILURE TO SUBMIT THE DESCRIPTIVE LITERATURE MAY BE CAUSE FOR REJECTION OF YOUR BID.**

## **AMERICANS WITH DISABILITIES ACT:**

THE CONTRACTOR SHALL TAKE THE NECESSARY ACTIONS TO ENSURE ITS FACILITIES AND EQUIPMENT ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT. IT IS UNDERSTOOD THAT THE PROGRAM OF THE CONTRACTOR IS NOT A PROGRAM OR ACTIVITY OF THE CITY OF TULSA. THE CONTRACTOR AGREES THAT ITS PROGRAM OR ACTIVITY WILL COMPLY WITH THE REQUIREMENTS OF THE ADA. ANY COSTS OF SUCH COMPLIANCE WILL BE THE RESPONSIBILITY OF CONTRACTOR. UNDER NO CIRCUMSTANCES WILL CONTRACTOR CONDUCT ANY ACTIVITY WHICH IT DEEMS TO NOT BE IN COMPLIANCE WITH THE ADA.

## **EMPLOYMENT DISCRIMINATION BY CONTRACTOR PROHIBITED:**

A. DURING THE PERFORMANCE OF THIS CONTRACT, THE CONTRACTOR AGREES AS FOLLOWS:

(1) THE CONTRACTOR WILL NOT DISCRIMINATE AGAINST ANY EMPLOYEE OR APPLICANT FOR EMPLOYMENT BECAUSE OF RACE, RELIGION, COLOR, SEX OR NATIONAL ORIGIN, EXCEPT WHERE RELIGION, SEX OR NATIONAL ORIGIN IS A BONA FIDE OCCUPATIONAL QUALIFICATION REASONABLY NECESSARY TO THE NORMAL OPERATION OF THE CONTRACTOR. THE

CONTRACTOR AGREES TO POST IN CONSPICUOUS PLACES, AVAILABLE TO EMPLOYEES AND APPLICANTS FOR EMPLOYMENT, NOTICES SETTING FORTH THE PROVISION OF THIS NON-DISCRIMINATION CLAUSE.

(2) THE CONTRACTOR, IN ALL SOLICITATIONS OR ADVERTISEMENTS FOR EMPLOYMENT PLACED BY OR ON BEHALF OF THE CONTRACTOR, WILL STATE THAT SUCH CONTRACTOR IS AN EQUAL OPPORTUNITY EMPLOYER.

(3) NOTICES, ADVERTISEMENTS AND SOLICITATIONS PLACED IN ACCORDANCE WITH FEDERAL LAW, RULE OR REGULATION SHALL BE DEEMED SUFFICIENT FOR THE PURPOSE OF MEETING THE REQUIREMENTS OF THIS SECTION.

B. THE CONTRACTOR WILL INCLUDE THE PROVISION OF THE FOREGOING PARAGRAPHS OF THIS SECTION IN EVERY SUBCONTRACT OR PURCHASE ORDER OF OVER \$10,000, SO THAT THE PROVISIONS WILL BE BINDING UPON EACH SUBCONTRACTOR OR VENDOR.

**AWARD OF BID:**

THE BID SHALL BE AWARDED TO THE FIRM(S) WHOSE PROPOSAL IS RESPONSIVE TO THE BID AND IS MOST ADVANTAGEOUS TO THE CITY, CONSIDERING THE FACTORS IDENTIFIED IN THE BID AND SECTION 406E OF TITLE 6, THE PURCHASING ORDINANCE SET FORTH BELOW:

E. AWARD OF CONTRACT.

1. AUTHORITY OF MAYOR. THE MAYOR SHALL HAVE THE AUTHORITY TO AWARD CONTRACTS WITHIN THE PURVIEW OF THIS CHAPTER.

2. LOWEST SECURE BIDDER. CONTRACTS SHALL BE AWARDED TO THE LOWEST SECURE BIDDER MEETING SPECIFICATIONS. IN DETERMINING "LOWEST SECURE BIDDER", IN ADDITION TO PRICE, THE FOLLOWING FACTORS SHALL BE CONSIDERED:

A. THE ABILITY, CAPACITY AND SKILL OF THE BIDDER TO PERFORM THE CONTRACT OR PROVIDE THE SERVICE REQUIRED;

B. WHETHER THE BIDDER CAN PERFORM THE CONTRACT OR PROVIDE THE SERVICE PROMPTLY OR WITHIN THE TIME SPECIFIED, WITHOUT DELAY OR INTERFERENCE;

C. THE CHARACTER, INTEGRITY, REPUTATION, JUDGMENT, EXPERIENCE AND EFFICIENCY OF THE BIDDER;

D. THE QUALITY OF PERFORMANCE OF PREVIOUS CONTRACTS OR SERVICES;

E. THE PREVIOUS AND EXISTING COMPLIANCE BY THE BIDDER WITH LAWS AND ORDINANCES RELATING TO THE CONTRACT OR SERVICE;

F. THE SUFFICIENCY OF THE FINANCIAL RESOURCES AND ABILITY OF THE BIDDER TO PERFORM THE CONTRACT OR PROVIDE THE SERVICE;

G. THE QUALITY, AVAILABILITY AND ADAPTABILITY OF THE SUPPLIES OR CONTRACTUAL SERVICES TO THE PARTICULAR USE REQUIRED;

H. THE ABILITY OF THE BIDDER TO PROVIDE FUTURE MAINTENANCE AND SERVICE FOR THE USE OF THE SUBJECT OF THE CONTRACT, AND;

I. WHERE AN EARLIER DELIVERY DATE WOULD BE OF GREAT BENEFIT TO THE REQUISITIONING AGENCY, THE DATE AND TERMS OF DELIVERY MAY BE CONSIDERED IN THE BID AWARD, AND;

J. THE NUMBER AND SCOPE OF CONDITIONS ATTACHED TO THE BID.

K. IF A POINT SYSTEM HAS BEEN UTILIZED IN THE BID SPECIFICATIONS, THE NUMBER OF POINTS EARNED BY THE BIDDER.

**BID DOCUMENTS:**

BIDDER SHALL RETURN ALL BID DOCUMENTS INTACT EXACTLY AS FURNISHED IN ITS ORIGINAL FORM. ALL BID DOCUMENTS REQUIRING SIGNATURE MUST BE SIGNED BY AN AUTHORIZED AGENT OF THE COMPANY BIDDING. PRINTING YOUR NAME IN LIEU OF SIGNATURE WILL NOT BE ALLOWED. **FAILURE TO COMPLY WILL RESULT IN REJECTION OF YOUR BID.**

## Specification for Retroreflectometer for Determining the coefficient luminance of pavement markings

BIDDER SHALL COMPLETE EVERY SPACE IN SECTION 2 (BIDDER'S PROPOSAL COLUMN). THE BIDDER SHALL GIVE A COMPLETE DESCRIPTION OF THE ITEM BEING BID, SUCH AS SIZES, CAPACITIES, DIMENSIONS, ETC.

ITEM	SECTION 1 SPECIFICATIONS(MINIMUM)	SECTION 2		
		BIDDER'S PROPOSAL		
		YES	COMPLY	NO
<b>1</b>	<b>MEASUREMENT PARAMETERS:</b>			
1.1	Observation angle : The retroreflectometer (instrument) should Be constructed to simulate the driver observation angle at a 30-meter Distance from the marking and in accordance with CEN EN 1436 AND ASTM E1710.	-----		-----
	1.1.1. Entrance angle of 88.76 degrees.	-----		-----
	1.1.2. Observation angle 1.05 degrees.	-----		-----
1.2	Working Range: The instrument shall have a working range of 0 to 2000 mcd'm-2'1x-1	-----		-----
1.3	Marking Conditions: The instrument shall be capable of measuring Retroreflectivity on planar (flat) and profiled (textured) markings under Both wet and dry conditions. The instrument, when fitted with the man-ufacturers accessory, shall be able to measure markings under conti-nuous wetness conditions in accordance to ASTM E-2176 . The in-strument shall be capable of compensating for stray light allowing for full daylight measurements. The instrument shall be capable of measur-ing of pavement marking with a profile height of 10 mm.	-----		-----
1.4	Color Correction: The instrument shall be internally color corrected to allow measurement of various colored markings without requiring recalibration using colored reflection standards. The color correction complies with ASTM E1710 para. 6.3.2.for slected filters.	-----		-----
1.5	Measurement Fields: The instrument shall utilize an illumination field that is wholly contained within the observation field. The instrument shall measure a sample area of a least 200 mm (7.87in) in length by 45 mm (1.77in )in width.	-----		-----
1.6	STRAY LIGHT COMPENSATION: The instrument shall actively detect For and compensate for the normal level of stray light present as part Of each retroreflectivity measurement.	-----		-----

**2. CALIBRATION:**

The instrument shall be supplied with two calibration standards as described below.

- 2.1 FIELD CALIBRATION: The instrument shall be supplied with a working Field calibration assembly, which contains a reflection standard and a Light trap for field calibration purposes. -----
- 2.2 TRACEABLE CALIBRATION: The instrument shall be supplied with certified calibration assembly, which is made up of a light trap and a calibrated reflection standard. The calibrated reflection standard must be traceable to an accredited national standards laboratory and a certified testing and calibration laboratory. A certificate of conformance and traceability shall also be supplied with the traceable calibration reflection standard. -----
- 2.3 Both of the reflection standards shall be made of diffuse reflector without glass beads that is uniform and consistent across the whole reflector face. -----

**3. CONSTRUCTION:**

- 3.1 BASIC CONSTRUCTION: The instrument shall be constructed with an internal metal skeleton to which the illumination and observation sources shall be mounted in order to maintain a fixed geometry. The instrument shall have an external shell made of impact plastic. -----
- 3.2 WHEELS: The instrument shall come with wheels, which are semi-permanent. -----
- 3.3 PORTABILITY: The instrument shall be completely self-contained with no external battery packs or electronic components. The handle assembly must be retractable into the instrument body when not in use. -----
- 3.4 POWER SOURCE: The instrument must be powered by a nickel metal hydride battery (NiMH). The battery shall be semi permanently mounted, internal to the instrument, to prevent accidental contact separation. -----
- 3.5 ELECTRONICS SHIELDING: The instrument shall comply with FCC-CFR47 Part 15 class to be fully shielded to eliminate external electromagnetic interference with its performance and block internal electromagnetic radiation. -----
- 3.6 OPTICS: The optics of the instrument shall be fixed within the aluminum frame and totally enclosed and protected by a sealed glass window. -----

**4. USE AND CONTROL:**

- 4.1 Keyboard Panel : Use of the instrument shall be through the use of programmed control buttons, directional navigation buttons and a display window. -----
- 4.2 Ease of use: The unit shall have an ergonomic handle which will afford the user a single-handed operation. -----

- 4.3 Timing: The instrument shall be able to take quick measurements and have a short time between measurements. -----
- 4.4 Data Storage: The instrument shall utilize internal non-volatile memory for storing measurement data. The instrument shall be capable of collecting and storing 1000 measurements . The instrument shall have a data retention rate of 5 years . Each stored measurement must be identifiable by way of a series identifier, a user identifier, and a marking type icon. -----
- 4.5 Data Output: The instrument shall contain a built in thermal printer capable of providing a paper printout of individual measurement and averaging details or stored measurements. The instrument shall be equipped with a serial interface port to allow for software compatible data output, extended control, calibration and diagnostics. -----
- 4.6 Internal Error Detection: The instrument must indicate on the display, printout, and data log whenever detectable errors exist, such as excessive stray light, low battery or incorrect calibration. -----

**5. EQUIPMENT:**

- 5.1 Standard Accessories: The instrument shall be equipped complete with a users manual , quick guide, battery charger, battery, carrying case with wheels, printer paper,working reflection standard and a calibrated reflection standard. -----
- 5.2 Optional Accessories: The instrument shall have available from the manufacturer an integrated global positioning system. The GPS information shall be displayed on screen, printed out with the measurement, and also attached to the measurement in storage. -----
- 5.3 Factory Services: The instrument must also have a factory certified maintenance program available for yearly service checks to verify instrument performance and reference standard condition. -----
- 5.4 Add on Equipment: Must be capable at later date to add internal G.P.S. System to the instrument . -----