

**ARYABHATTA RESEARCH INSTITUTE OF
OBSERVATIONAL SCIENCES (ARIES), NAINITAL**
(An Autonomous Institute of Department of Science & Technology, Government of India)

**TENDER DOCUMENT
(NO. ARIES-DOT-PN-001-R0)**

FOR

**MANUFACTURE, TESTING AND SUPPLY OF
3.5 TO 4.0 METER DIAMETER SUBSTRATE BLANK
FOR TELESCOPE PRIMARY MIRROR**

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SECTION –A

INVITATION TO BID AND BIDDING CONDITIONS

1.0 INVITATION TO BID

Sealed Bids are invited in triplicate (one original plus two photo copies) for manufacture, testing and supply of one no. 3.5 to 4.0 meter diameter mirror blank for making a primary mirror of an optical telescope as per the enclosed specifications and conditions of contract.

2.0 FORMAT AND SIGNING OF BIDS

2.1 The Bidder shall prepare the Bids in TWO PARTS :

- (A) PART-I (Technical and Commercial Bid Except Price) and
- (B) PART-II (Price Bid).

2.2 The Bidder shall prepare original and two (2) copies of the Bid, clearly marking each as "Original Bid" and "Copies of Bid," as appropriate. In the event of any discrepancy between them, the Original shall govern.

2.3 The Bidder shall also prepare an un-priced copy of Part-II (Price Bid) clearly marking as “un-priced copy of Part-II Bid”.

2.4 Both the Original and Copies of the Bid shall be signed by the Bidder or a person or persons duly authorised by the Bidder. The latter's authorisation shall be indicated by written Power of Attorney accompanying the Bid. All pages of the Bid (except for unamended printed literature) shall be initialed by the person or persons signing the Bid.

2.5 The Bidder's name stated on the proposal shall be the exact legal name of the firm.

3.0 SUBMISSION OF BIDS

3.1 The Bidder shall submit the Bid in TWO PARTS viz. PART-I (Technical and Commercial Bid Except Price) and PART-II (Price Bid).

3.2 The Bidders shall enclose a Crossed Demand Draft of US \$100/- (US Dollar Hundred only) / Rs. 5000/- (Rupees five thousand only) in favour of ARIES, Nainital (India) on a Nationalised Bank in India towards the cost of this tender document. This must accompany with the PART-I Bid. The Bids without this demand draft will be rejected.

3.3 The Bidder shall seal the original and two (2) copies of the Part-I Bid in two separate envelopes, duly marking as "Original : Part-I Bid" and "Copies : Part-I

Bid". These two envelopes shall be sealed in a separate envelope, duly marking as "Part-I Bid". Similarly, the original and copies of the Part-II bid shall be sealed.

- 3.4 The Bidder shall also submit an un-priced copy of Part-II (Price Bid) along with the Part-I Bid in a separate sealed envelope, duly marking as "Un-priced Copy of Part-II Bid".
- 3.5 The envelopes for PART-I Bid and PART-II Bid shall bear (i) the Project Name "MANUFACTURE, TESTING AND SUPPLY OF A 3.8 METER DIAMETER MIRROR BLANK FOR AN OPTICAL TELESCOPE", (ii) Invitation for Bids (iii) Tender No. ARIES-DOT-PN-001-R0 and the words "DO NOT OPEN BEFORE 17.00 HRS IST on 30 AUGUST 2006" and addressed as follows:

**THE DIRECTOR,
ARYABHATTA RESEARCH INSTITUTE OF OBSERVATIONAL
SCIENCES (ARIES), MANORA PEAK, NAINITAL – 263 129
UTTARANCHAL, INDIA**

- 3.6 The inner and outer envelopes shall indicate the name and address of the Bidder.
- 3.7 If the outer envelope is not sealed and marked as required, the Owner will assume no responsibility for Bid's misplacement or premature opening.
- 3.8 The Bidder has the option of sending the Bid by registered post or submitting the Bid in person so as to reach the ARIES (Owner) by the date and time indicated. The Owner will not be responsible for late, delayed Bids and loss of Bids in transit. Do not submit the bid by any courier. The bid can be submitted by registered AIRMAIL.
- 3.9 Bids submitted by Telefax or E Mail and unsigned will not be accepted.
- 3.10 The Owner reserves the right to reject any Bid, which is not deposited in accordance with the instructions, stipulated above.

4.0 BID PRICES

- 4.1 The Bidder shall submit completely filled price schedules as per the format given in the Section E (Schedule of Prices).
- 4.2 The Bid prices should be firm for the complete work covered in this specification. All applicable taxes, duties, levies etc. should be indicated separately and will be paid extra at actuals.

5.0 BID SECURITY AND PERFORMANCE GAURANTEE

- 5.1 The Bidder shall furnish, as part of his Bid, a Bid security of US \$ 24,000/- (US Dollars Twenty Four Thousand Only) / Rs. 1000000/- (Rupees 10 Lakh only) in favour of ARIES, Nainital, India in the form of a Crossed Demand Draft on a Bank acceptable to State Bank of India. This must accompany the Technical Bid viz.: PART-I (Technical and Commercial Bid Except Price).
- 5.2 The Bid security is required to protect the Owner against the risk of Bidder's conduct that would warrant the security's forfeiture.
- 5.3 The Bid security shall be valid for 210 days from the due date of Bid submission closing date. This will be refunded to the successful bidder on receipt of performance guarantee. The unsuccessful bidder will get this back without delay.
- 5.4 The Bid Security will be forfeited if a Bidder withdraws his Bid during the period of Bid validity specified in clause 6.1 below.
- 5.5 Any Bid not secured in accordance with Bid security will be treated as non-responsive and will be rejected.
- 5.6 Unsuccessful Bidder's Bid security will be discharged/ returned as promptly as possible but not later than thirty (30) days after the expiry of the period of Bid validity prescribed by the Owner.
- 5.7 On award of contract, the Successful Bidder will be required to submit a Security Deposit (performance guarantee) of 5% of the Contract Price (refer clause 1.1 of Schedule of Prices in Section E) in the form of a Demand Draft or Bank Guarantee acceptable to State Bank of India valid till continuance of the contract. Performance guarantee should remain valid for a period of sixty days beyond the date of defect liability period.
- 5.8 The successful Bidder's Bid Security will be returned on receipt of the Security Deposit as mentioned in clause 5.7 above.
- 5.9 The Owner reserves the right to place the order on one or more contractors.
- 5.10 The Owner reserves the right to reject any Bid/ all Bids without assigning any reason whatsoever. In case any Bid is rejected, the ARIES is not committed to pay any costs incurred in the preparation and submission of the Bid.

6.0 PERIOD OF VALIDITY OF BIDS

- 6.1 Bids shall remain valid for 180 days from the due date of Bid submission closing date prescribed by the Owner. A Bid valid for a shorter period will be rejected as non-responsive.
- 6.2 In exceptional circumstances, the Owner may seek the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The period of validity of Bid security shall also be suitably

extended. A Bidder granting the request is not required or permitted to modify his Bid.

- 6.3 Prior to the expiry of the period of Bid validity, the Owner will inform the successful Bidder in writing by registered letter or by telefax and confirm that his Bid has been accepted.

7.0 DEADLINE FOR SUBMISSION OF BID

- 7.1 Bids for PART-I and PART-II must be received by the Owner at the address specified not later than **17.00 HRS IST on 30 August 2006**.

- 7.2 The Owner may, at his discretion, extend this deadline for the submission of Bids by amending the Bidding Documents, in which case all rights and obligations of the Owner and Bidder previously subject to the deadline will thereafter be subject to the deadline as extended.

8.0 MODIFICATIONS AND WITHDRAWAL OF BID

- 8.1 The Bidder may modify or withdraw his Bid after the Bid's submission, provided that written notice of the modification or withdrawal is received by the Owner prior to the deadline prescribed for submission of Bids.

- 8.2 The Bidder's modification or withdrawal notice shall be prepared, sealed, marked and despatched in accordance with the provisions for sealing and marking of Bids. A withdrawal notice may also be sent by telefax but followed by a signed confirmation copy, post marked not later than the deadline for submission of Bids.

- 8.3 No Bid may be modified subsequent to deadline for submission of Bids.

9.0 BID OPENING/ CLARIFICATION OF BIDS

- 9.1 Bids for PART-I shall be opened first on **01 September 2006 at 11.00 Hrs. IST** at ARIES, Nainital. Bidders can be present at their own interest when the Bids are being opened. The PART-II Bids of the Bidders whose PART-I Bids are acceptable shall be opened at a later date with due intimation.

- 9.2 To assist in the examination, evaluation and comparison of Bids, the Owner may at his discretion ask the Bidder for a clarification of his Bid. The Owner may call for meetings with Bidders to seek clarifications to the Bids at appropriate times. The request for clarification and the response shall be in writing.

- 9.3 Any effort by a Bidder to influence the Owner in the Bid Evaluation, Bid Comparison or Contract Award decisions may result in the rejection of his Bid.

10.0 CLARIFICATION OF BIDDING DOCUMENTS

- 10.1 Any clarifications pertaining to this tender document shall be obtained by the Bidders in writing from the Owner at the following addresses:

Dr. B B Sanwal, Scientist D,
Aryabhata Research Institute of Observational Sciences (ARIES),
Manora Peak, Nainital – 263 129,
Uttaranchal, India
Tel. +91 5942 235583, Fax +91 5942 233439,
Email Id : sanwal @aries.ernet.in

- 10.2 A prospective Bidder requiring any clarification on the Bidding document may notify in writing at the above mailing address, latest by 21 August 2006. All such clarifications shall form a part of the tender specifications/ documents and accompany the Bid.

11.0 AMENDMENT OF BIDDING DOCUMENTS

- 11.1 At any time prior to the deadline for submission of Bids, the Owner may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding documents by amendment.
- 11.2 The amendment will be notified in writing to all prospective Bidders who have received the Bidding documents and the amendment will be binding on them.
- 11.3 In order to allow reasonable time to the prospective Bidders for taking the amendment into account in preparation of their Bids, the Owner may, at his discretion, extend the deadline for the submission of Bids.

12.0 DOCUMENTS/ REPORTS

The Bidder shall ensure that all the required documents/ reports as mentioned in this tender document are attached with the Bid. All necessary catalogues / drawings / technical literature data as considered essential for full and correct evaluation of the Bids shall invariably accompany the PART-I of the Bid.

SECTION – B GENERAL CONDITIONS OF CONTRACT

1.0 DEFINITIONS OF TERMS

- 1.1 'Owner / Purchaser' shall mean the Aryabhata Research Institute of Observational Sciences (ARIES), an Autonomous Institute of Department of Science & Technology, Government of India acting through the Director, ARIES, Nainital.
- 1.2 'Engineer / Consultant' shall mean any person/ firm nominated by the Purchaser to carry out all engineering functions concerning the contract including approval of manufacturing drawings, post contract follow up, technical follow up.
- 1.3 'Bidder' shall mean the firm / party who quotes against tender enquiry.
- 1.4 'Vendor / Contractor / Fabricator' shall mean the successful Bidder whose Bid has been accepted by the Owner / Purchaser and on whom the 'Contract' or 'Purchase Order' is placed by the Owner / Purchaser and shall include his heirs, legal representatives, successors and permitted assigns.
- 1.5 'Sub-Vendor / Sub-Contractor / Sub-Purchaser' shall mean the person named in the 'Contract' undertaking a part of the work or any person to whom a part of the 'Contract' has been sublet, with the consent, in writing, of the Owner / Purchaser and shall include his heirs, legal representatives, successors and permitted assigns.
- 1.6 'Manufacturer' refers to a person or firm who is the producer and furnisher of material or designer and fabricator of equipment to either the Owner / Purchaser or the Vendor / Contractor or both under the 'Contract'.
- 1.7 'Inspector' shall mean the authorised representatives appointed by the 'Owner / Purchaser' or the 'Engineer / Consultant' for purpose of inspection of materials / equipment / works.
- 1.8 'Site' shall mean the actual place of the proposed 'Project' as detailed in the 'Specification' or other place where work has to be executed under the Contract.
- 1.9 'Bid' shall mean the proposal / document that the Bidder submits in response to Bid invitation by Owner / Purchaser / Consultant.
- 1.10 'Parties' to the Contract means the Contractor named in the Contract and the Purchaser.
- 1.11 'Contract' or 'Purchase Order' shall mean the order and associated specifications executed by the Owner / Purchaser and the Vendor including other documents agreed between the parties or implied to form a part of the 'Contract'.
- 1.12 'Contract Price' shall mean, if there is a formal agreement, the prices referred to in the agreement or if there is no formal agreement, the price agreed to be the value of the 'Contract'.
- 1.13 'Date of Contract' shall mean the calendar date on which the Owner / Purchaser and Vendor / Contractor / Fabricator have signed the 'Contract'. 'Effective Date of Contract' shall mean the calendar date on which the Owner / Purchaser have

issued to the Vendor the 'Letter of Intent' or as otherwise mutually agreed to between the Owner / Purchaser and the Vendor.

- 1.14 'Contract Period' shall mean the period during which the 'Contract' shall be executed as agreed between 'Vendor / Contractor / Fabricator and Owner / Purchaser'.
- 1.15 'Stores' shall mean and include what the Contractor agreed to supply under the Contract.
- 1.16 'Guarantee Period' or 'Warranty Period' or Defect Liability Period' shall mean the period during which the Contractor shall remain liable without any extra cost to the Purchaser for repair, replace or rectify any defective part or performance of the Stores supplied under the Contract.
- 1.17 'Performance Tests' shall mean all operational checks and tests required to determine the performance parameters of the Stores as specified in the Contract, before the 'Stores' is taken over under guarantee by the Owner / Purchaser.
- 1.18 'Virtual Completion' shall mean that all work is completed as directed and the 'Stores' is supplied to the satisfaction of the Owner / Purchaser or the Engineer / Consultant.

2.0 EXECUTION OF CONTRACT – TIME SCHEDULE

The manufacture, testing and supply of the mirror blank shall be carried out with in a total period of 6 (six) months from the date of issue of the Letter of Intent (L.O.I) or Purchase Order (P.O.), whichever is earlier.

3.0 DELIVERY DESTINATION

The Contractor shall arrange to deliver the Stores (Mirror Blank) to a destination, which will be intimated by the Owner at a later date.

4.0 COMPENSATION FOR DELAY/ LIQUIDATED DAMAGES

Time and date of delivery of the Stores stipulated in the Contract is the essence of the contract and the contractor must ensure time bound completion of the work. The Contractor shall be bound to pay Liquidated Damages to compensate the Owner for delay in supply of the Stores at the rate of 1% of the total Contract Value for each week's delay, subject to a maximum of 5 %.

5.0 EXTENSION OF TIME

The Contractor's request for extension of time for completion of work can be entertained only on the ground of his work having been unavoidably hindered. The time of the completion may be suitably extended if in the opinion of the Owner's Engineer-In-Charge it is justified. The decision of the Engineer-In-Charge in this regard shall be final and binding.

All works under or in course of execution or executed in pursuance of the contract shall at all times be open for inspection and supervision of the Engineer-In-Charge. The Contractor and his subordinates shall at all times during the usual working hours be present to receive orders and instructions and the same will have to be implemented.

6.0 TERMS OF PAYMENT

- 6.1 20% of Contract Price (excluding applicable taxes, duties & levies) as mobilisation advance after placement of order, on submission of satisfactory work plan and against bank guarantee.
- 6.2 80% of Contract Price with applicable taxes, duties & levies against Owner's inspection and acceptance of the Stores (Mirror Blank) at Contractor's shop and his issuing of test reports and certification release.

7.0 SIGNING OF CONTRACT

- 7.1 At the same time as the Owner notifies the successful Bidder that his Bid has been accepted, the Owner will send the Bidder the Contract Form incorporating all agreements between the parties.
- 7.2 Within thirty (30) days of receipt of the Contract Form, the successful Bidder shall sign and date the Contract and return it to the Owner.

8.0 SUB CONTRACTING / SUBLETTING

The Bidder in the event of his Bid being accepted by the Owner shall not assign / sublet or delegate the contract or any part thereof without the prior written consent of the Owner. The Contractor shall be responsible for the satisfactory execution of the contract irrespective of the fact whether a part or a portion of a contract has been assigned or sublet by him to subcontractor with the prior written consent of the Owner.

9.0 PERMITS AND LICENSES

The Contractor shall secure and pay for all permits and licenses which he may require to comply with in respect of all laws, ordinances and regulations of the Government or Public Authorities in connection with the performance of his

obligations under the Contract. The Contractor shall be responsible for all damages and shall indemnify and save the Owner harmless from and against all claims for damages and liability, which may arise due to his failure to comply with what is stated above.

10.0 TERMINATION OF CONTRACT

If in the opinion of the Owner's Engineer-In-Charge, the Contractor has abandoned the work without any serious reason or deliberately delayed the work or is not carrying out the work under the terms and conditions of the contract, the Engineer-In-Charge reserves the right to terminate the contract at any time by giving written notice and the Contractor shall not be eligible for any compensation for the same.

11.0 SUBMISSION OF PROJECT SCHEDULE

The Bidder shall furnish in his Bid the Bar Chart / Project Schedule indicating various phases of the project work viz. Procurement of raw materials, manufacturing, inspection & testing, packing, transportation to site indicated by the Owner.

12.0 PROGRESS REPORTS

The Contractor shall provide from time to time or when asked the statement of work accomplished during the report period including drawings / photographs of the Stores, test and performance reports, statement of problem areas, proposed corrective actions, plan of work to be completed during the next reporting period etc.

13.0 QUALITY SURVEILLANCE, INSPECTION AND ACCEPTANCE

- 13.1 The Stores covered by the Contract shall be subjected to quality surveillance and inspection by the Owner / Owner's authorized representative, who shall have free access at all times to the Contractor's works where the work pertaining to this Contract is being carried out. The Contractor shall provide all facilities for inspection and testing at no cost to the Owner / Owner's representative.
- 13.2 The Contractor shall establish a Quality surveillance and Inspection Plan in consultation with the Owner and have it approved by the Owner before start of manufacture of the Stores.
- 13.3 The Contractor shall record and document the observation during various phases of the manufacturing of the Stores.

- 13.4 The Contractor shall inspect and verify the conformance of the Stores to the contractual requirements before offering the same for inspection and approval of the Owner.
- 13.5 The Contractor shall give notice of readiness of Stores for inspection to the Owner and shall perform all tests and inspection in presence of the Owner / Owner's authorized representative as per the terms of the Contract and approved inspection plan.
- 13.6 The Owner on completion of satisfactory inspection and testing of the Stores as per the Contract shall issue the shipping release.
- 13.7 Quality Surveillance by the Owner or his authorized representative shall not relieve the supplier from the responsibility of meeting the specifications or inspection duties called in this document.

14.0 INSTRUCTION MANUAL

The Contractor shall furnish necessary Instruction Manual alongwith the Stores to enable the Owner to put the Stores to proper use.

15.0 PACKING AND MARKING

The packing of the Mirror Blank for shipment shall be appropriate depending upon the nature of transportation and handling hazards. The mirror blank shall be packed securely to avoid any damage to the consignment in transit, loading, unloading and storage. The package shall contain a Packing Note quoting Contract number and date, Copy of Shipping Release and one set of test certificates. The Package shall be marked with name and address of the Contractor, lifting points and special handling instructions, if any.

16.0 TRANSPORTATION AND INSURANCE

The Contractor shall arrange the transportation to a **destination as specified** by the Owner and shall be responsible for safe receipt of the Stores by the Consignee and for arranging transit insurance with his underwriters from warehouse to warehouse prior to dispatch of the Stores under intimation to the consignee. The Price specified in the Contract shall be inclusive of the insurance charges. In case of failure of the Contractor to take out the insurance cover, the Contractor would be held responsible for any loss, damage, breakage, late-delivery, non-delivery, theft, and pilferage of the Stores in transit.

17.0 INDEMNITY

The Contractor shall at all times indemnify the Owner against all claims which may be made in respect of Stores against infringement of any right protected by Patent Registration of Designs or Trade Marks and shall indemnify any risk of

accidents or damage to the Stores and continue to indemnify the Owner against all patent and latent defects, till the satisfactory completion of the warrantee period.

18.0 RESOLUTION OF DISPUTES AND ARBITRATION

Any dispute or difference arising out of or in connection with this Contract, the matter shall be referred to the Arbitrators, one each nominated by the Owner and the Contractor from their organizations. In case the said Arbitrators are not able to settle the dispute by themselves, the matter shall be referred to the Arbitrator mutually nominated by the Owner and the Contractor and whose decisions will be final and binding on both the parties. The venue of the arbitration will be ARIRES, Nainital (India). Subject to as aforesaid, the Indian Arbitration and Conciliation Act, 1996 and the rules there under and any statutory modification thereof for the time being in force shall be deemed to apply to the Arbitration proceedings under this Contract.

19.0 DEMURRAGE / WHARFAGE

All demurrage, wharfage and allied expenses incurred by the Owner, if any, due to delayed clearance of Stores in view of non-receipt, incomplete or delayed receipt of document by the Owner, shall be recovered from the payment due to the Contractor.

20.0 DEFECT LIABILITY AND PERFORMANCE GUARANTEE

Three years from the date of supply of the Stores (Mirror Blank) will be deemed to be the "Defect Liability Period". In case any defect in the work due to bad materials, and / or bad workmanship develop in the Stores before the expiry of this period, the Contractor, on notification by the Owner, shall rectify or remedy the defects at his own cost and shall make his own arrangements to provide materials, labour, equipment and any other appliances in this regard. The retention amount will be returned to Contractor only after the expiry of this defect liability period, without interest.

21.0 WORKMEN COMPENSATION POLICY

The Contractor shall be responsible for the safety of the men & materials and shall take proper precautions against any loss or damages to all his workmen & staff by proper insurance cover such as Workmen Compensation Insurance Policy valid for the full contract period. The Contractor may please note that such insurance policy document needs to be submitted to the Owner for his records before commencing the work at site. The Contractor should also promptly report in writing to the Owner all cases of accidents and damages. However, irrespective of the cause and place of occurring during the execution of the work, the Contractor should make adequate arrangements to render all possible aid to the victims of all such accidents and damages.

22.0 LAW GOVERNING THE CONTRACT

The contract shall be construed and shall be governed by the Laws of India for the time being in force and the Contractor shall be required to comply with all the applicable laws with regards to performance of the Contract.

23.0 JURISDICTION

The Courts of Nainital (India) shall have jurisdiction to deal with and decide any legal disputes arising out of this Contract.

24.0 BANK CHARGES

The Contractor shall meet the bank charges for any transaction pertaining to this contract in the Contractor's country.

25.0 FORCE MAJEURE

Neither party shall be held responsible for any losses, if the fulfillment of any terms and conditions of this Contract are delayed or prevented by acts of lawful Government, revolutions and other disorders, wars (declared or undeclared), acts of enemies, strikes, fires, floods, acts of God and, without limiting the foregoing, any other cause not within the control of the party whose performance is interfered with and which, by the exercise of reasonable diligence, he is unable to prevent. The Owner may grant relief from performance of the contract if the contractor is prevented from compliance to the Contract due to the above force majeure causes. However, the responsibility for providing proof for the need of such relief shall rest on the Contractor. To obtain relief based on force majeure, the Contractor shall file a written request with Director, ARIES.

26.0 GENERAL INSTRUCTIONS TO BIDDERS

- 26.1 This specification is intended as a general description of quality envisaged for materials, workmanship and the finished work. It is not intended to cover minute details. The work shall be executed in accordance with the best modern practices and to the complete satisfaction of the Owner.
- 26.2 The Bidder will attach a list of customers and attach performance certificates for such orders executed earlier for supply of mirror blanks of sizes comparable to the mirror blank as per this tender document. Complete details of such assignments shall be submitted alongwith contact address, telephone nos. etc.
- 26.3 The Bidder is expected to examine all the terms and conditions of this tender document. After review of the tender document, the Bidder shall indicate clause-by-clause compliance with the requirements specified therein. Any deviations to these requirements shall be clearly stated. Incomplete/ unfilled Schedules of Deviations shall render the Bid liable for rejection.

- 26.4 If no deviations are stated, it will be assumed that the Bid conforms in all respects to the specification and the Owner reserves the right to evaluate the Bid as such without further reference to the Bidder.
- 26.5 The Bidder shall bear all costs associated with the preparation and submission of the Bid (including the costs for site visits, if any) and the Owner will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the Bidding process.
- 26.6 It is not the intent to specify completely herein all the details of the Stores (Mirror Blank) and works involved. However, the work shall conform to high standards of engineering design and workmanship and shall meet the anticipated requirements / performance in a manner acceptable to the OWNER who will interpret the meaning of the tender document and the enclosed specifications and shall have the power to reject any work or materials, which in his judgment, is not in full accordance with requirements of the specifications.

SECTION – C

SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

1.0 INTRODUCTION

The Aryabhata Research Institute of Observational Sciences (ARIES), Nainital (An Autonomous Institute of the Department of Science & Technology, Government of India) is planning to set up a 3.5 to 4.0 meter diameter Optical Telescope at Devasthal about 60 kms from Nainital at a height of about 2400 meters above MSL. The telescope will be operated in optical wavelength for astronomical observations.

The primary mirror of this telescope will be of Cassegrain-type Ritchie Cretien configuration. The telescope will have a clear aperture of about 3.5 to 4.0 meters and a focal length of 35 meters. The scope of work for supply of the mirror blank and the technical specifications / requirements of the mirror blank that will be used for manufacturing of the Primary Mirror including its material, dimensional / quality requirements are given in the subsequent clauses.

2.0 SCOPE OF WORK

The scope of work covered in this specification document includes :

- (a) Manufacturing of Mirror Blank to the dimensions as per clause 7.0 below.
- (b) Shop Testing and Inspection of the Mirror Blank
- (c) Issuing the Shop Test Certificate for the Mirror Blank
- (d) Packing of the Mirror Blank in a transport box
- (e) Despatch of the Mirror Blank to a destination as advised by the Owner.

3.0 MATERIAL OF MIRROR BLANK

- 3.1 The material of the blank shall be solid. It shall be one of the very low-expansion glass ceramics similar to Corning ULE Titanium Silicate, Schott Zerodur or LZOS Astrositall or equivalent materials.
- 3.2 Other materials may be offered if accompanied by supporting data and if it conforms to the material blank requirements stated below. The prices of such proposed materials shall be indicated.

4.0 REQUIREMENTS OF BLANK MATERIAL PROPERTIES

The glass-ceramic material of the blank shall have the following properties:

- 4.1 Average linear thermal coefficient of expansion shall not exceed $\pm 1.0 \times 10^{-7}$ per $^{\circ}\text{C}$ over the temperature range -10°C to $+35^{\circ}\text{C}$. The coefficient of thermal expansion shall not vary throughout the blank by more than $\pm 1.0 \times 10^{-7}$ per $^{\circ}\text{C}$.
- 4.2 Material shall be capable of being finished to a mirror surface meeting the presently accepted standards of the optical industry by means of conventional polishing methods or any other alternative methods that would result into appropriate telescope mirror finish.
- 4.3 Material shall not be susceptible to damage or deterioration during the cleaning processes being normally recommended / followed for telescope mirror blanks.
- 4.4 Material shall be compatible with standard processes being normally followed during the application of standard evaporated coatings including aluminum, silver and silicon oxide as well as during the removal of these coatings.

5.0 PERMISSIBLE INCLUSIONS IN THE BLANK INCLUSIONS

The number of inclusions in the blank, whether gaseous or solid, shall not exceed the values given in the following table. The inclusions having less than $100 \mu\text{m}$ mean diameter can be excluded from the count.

Inclusion Count and Size Limits	In Critical Zone¹	Outside Critical Zone
Maximum number per 100 cubic cm	15	75
Maximum number in any continuous 20 cubic cm	3	20
Mean diameter in mm	3	7
Maximum individual mean diameter in mm	7	20

¹ The *critical zone* referred to in the above table is the zone between the roughly generated surface and a concentric surface 3 cm below.

6.0 PERMISSIBLE STRESS BIREFRINGENCE IN THE BLANK

The blank shall have a stress birefringence not greater than 15 nm per cm at the edge of the blank except where there are cords. Cords shall not produce a stress greater than 100 nm per cm. The stress inside the critical zone shall nowhere exceed 15 nm per cm. The stress pattern except for the cords shall be generally symmetrical.

7.0 BLANK DIMENSIONS

The expected dimensional parameters of the blank with their tolerances are given in the following table. (Refer enclosed Sketch ARIES-DOT-001)

Outside diameter	3800 mm ± 20 mm
Edge thickness	400 mm ± 10 mm
Central hole diameter	To be decided
Central hole concentricity with outside diameter not greater than	2.0 mm
Flatness of back surface	0.5 mm
Wedge effect not to exceed ²	1.0 mm
Edge chamfer	10 mm x 45°

² This is the permissible variation of the blank thickness along the outer circumference

The blank shall be machined to the above dimensions by a suitable diamond tool or any other equivalent tool. However, prior to commencement of the machining of the blank, the Supplier and ARIES will thoroughly examine the

un-machined blank and decide the final required dimensional parameters. The final optical surface within the un-machined blank shall be agreed on placement of contract.

8.0 SURFACES OF THE BLANK

The mirror blank should have a plano-plano form with dimensions noted above. The working optical surface of the blank shall be agreed between the Contractor and ARIES and will be accordingly marked on the blank.

9.0 PACKING

The mirror blank shall be packed securely in a strong sturdy transport box, suitable for handling and transportation by all transport means, to avoid any damage to the blank during transit, loading, unloading and storage.

10.0 WARRANTY

If the optical finishing of the blank surface is not found suitable to get the blank surface machined to the required values or to keep a fine optical figure, the Contractor shall either anneal additionally this mirror blank or provide another mirror substrate blank corresponding to the required quality. Besides, the Contractor shall pay to ARIES a cost of a treatment of the mirror made under such circumstances.

SECTION – D

**FORMAT FOR SUBMISSION OF PART – I
(TECHNICAL AND COMMERCIAL BID EXCEPT PRICE)**

The Bidder shall submit the PART-I of his Bid as per the ‘Tender Form’ format given below, on his letterhead.

TENDER FORM

PART-I (Technical and Commercial Bid except Price)

Tender No. ARIES-OT-PN-001 (R0)

Last Date for Receipt of Part-I & Part-II of the Tender : 30 August 2006 upto 17.00 Hrs.

Due Date for Opening of Part-I of the tender : 01 September 2006 at 11.00 Hrs.

Bidder’s Offer No. -----

Dated -----

FROM

M/s -----

To

The Director,
Aryabhata Research Institute of Observational Sciences (ARIES),
Manora Peak, Nainital – 263 129,
Uttaranchal, India

Dear Sir,

1. We have gone through the tender conditions pertaining to your two Part Tender and are submitting herewith our PART-I Bid.
2. We hereby agree to supply the Stores (Mirror Blank) conforming to the tender specifications incorporated in Section – C of the Tender Document.
3. We hereby agree to keep the price validity for your acceptance for a period of 180 days from the due date of Bid submission.
4. Compliance / Deviations to the General Conditions of Contract and Technical Specifications as given in Section –B of the tender document is detailed in Annexure – 1 of our PART-I Bid.
5. Compliance / Deviations to the Technical Specifications as given in Section - C of the tender document is detailed in Annexure – 2 of our PART-I Bid.
6. We have enclosed herewith an un-priced copy of our PART-II Bid as per clause 3.4 of Section – A of your tender document.
7. We have enclosed herewith a Demand Draft of US \$100/- towards cost of the tender document as per clause 3.2 of Section – A of your tender document.
8. We have enclosed herewith a Demand Draft of US \$ 24,000/- towards Bid Security as per clause 5.1 of Section – A of your tender document.

Yours faithfully,

Stamp and Signature of the Bidder

SECTION – E
FORMAT FOR SUBMISSION OF PART - II (PRICE BID)

The Bidder shall submit the PART-II of his Bid as per the ‘Tender Form’ format given below, on his letterhead.

TENDER FORM

Bidder’s Offer No. -----

Dated -----

PART-II (Price Bid)

Tender No. ARIES-OT-PN-001 (R0)

FROM

M/s -----

To

The Director,

Aryabhatta Research Institute of Observational Sciences (ARIES),
Manora Peak, Nainital – 263 129,
Uttaranchal, India

Dear Sir,

1. In response to your invitation to the tender and as per the tendering conditions, we attach herewith our Price and Delivery Schedule in the format given in Annexure -1 to the format for Tender Form for PART-II (Price Bid), for the Scope of supply of the Stores (Mirror Blank) as per our PART-I (Technical and Commercial Bid except Price).
2. We hereby agree to keep the price and other commercial terms and conditions valid for your acceptance for a period of 180 days from the due date of Bid submission.

Yours faithfully,

Stamp and Signature of the Bidder

Annexure – 1
(Annexure to format for Part-II Bid)

SCHEDULE OF PRICE

- 1.0 Bidder shall indicate FIRM prices for the supply of one no. Mirror Blank for the complete work covered by this tender document, as per the format given below,
- 1.1 The total Contract Price refers to a sum of prices under clauses 1.2, 1.3 and 1.4 below.
- 1.2 Ex-factory Price of Mirror Blank
including manufacturing, shop testing /inspection,
and packing charges :
- 1.3 Charges for Transportation to destiny of delivery :
- 1.4 Charges for Marine cum Storage Insurance valid till
completion of work and taking over of the
Mirror Blank by the Owner :
- 1.5 All applicable taxes, duties, levies etc.
with individual break-up :

Signature of the Bidder :
Name & Designation :
Name & Address of the Company :

Company Seal

Date :

