



Government of India  
BHABHA ATOMIC RESEARCH CENTRE  
Engineering Services Group  
**Security Technical Support Section**  
Mumbai-400085



**A. S. Salunke**  
Head, STSS  
BARC, Trombay  
Mumbai-400085

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**Tender No.: BARC/ESG/STSS/IDGS/17/28**

**Date: 07.11.2017**

**Due Date: 21.11.2017 at 14:30 Hrs**

**Sub: Invitation to submit your quotation**

On behalf of President of India, Head, Security Technical Support Section, Engineering Services Group, Bhabha Atomic Research Center invites lowest quotation in sealed envelope for the work given below as per the scope of work & technical specifications enclosed herewith.

S. No.	Description of Job	Completion Period
1.	<b>Fabrication, Supply Installation &amp; Commissioning of Intrusion Detection Grid System at BARC Trombay, Mumbai as per annexure-A attached.</b>	Eight Months

Quotations are invited for the above system as per annexure-A on or before November 21, 2017 up to 14.30 hrs in a sealed envelope through registered post/speed post of Indian Postal Services only.

**The terms and conditions are given below:**

**1. Qualifying criteria for bidders:**

- 1.1** Firms willing to bid for above mentioned job shall have been vetted by Security Section of BARC.
- 1.2** All the supervisors and workers should have valid Police Verification Certificate (PVC) (for minimum 03 persons) and not expiring during the tender period (i.e., from the date of issue of this enquiry till completion of job after getting work order). The list of manpower available with firm shall also be submitted along with their details of PVC.
- 1.3** Workers/labourers given by the vendor should be well experienced in Fabrication, installation and commissioning of similar type jobs.
- 1.4** All workers/labourers of the Vendor/Contractor employed for execution of job in this tender should have proper Personal Protective Equipment (PPE), the arrangement of which shall be made by Vendor/Contractor

- 1.5 The past experience of the firm in similar nature in BARC/DAE shall be made available with Work Order copy and satisfactory completion certificate from the user. Also the list on of going jobs inside BARC premises with expected completion period shall be provided.
2. The quotation envelope shall be superscripted with **Description of the job and the Tender Ref. No.** as mentioned above.
3. Authorization & service support up to five years Certificate from the OEM of the equipment shall be submitted along with the quotations.
4. The complete quotation shall reach the following address on or before 21.11.2017 14:30 Hrs. by **Registered Post/ Speed post**. The quotations will be opened on the 21.11.2017 in Accounts Division, BARC between 1500 to 1600 Hrs.

<p><b>To,</b></p> <p><b>Attention:</b></p>	<p>Head, STSS, ESG, <b>Shri. Ranjit Sen</b> <b>SO/D</b> Room No. 313, E&amp;SC building BARC, Trombay, Mumbai- 400 085</p>
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5. **Printed Letter Head:** Quotation should be printed on the letter head; computer generated quotation is not valid.
6. **Validity of the Offer:** Validity of the offer shall be for 90 days from the date of opening of quotation.
7. **Guarantee:** Vendor shall have to give guarantee of the quality and workmanship of work done for the period of min. 12 months from the date of completion of the work.
8. **Offer of Firm:** Offer of those firms, who do not submit their quotation as per the details given in the technical specification and incomplete quotations in any respect shall not be considered.
9. The department reserves right to extend the date of opening the quotations.
10. **Payment Terms:** Accounts Division BARC Mumbai-400085 shall make full and final payment only after submission of the satisfactory work completion certificate issued from the undersigned, bill, guarantee certificate, delivery Challan and advanced stamped receipt. No advance payment is admissible.
11. **Income Tax Recovery Clause:** Income tax @ 2% will be deducted from the bill.
12. If any of the employee, consultant, or partner of the company is an Ex- BARC employee, the same must be stated in the quotation clearly.

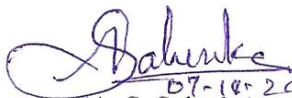
**13. Penalty:** Any delay which is attributable to the contractor is liable for penalty @ 0.5 % per week (max 5 %).

**14. GST Number:** Quotation shall consist of GST Registration Number registered with local authority & PAN number of the firm, etc.

**15. Safety & Security Rule:** The vendor shall follow all the safety procedures as per the normal industrial practice during the execution of the job at site. Any mishap occurring during the work due to unsafe workmanship shall be the vendor's liability. Security and transportation rules at BARC, Trombay premises shall be strictly followed.

**16. Confidential Clauses:**

- I. **Confidentiality** : No party shall disclose any information to any third party concerning matters under this contract generally, In particular, any information identified as "Proprietary" in nature by the disclosing party shall be kept strictly confidential by the receiving party shall not be disclosed to any third party without the prior written consent of the original disclosing party This clause shall apply to the sub- contractors, consultants, advisors, or the employees engaged by a party with equal force.
- II. "Restricted information" categories under section 18 of the Atomic Energy Act, 1962 and "Official secrets" under section 5 of the Official Secret Act, 1923: Any contravention of the above mentioned provisions by any contractor, sub- contractor, consultant, advisor or the employee of a contractor will invite Penal consequences under the aforesaid legislation.
- III. Prohibition against use of BARC's name without permission for any publicity Purpose. The contractor or Sub contractor, consultant, advisor or the employees engaged by the contractor shall not be use any public purposes through any media like press, TV, or internet, without the prior written approval of BARC.

  
07-10-2017  
(A. S. Salunke)  
Head, STSS  
BARC

(For and on behalf of President of India)

ए. एस. सालुंके / A. S. SALUNKE  
अध्यक्ष, सुरक्षा तकनीकी आलंब अनुभाग, भापअ केंद्र  
Head, Security Technical Support Section, BARC

**Annexure -A**

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 BHABHA ATOMIC RESEARCH CENTRE  
 Engineering services Group  
 Security Technical Support Section  
 Trombay  
 MUMBAI – 400085  
 Ph: (022) 2559 4822 , 2559 6942 ; FAX : (022) 2550 5151  
 Email: ashokss@barc.gov.in  
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Tender Document No. : ESG/STSS/2017/  
 Title : Fabrication, Supply, Installation, Integration & commissioning of ‘Intrusion Detection Grid’ Systems  
 Tender Type : Single part tender, sealed cover has to be submitted through Speed/Registered Post only.  
 Nature of Work : Fabrication, Testing, Installation, Integration of Intrusion Detection Grid System with existing Electric Fencing along with related accessories

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INDEX

- 1) Introduction .....2
- 2) Pre-qualifications for bidder.....2
- 3) Scope of work .....3
- 4) Special terms and conditions of the contract .....6
- 5) Conditions of contract .....8
- 6) Technical specification .....15
- 7) Bill of materials .....BOM Page 22

## **1. INTRODUCTION**

The tender is invited for fabrication, supply, testing, training, providing warranty support for 36 months and comprehensive AMC after warranty period for two years.

This is a Single part tender for supply of Intrusion Detection Grids, installation, integration & commissioning and training of technical staff. These Grids has to be installed at BARC, Trombay, Mumbai 400 085.

This specification specifies the requirements of detail engineering, fabrication, supply, installation & commissioning, of Intrusion detection Grid intrusion detection system to be installed on the storm water drains openings on the perimeter wall at BARC, Trombay, Mumbai (refer section-V, special instructions point No.2) as per the following technical specification.

## **2. PRE- QUALIFICATION FOR BIDDERS**

- 2.1. Design, fabrication, supply, installation and commissioning must be the main activity of the bidder.
- 2.2. Supplier shall submit along with the offer about the similar work experience/the details of past experience with documentary proof, the list of their clients
- 2.3. The list of similar jobs carried out/items supplied specifying unit.
- 2.4. Catalogues or literature to support their quotation with the list of similar jobs carried out for the firms/other Govt. organization where items were supplied by supplier or supplied through their Principals specifying the Original Equipment Manufacturer (OEM)- and preferably shall submit the details of past experience with documentary proof.
- 2.5. The annual turnover of the vendor must be over Rs 20 Lakhs for supply, installation and commissioning of equipment. Documents supporting this must be included with the offer.
- 2.6. The bidder must have at least 05 years of experience in this field.
- 2.7. The bidder must have executed successfully at least 03 orders of same or larger magnitude than this in the last 10 years.
- 2.8. Copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder;

### **3. SCOPE OF WORK**

The scope of work in brief includes design, engineering, fabrication, installation, integration and commissioning of Grid Intrusion Detection system and accessories. The bidders shall make a site visit to understand the exact requirements and the present security system setup.

#### **3.1. Intended application & technical requirements:**

Installation of these intrusion detection grids on the perimeter wall in addition to the normal storm water drain grills aim at increasing the strength of the existing grills.

The size of each storm water drain openings on the subject perimeter wall is given in the chart under the section deliverables. It is intended that, the design, layout and strength of intrusion detection grid should be such that, any forced entry attempt by bending or cutting of these detection grid will generate alarm. Also it is desirable to slide the detection grid in upward direction for cleaning the mud, tree branches, stones etc. any unauthorized sliding should produce an alarm. Each detection grid should have independent intrusion detection sensor and Tamper alarm output in the form of potential free contacts for interfacing with the existing perimeter intrusion detection (electric fencing) system.

Detailed technical specifications of individual item of the systems are given in the paragraph No.6.0 including sketches indicating the block diagram of the requirements, detection element etc.

3.2. Supply, install and commission the system as per technical specifications requirement.

3.3. Integration & Commissioning of Grids with existing E-Fence system.

3.4. Excavation/saddling and installation of control and data cable.

3.5. Testing of installation and certifying

3.6. Hands on training to three BARC technical staff in operating and managing the system.

3.7. Documentation

#### **3.8. Functional testing procedures, acceptance criteria:**

Functional tests will be carried out on each grid. The testing procedure shall be prepared by supplier and same will be approved by purchaser. The test rigs and required fixtures

for carrying out all tests will be designed and developed by supplier and same will be approved by purchaser.

**3.9. Requirement of Quality assurances:**

Quality surveillance and expediting, relating to all the aspects of the contract will be carried out by the purchaser or his authorized representative for which purpose the supplier and his subcontractor shall

**3.10. Before delivery of the items:**

3.11. Allow access at all reasonable times during manufacture, assembly and testing to the premises in which the work is being carried out.

3.12. Furnish the latest drawings and/or tooling, gauges, instruments, testing equipment etc. required for inspecting the jobs. Prints of all the latest required drawings and approved procedures shall be made available for inspection and retention, if so desired.

3.13. Produce an inspection plan to the purchaser's satisfaction and notify when checkpoints on the plan are imminent so that the purchaser's representative may be present, if it is so desired.

3.14. Obtain acceptance of the components in the form of a shipping release from the purchaser's representative before shipment.

3.15. The address of the purchaser's authorized quality surveillance representative will be intimated by the purchaser after award of contract.

3.16. The supplier shall be responsible for the inspection of the components that is subcontracted by him.

3.17. Waiving of quality surveillance by the purchaser's or acceptance of the items by the purchaser or his authorized agent, shall not relieve the supplier from the responsibility for supplying the items in accordance with specification requirements of this document and purchase order.

**3.18. At Installation Site:**

3.18.1. Installation of Intrusion detection grid on the wall; alignment with the existing iron grills, fixing of locking arrangements, magnetic proximity sensor, cable termination box etc. should be well tightened and of non-corrosive nuts and bolts.

3.18.2. Sliding of intrusion detection grids for cleaning, purpose should be very



smooth in the cover provided.

3.18.3. Cable laying: power supply and sensor output signal cables should be properly laid and saddled on the wall as per the applicable electrical standards. Cables from the grid to the nearest ‘Electric Fence Energizer’ unit to be laid at least 9” below the ground level and filled with soil.

3.18.4. All wires of the cables have to be properly terminated with good quality lugs after crimping. No loose wires should be left in the, terminal /junction box.

3.18.5. Tamper alarms: gap between the magnetic proximity switches used for tamper alarm should be with-in its’ specified limits and should not produce any false alarm.

3.18.6. Minimum or no nuisance alarms should be produced by hitting with stone or wood stick.

### 3.19. Inspection and Testing

Following tests will be carried out for the acceptance of the individual subsystems at vender’s premises.

Test No.	Name of the test	Description	To be done on	Test to be carried out at
1.	Power ON/ OFF test	Mains power of equipment to be switched ON & OFF for 50 times	Field control unit	Supplier’s Premises
2.	Functional tests with +/- 10% power supply variations	Power to the device under test will be varied from -10% to +10% of the rated input supply voltage and the functional and performance of the devices will be observed.	Field control unit	Supplier’s Premises
3.	Drop- dumped tests (To simulate vibrations)	Devices packed in their original packing will be dropped on a wooden table from 5-10 Cms. For 10 times	Field control unit	Supplier’s Premises
4.	Continuity & Insulation test	Cables continuity and inter wire insulation checks	All types of cables	Supplier’s Premises
5.	Environmental	EMI, RFI, Temperature etc.	Field control unit	Supplier’s Premises

#### **4. Special terms and conditions of the contract**

- 4.1. The system requirements are based on certain assumptions. Quantity mentioned in the tender is an estimate; contractor should make a thorough site survey, prepare detail engineering drawings and present the final bill of quantities.
- 4.2. Any deviation from the specification / guide lines shall be with prior approval.
- 4.3. Price quoted by the bidders must indicate clearly about cost of the equipment, insurance, freight, GST, delivery charges if any, etc. Necessary exemption certificates will be provided wherever applicable.
- 4.4. The complete supply and installation will have an onsite comprehensive warranty for 3 years after the date of commissioning. Warranty shall include for both hardware and software.
- 4.5. Bidders have to quote in Indian rupees for indigenous items and in US Dollars for the items that are imported.
- 4.6. All works have to be executed under the supervision of BARC employee.
- 4.7. The bidder shall bear all costs associated with the preparation and submission of his bid, and the tenderer will in no case is responsible and liable for those costs.
- 4.8. The bid should be valid for 8 weeks from date of bid opening.
- 4.9. Income tax will be deducted at source as applicable at the time of releasing payments.
- 4.10. BARC reserves the right to accept or reject any or all tenders.
- 4.11. The bidder has to sign and seal all the pages of the tender document before submitting the tender document.
- 4.12. BARC will have full power to split the order or go with single party depending on the financial, technical and support benefit.
- 4.13. Bidders have to quote the part number against each item quoted.
- 4.14. Any deviation from the specification has to be clearly spelt giving reasons.
- 4.15. Bidders can come out and propose an alternative to the proposed plan, if there is technical and financial benefit to the purchaser. However, the right to accept or drop the proposal will be with the tenderer. The alternate proposed plan, if any, should be separate from the main tender.
- 4.16. The installation should be carried out at BARC, Trombay Mumbai 400085.

- 4.17. The bidders should treat the details of this tender and any subsequent Contract as private and confidential. All information supplied by BARC in connection with this tender shall be treated as confidential.
- 4.18. The Purchaser shall not be bound to accept the lowest or any form of tender and shall not be responsible for any costs in connection with the preparation of tenders.
- 4.19. The prospective contractor shall complete the contract in all respects by 8 months.
- 4.20. The Contractor shall submit a detailed project plan for the execution of the works within fourteen days after the Letter of Acceptance. Parallel activity has to be started wherever possible.
- 4.21. The successful bidder on completion of project shall provide all required information, manuals, and drawings etc, related to the installation. Typically, the file shall comprise:-
  - 4.21.1. Record or “as built” drawings.
  - 4.21.2. Details of equipment.
  - 4.21.3. Manuals produced by OEM’s and Contractors.
  - 4.21.4. Copies of Test Certificates required by the Specification.
  - 4.21.5. Copies of guarantees, warranties offered by manufacturers.
  - 4.21.6. Names, addresses, telephone numbers and fax numbers of all relevant contacts.
- 4.22. Contractor should ensure that the place is maintained clean and all waste materials have to be removed from the site on day to day basis to specified garbage area.
- 4.23. The contract value is for the complete work, as per actual measurement.
- 4.24. Contractor should take excess / waste material back.
- 4.25. Contractor/engineer has to attend the site meeting regularly to take stock of the things and monitor the progress/quality of work.
- 4.26. Contractor has to prepare working drawings and take necessary approval before starting the work.
- 4.27. 3 sets of as built drawings have to be submitted after completion of work in hard copy and soft copy on a CD.
- 4.28. Storage space will be provided by BARC at the site. The material brought for work will be under the custody of contractor and the contractor is responsible for the safety of their material.
- 4.29. The contractor has to arrange for his own tools and equipment required for completing the project. Power required for day-to-day work has to be tapped from nearby power source with prior permission from engineer in charge.
- 4.30. All software supplied should be perpetual.

- 4.31. The contractor has to take prior approval from BARC site engineer for any civil works.
- 4.32. The Contractor shall be fully responsible for taking delivery of materials and equipment, unloading and distributing them as necessary on site and the return of all cases and all condemned or surplus goods.
- 4.33. The Contractor shall provide all necessary temporary protection, coverings, structures, etc to avoid deterioration or damage to the building, both internally and externally, by best working practices.
- 4.34. The Contractor shall ensure that all of the equipment provided under the Contract is protected from the effects of electromagnetic interference, which shall include, but not be limited to-
  - 4.34.1. The effects of lightning strike either directly or by induction.
  - 4.34.2. The effects of mains borne transients on the power supplies.
- 4.35. Where appropriate, the Contractor shall supply and install suitable protection/devices.
- 4.36. The installation of the equipment and cabling shall take due account of the system security and be protected against vandalism. Conduit junction and Junction boxes shall be fitted with tamper-proof screws to prevent unauthorized access. Where cable chambers or manholes are located in public areas, the lids shall be secured with tamper-proof screws.
- 4.37. Bidders have to provide the model or type number of the equipment considered in the proposal. Where applicable the quote should be given in US\$.
- 4.38. All electronic equipment supplied shall have latest version of Software compatible with the electronic devices.
- 4.39. All statutory approvals from government bodies and fees to government agencies, if any, shall be in the scope of the successful bidder.

## **5. CONDITIONS OF CONTRACT**

### **5.1. Contract:**

- 5.1.1. Contractor / supplier should send their acceptance letter on receipt of work order within stipulated period. On expiry of said period or exorbitant delay in commencing or executing the work, the purchaser shall not be liable to any claim from the contractor / supplier for the work entrusted to and may revoke the contract.
- 5.1.2. The contract will be fixed rate contract. No escalation in prices of materials during the execution of project will be paid. Statutory variations like change in excise duty, taxes etc, if levied after the award of the work shall be paid on production of proof for such changes.

**5.2. Work at Site :**

- 5.2.1. Access to the works shall be allowed only to the Contractor / Supplier, Sub-contractors or his duly appointed representatives. The Contractor/ Supplier shall not object to the execution of work by other contractors or tradesmen and shall afford them every facility for execution of their several works simultaneously with his own.
- 5.2.2. Work at the Purchasers premises shall be carried out when the purchaser may approve but the Purchaser shall give the Contractor / Supplier all reasonable facilities for the same. The Contractor / Supplier shall provide sufficient fencing, notice boards etc. to guard the works and warn the public.
- 5.2.3. The Contractor shall obey Central, local and State regulations and enactments pertaining to workers and labor and the Engineer shall have the right to enquire into and decide all complaints on such matters.

**5.3. Delays:**

- 5.3.1. The Contractor shall not be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work, whatever the cause for such delays may be, including delays in procuring Government controlled or other materials and delay in obtaining instructions and decisions from Engineer-in-Charge. The Contractor shall however, merit extension of time as hereinafter mentioned.

**5.4. Extension of Delivery Period:**

- 5.4.1. If the Contractor is delayed in the progress of work by changes ordered in the work, or by and cause which the Engineer shall decide to justify the delay, then the time of completion shall be extended by a reasonable time. No such extension shall be allowed unless requests for extension are made in writing by the Contractor / Supplier to the Engineer within 15 days from the date of occurrence of the delay.

**5.5. Damages:**

- 5.5.1. The Contractor / Supplier shall be responsible for all injury to persons, animals or things and for all damage to the works, structure of, and decorative work in the property which may arise from operation or neglect of himself or any of his sub-contractor or of his or sub-contractors employees, whether such injury or damage may arise from carelessness, accident or any other cause whatever in any way connected with the carrying out of this contract. This clause shall be held to include any damage to buildings, whether immediately adjacent or otherwise, any damage to roads, streets, footpaths, as well as all damage caused to the works forming the subject of this contract by frost or other inclemency of weather. The Contractor / Supplier shall indemnify the purchaser and hold him harmless in respect of all and any expenses or property as aforesaid and also in respect of any claim made in respect of injury or damage under any

acts of Government or otherwise and also in respect of any award of compensation or damages consequent upon such claim.

- 5.5.2. The Contractor / Supplier shall reinstate all damage of every sort mentioned in this clause, so as to deliver up the whole of the contract works complete and perfects in every respect and so as to make good or otherwise satisfy all claims for damage to the property of third parties.
- 5.5.3. The Contractor / Supplier shall indemnify the purchaser against all claims which may be made against the purchaser, by any member of the public or other party, in respect of anything which may arise in respect of the works or in consequence thereof and shall, at his own expense, effect and maintain, until the work has been 'taken over' under clause 5.0.
- 5.5.4. The Contractor / Supplier shall also indemnify the purchaser against all claims which may be made upon the Purchaser whether under the Workmen's compensation act or any other statute in force during the currency of this contract or at common law in respect of any employee of the Contractor / supplier or of any of his sub-contractor and shall at his own expense effect and maintain until the work has been 'Taken over', with an approved office.
- 5.5.5. The Purchaser, with the concurrence of the Engineer, shall be at liberty and is hereby empowered to deduct the amount of any damages compensation costs, charges and expenses arising or accruing from or in respect of any such claims for damages from any sums due to or become due to the Contractor / Supplier.

**5.6. Termination of Contract by the Purchaser :**

- 5.6.1. If the Contractor / Supplier commits any 'Act of Insolvency' or shall be adjudged an Insolvent or shall have an order for compulsory winding up made against him or pass effective resolution for winding up voluntarily, or if the Contractor / Supplier shall suffer execution to be issued, or shall suffer any payment under this contract to be attached by or on behalf of any of the creditors of the Contractor / Supplier, or shall assign the contract without the prior consent in writing of the Engineer, or shall charge or encumber this Contract or any payments due or which may become due to the Contractor there under, or if the Engineer shall certify in writing to the Purchaser that the Contractor / Supplier – has abandoned the Contract,

or

has failed to commence the works, or has without any lawful excuse these conditions suspended the progress of the works for seven days after receiving from the Engineer written notice to proceed,

or

has failed to proceed with the work with such due diligence and failed to make such due progress as would enable the works to be completed in accordance with the approved programme of work,

or

has failed to remove materials from the site or to pull down and replace work for seven days after receiving from the Engineer written notice that the said materials or work were condemned and rejected by the Engineer under these conditions,

or

has neglected or failed persistently to observe and perform all or any of the acts matters or things by this contract to be observe and performed by the Contractor for seven days after written notice shall have been given to the Contractor / Supplier requiring the Contractor / supplier to observe or perform the same,

or

has to the detriment of good workmanship or in defiance of the Engineers instructions to the contrary sub-let any part of the contract.

then and in any of the above said causes, the purchaser with the written consent of the Engineer may, notwithstanding any previous waiver, after giving seven days notice in writing under the provisions of this clause to the Contractor / Supplier, determine the contract but without prejudice to the powers of the Engineer or the obligations and liabilities of the Contract, the whole of which shall continue to be in force as if the contract has not been so determined and as if the work subsequently executed has been executed by and / or on behalf of the Contractor / Supplier.

- 5.6.2. After the issue of such notice, the Contractor / Supplier shall not be at liberty to remove from site any equipment, tools and materials belonging to him which shall have been placed thereon for the purpose of the works and the Purchaser shall have lien upon such equipments, tools or materials to subsist from the date of such notice and until the notice shall have been complied with.
- 5.6.3. If the Contractor / Supplier shall fail to comply with the requirements of said notice for seven days after such notice has been given, the Purchaser shall have the power to enter upon and take possession of the works and site and all equipment, tools and materials thereon, and to engage any other person, firm or agency to complete the works, utilizing the equipment, tools and materials to the extent possible. The purchaser shall not in any way be responsible for damage or loss of the tools, equipment and materials and the Contractor / Supplier shall not have any compensation therefore.
- 5.6.4. Upon completion of the works, the Engineer shall certify the amount of expenditure properly incurred consequent on and incidental to the default of the Contractor / Supplier as aforesaid and such amount shall be deducted from the payments due to the Contractor / Supplier. If the said amount exceeds the payments due to the Contractor / Supplier, the Purchaser shall be at liberty to

dispose of any of the Contractors / Supplier's materials, tools or equipment and apply the proceeds for the payments due from the Contractor / supplier and recover the balance by process of law.

- 5.6.5. After the works have been completed, after the amounts due to the contractor / Supplier have been fully recovered from the Contractor / Supplier, the Engineer shall give notice in writing to the Contractor / Supplier to remove the surplus equipment and material from site. If such equipment and material are not removed within a period of 14 days after such notice, the Purchaser shall have the power to remove and sell the same holding the proceed less the cost of removal and sale, to the credit of the Contractor / Supplier. The Purchaser shall not be responsible for any loss sustained by the Contractor / Supplier from the sale of the equipment and material.

#### **5.7. Contractors Representative :**

- 5.7.1. The Contractor shall employ at least one qualified representative whose name shall have previously been communicated in writing to the Engineer and approved by him to supervise the erection. Any written order or instructions given to the representative shall be deemed to have been given to the Contractor / Supplier. The Engineer shall be at liberty to object to any particular representative / or any persons employed by the Contractor / Supplier on the work and the Contractor / Supplier shall remove the person objected to, on receipt from the Engineer, in writing, a request requiring him to do so and shall provide in his place another competent representative acceptable to the Engineer.
- 5.7.2. The Contractors / Suppliers representative shall be a qualified electrical / Electronics engineer and possessing adequate site experience in similar nature or works.

#### **5.8. Guarantee and defects liability period**

- 5.8.1. The Contractor / Supplier shall guarantee that the complete setup shall be free from any defect due to defective material and bad workmanship and that the whole system shall operate satisfactorily and that the performance and efficiencies of the surveillance system shall not be less than the optimum value. The guarantee shall be for a period of 36 months after taking over and any parts found defective shall be replaced free of all costs by the Contractor/Supplier. The services of the Contractor's/Supplier's personnel if requisitioned during this period for such work shall be made available free of cost to the purchaser.
- 5.8.2. If the defects were not remedied within reasonable time, the purchaser may proceed to do so at the Contractor's/Supplier's risk and expense without prejudice to any other rights.

#### **5.9. Liquidity Damages**



5.9.1. For all delays, which do not merit any extension of time, the Contractor / Supplier shall attract 1% of penalty per week for the first 4 weeks of delay and 2% penalty per week for the next 4 weeks of the remaining contract value. The amount of liquidated damages shall be recoverable from the payment due to Contractor/Supplier on this or any other contract with in the purchaser.

5.9.2. The deduction of liquidated damages shall not , however, absolve the Contractor/ Supplier of his responsibility and obligations under the contract to complete the work in it's entirely and shall also be without prejudice to action by the purchaser under clause "Termination of Contract by the Purchaser". After that, the same shall be completed by the institute at the Contractor's/Supplier's risk and cost.

## **5.10. Project Schedule**

5.10.1. On receipt of work order / purchase order, the Contractor/Supplier has to submit the project schedule in one weeks time. The project has to be completed as per the approved project schedule. Contractor / Supplier have to open up different fronts for parallel execution of work.

5.10.2. Contractor / Supplier have to ensure that the numbers of technical / skilled labourers are at site for completion of job as per project schedule.

## **5.11. Documentation, inspection and testing :**

5.11.1. Following tests shall be carried out in presence of BARC engineer, using suitable test equipment before and after the installation. The test results shall be submitted to BARC.

5.11.1.1. Loop impedance test

5.11.1.2. Continuity test

5.11.1.3. Pair colour grouping or colour identification test

5.11.2. Following details should be included in the "as built" documents relating to the network.

5.11.2.1. Cables layout detail drawings.

5.11.2.2. Cables paths, junction box placement, labeling/Nomenclature, detail drawings and notes.

5.11.2.3. Test reports of all the equipment and cables.

5.11.2.4. Operation and maintenance manual of all the equipment used in the network if any.

5.11.2.5. List of equipment with serial number and physical location.

### **5.11.3. Acceptance of the work:**

5.11.4. The installation & Commissioning work under this contract will be considered complete only after work has been accepted by BARC.

5.11.5. Following Perquisites must be completed before requesting the BARC for acceptance of the work:

- 5.11.5.1. Cabling work is over and all cables and casing have been numbered as per the numbering scheme
  - 5.11.5.2. All tests have been carried out and test reports as detailed in section 5.12 have been submitted.
  - 5.11.5.3. Documentation of the wiring as detailed in section 5.12 has been submitted.
- 5.11.6. Following Methodology will be adopted to carry out the acceptance test.
- 5.11.6.1. Physical inspection of the installed wiring and check for conformance with the conditions laid in section 3.0 and 4.0.
  - 5.11.6.2. Consistency of the documentation with the installed equipment /network.
- 5.11.7. After successful completion of the acceptance test, an acceptance report will be issued by BARC.

## 6. Technical Specification

Intrusion Detection Grid system is required for the sensing of intrusion attempts through water pipes, windows, canals etc. existing at this complex. It shall add detection capabilities to the conventional physical barriers, while enhancing protective capability.

### **The following are the salient features expected:-**

- Immediate detection in case of any attempt to cut or remove part of the grid itself.
- Guard against cutting the bars to force an entry.
- Immediate activation of visual and audible alarms at computer screen through suitable central control unit.
- System should be based on an effective electro-optical or any other method of intrusion detection grid.
- Operated in the wide range of temperature
- Used as a standalone unit or linked to a computer. In a system configuration it shall be linked to whichever control unit has been selected.
- Local control unit that can supervise up to seven grids.
- Fiber optic communication or multi-wire cable
- Completely trouble free, requiring minimum maintenance.
- Sliding and/or rotating the inner frame to have easy access for cleaning and maintaining any water drains it may be covering.

### **6.1. Grid:**

- a. Size of the Grid given is only an approximate and the exact size will be intimated at the time of the order.
- b. Structural material used in the system shall be of Galvanized iron profile.
- c. The power source needed for the system should be 12V to 28V DC.
- d. The intrusion detection method used in the system preferably should be optic-mechanical system
- e. Specially designed sliding and/or rotating inner frame shall be preferred.
- f. The system should give almost Zero False Alarm rate.

- g. The system should have a special fence mounted transponder to process the signal.
- h. Mounting arrangements of the grid should be flexible as per the site conditions.
- i. The system should have grid breakage and magnetic switch sensing.
- j. There shall be a magnetic sensor to indicate the removal of grid.
- k. The maximum gap between the magnet and magnetic switch should be about 3 CMs.
- l. The maximum distance between field controller unit and the grid should be mentioned.
- m. Optionally the alarm output of the system should be provided on RS-485.

## **6.2. Field Controller Unit:-**

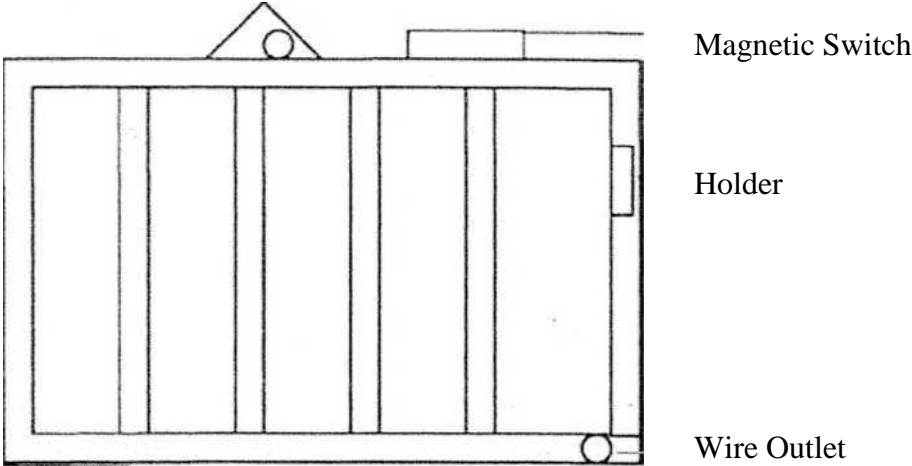
- 6.2.1. Power supply : Input to FCU 230VAC, 50 Hz., Input to the controller should be from SMPS
- 6.2.2. No. of inputs required : Min. 4
- 6.2.3. Number of potential free contacts: 8 min with additional common NO/NC
- 6.2.4. Contact rating : 1Amp.
- 6.2.5. Communication with PC : Through RS 232/RS 485 Port
- 6.2.6. Indications : Optical LED indications for all outputs
- 6.2.7. Audible Alarm Output : Common Alarm in case of any fault, should remain ON for 2 min.
- 6.2.8. Alarm acknowledge & reset switches: with different colour LED
- 6.2.9. Detector status check switch : Test push button for healthiness
- 6.2.10.** Controller Housing : Weather proof enclosure

## **6.3. Environment:**

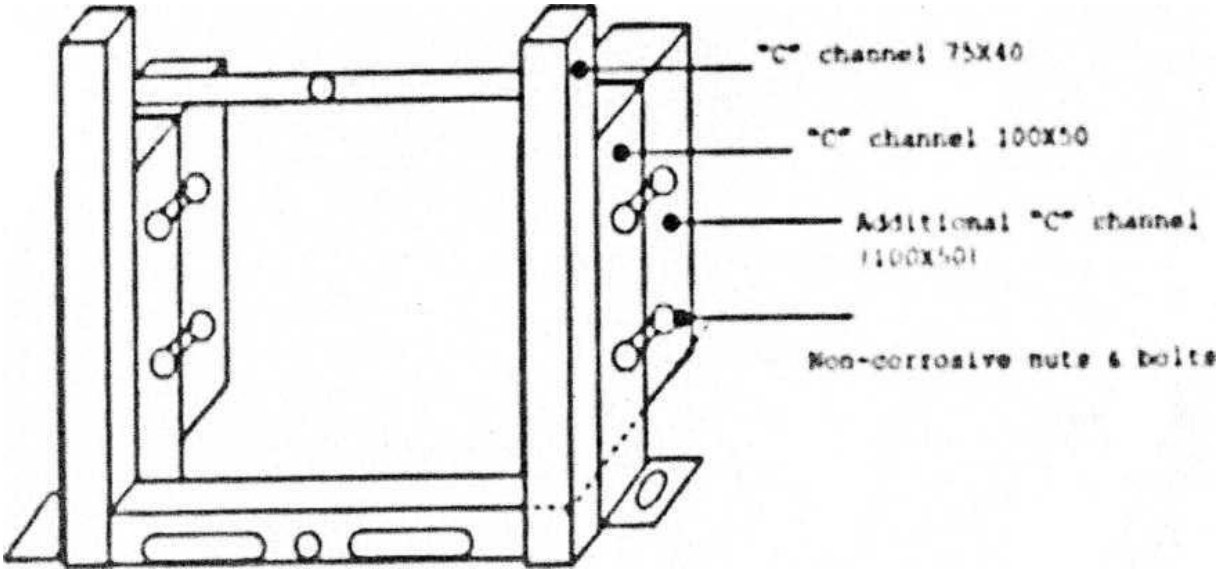
- 6.3.1. Temperature range of the system shall be 0 degree to 50 degree C.
- 6.3.2. The system should operate even when fully submerged in water.

Product having an independent test laboratory certificate of performance will be preferred.

INTRUSION GRID (WITH COVER)



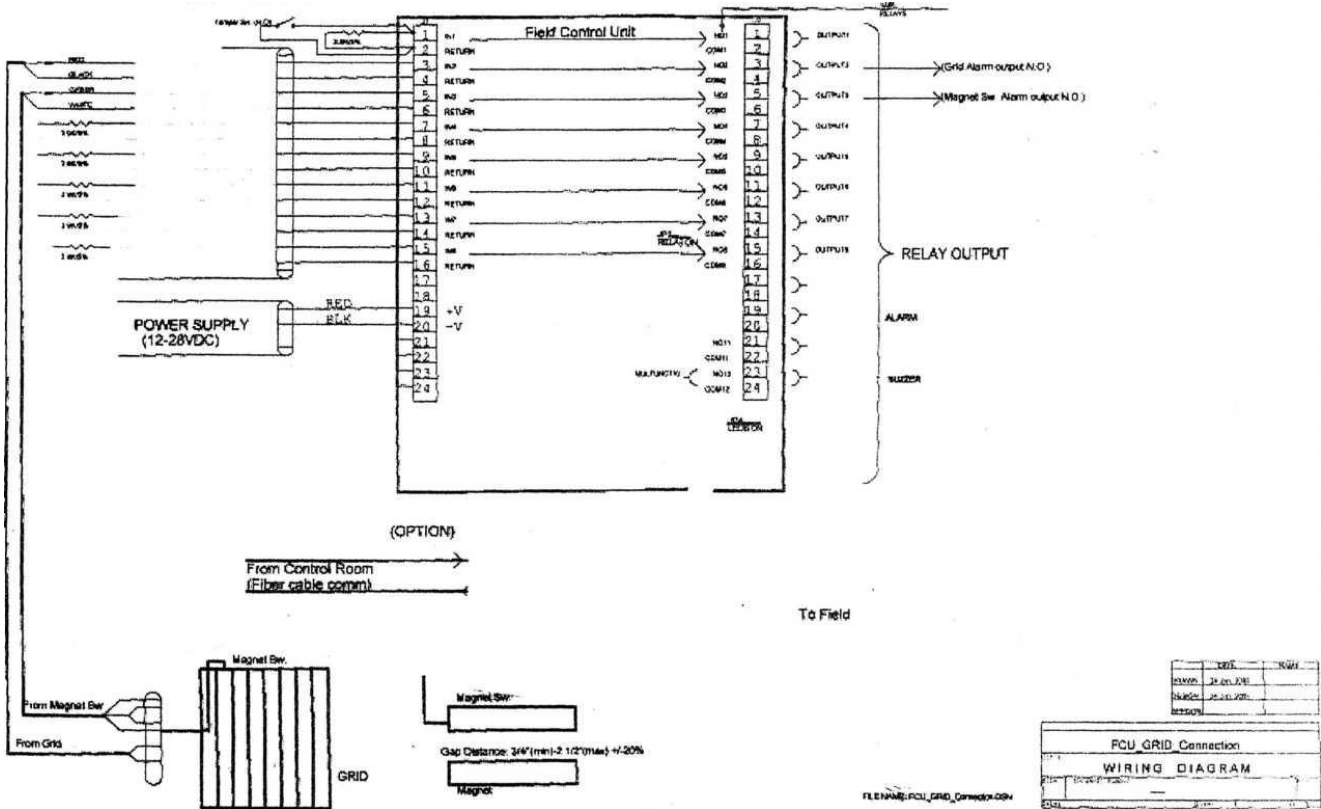
COVER FOR INTRUSION GRID



Note Additional 'C' channel height shall be slightly less than in par with grid frame as shown in the fig.

**Terminal Block details**

**INPUT FROM ZONES**



**6.4. General Specification:**

- 6.4.1. All the supply and work shall be in accordance with the relevant I.S. specifications and recognized standards & modern approved practice and shall meet the requirement of the latest issue of applicable codes, factory rules and regulations, supply codes and all standard accepted practice in the locality where the installation is to be made.
- 6.4.2. All materials and accessories provided by contractor under terms of this contract shall conform to the relevant Indian Standard Specifications. Samples of all equipment, materials and accessories to be supplied by the contractor shall be submitted for the approval of the Engineer-in-Charge before they are used.
- 6.4.3. Contractor shall provide all necessary labor, tools and other requisite work like drilling, cutting, welding at his own cost.
- 6.4.4. Good workmanship is the essence of this contract and shall be complied with at all times. The Contractor shall have the works supervised by qualified and experienced engineers. All the defects pointed out by the BARC Engineer shall be rectified immediately by the contractor, free of cost.

- 6.4.5. No alteration, which may affect the structures and architecture of building, shall be done without the prior approval of the Engineer-in-Charge. All work shall be carried out in such a manner that it should not cause any inconvenience to other works, which are under progress. The contractor shall co-operate with other agencies in the area for the smooth execution of all works.
- 6.4.6. Accidental damage to any property shall be reported immediately to site engineer and latter confirmed in writing.
- 6.4.7. The Contractor shall confirm and report the minimum segregation distances from other services as specified by the equipment and cable manufacturer. Minimum bend radii regulations should also be observed as specified by cable manufacturers.
- 6.4.8. The Contractors attention is drawn to the relevant Indian Standards and Code of Practice with regard to segregation, cable-fixing spacing and defined cable routes. The Contractor shall take care to ensure cables are not routed adjacent to other services where Electro-Magnetic emissions may be being generated. This will apply to any internal cabling and cables installed within ducts.
- 6.4.9. The successful Contractor will be expected to supply and install all remote electrical power supplies where necessary. The Contractor shall include within his tender sum for all necessary civil, electrical and co-ordination works required completing the installation of the power supplies. The works consist of providing electricity supplies to the Intrusion Detection Grid at specific locations.
- 6.4.10. The Contractor shall supply all the accessories including jointing and terminating material, compound, tapes, supporting materials, cable sockets, bricks, river sand etc. to make the installation complete in all respects. The prices of all these shall be included in installation work including digging and back filling the trenches as required and removing of excess earth.
- 6.4.11. All installed items of equipment need to be identified and shall be clearly labeled stating their particular function and supply circuit information. Labels shall consist of laminated white with black engraving or printing. 230 Volt danger labels shall also be fitted to items of equipment where applicable. Labeling shall extend to control room equipment such as monitors, DVR's etc.

## **6.5. Specification for cabling**

- 6.5.1. PVC cable mentioned in the schedule shall be heavy duty, armoured, galvanized steel round / stripped armoured and PVC inner & outer sheathed. PVC cable must comply with latest amended IS specifications.
- 6.5.2. All cabling materials such as, cable compound, cable lugs, tapes, sand, bricks, jointing material, joint boxes etc. shall be of approved quality and acceptable to Engineer-in-Charge.

- 6.5.3. Installation shall be carried out in professionally by skilled, experienced and competent workers in accordance with standard practice.
- 6.5.4. Cable shall be laid in one-piece length between two terminating points.
- 6.5.5. Method of installation, routing of cable, etc. shall in every case be as per schedule and subject to the approval of Engineer-in-Charge.
- 6.5.6. Care shall be exercised by providing suitable props for supporting other service lines in ground at the time of excavation. Where cutting of a lawn becomes necessary it should be done with the approval of the Engineer –In-Charge.
- 6.5.7. Excavation of the trenches shall be executed and the vertical side of the trenches is kept as straight as possible. The exact location of each trench shall be settled by the Engineer-in-Charge on the site, when contractor is in position to commence the work.
- 6.5.8. The bottom of the trench should be carefully leveled and free from stones however, if ingredients and changes of depth are unavoidable, it should be gradual.
- 6.5.9. When more than one multi-core cable are laid in same trench, horizontal inter-axial spacing of cables should be taken care of.
- 6.5.10. After the cables are laid, the trench shall be filled in layer with the earth in each layer being well rammed by spraying water and sufficient allowance made for settlement. Extra earth should be removed from the place of trench to the place as decided by Engineer-in-Charge.
- 6.5.11. Cable termination shall be done with suitable size heavy duty brass glands. Separate supports shall be provided for the glands wherever required.
- 6.5.12. The minimum self bending radius of multi-core cable should be 12 times the overall diameter of cable.
- 6.5.13. All power, control and data cables should be supported on their horizontal and vertical run on wall with G.I. saddles. 5 mm thick, galvanized M.S. spacers with brass machine screws. The spacers shall be firmly fixed by means of PVC rawal plugs / fill plugs and Nettle-fold screws. The interval between supports shall not exceed 40 cm for horizontal run and 50 cm for vertical run. If required heavy duty anchor fasteners have to be used.
- 6.5.14. Any unarmoured cable should be protected by either PVC or MS conduit.

## **6.6. Earthing & Bonding**

- 6.6.1. The complete electrical installation and all equipment connected thereto shall be earthed in conformity with the IS standards and the Electricity Supply Authority.



- 6.6.2. Dedicated earth pits should be created for electrical and lightning protection. They should not be connected electrically.
- 6.6.3. The metal framework of all equipment on which apparatus is mounted shall be provided with earthing.
- 6.6.4. The earth pit cover will be fixed with anti-tamper screws. The overall earth loop impedance for each earth rod installation (prior to bonding to the main earth bar) shall be less than 10 ohms

## **6.7. Testing, Commissioning and handover of system**

- 6.7.1. Prior to handover, the Contractor shall set to work, commission and test the installations to the full –satisfaction of the BARC site engineer. The Contractor shall be responsible for the provision of all the test equipment required to prove the system operation to the BARC site engineer satisfaction.
- 6.7.2. Commissioning shall include testing of all aspects of the system as follows:-
  - 6.7.2.1. The system shall be thoroughly inspected to ensure compliance with the relevant Standards. Testing shall be carried out for each Grid location.
  - 6.7.2.2. Test measurements shall be carried out using the monitors provided under the Contract and the results shall be recorded.
- 6.7.3. The completed results should be forwarded to BARC site engineer.
- 6.7.4. The Contractor shall satisfy himself that the system is fully commissioned and operating correctly prior to offering the system to the BARC site engineer for witness testing.
- 6.7.5. Contractors shall demonstrate to the entire satisfaction of The Purchaser that complete compatibility exists between all elements of the system.
- 6.7.6. The Contractor shall submit a copy of the completed test record sheets for the Intrusion Detection Grid installation, and all peripheral devices to the BARC site engineer prior to the testing and commissioning taking place.

**Bill of Material  
For Intrusion Detection Grid System**

SI. No	Location	Item Description	Qty.
<b>1</b>	<b>Intrusion Detection Grids</b>		
a)	E-fence Zone No. 33	Size 1.5m X1.5m	One
b)	E-fence Zone No. 33	Size 2m X1m	One
c)	E-fence Zone No. 33	Size 0.5m X1.2 m	One
d)	E-fence Zone No. 34	Size 2 m X 1m	One
e)	E-fence Zone No. 34	Size 2 m X 1.5m	One
f)	E-fence Zone No. 34	Size 1 m X 1m	One
g)	E-fence Zone No. 35	Size 1 m X 0.75m	One
h)	E-fence Zone No. 37	Size 1 m X 0.7m	One
i)	E-fence Zone No. 38	Size 1 m X 0.5m	One
j)	E-fence Zone No.40	Size 1.5m X 0.75m	One
k)	E-fence Zone No. 42	Size 1.5 m X 1m	One
l)	E-fence Zone No. 43	Size 1m X 0.5m	One
m)	E-fence Zone No. 43	Size 1 m X 0.5m	One
2	Supply of Control Units		8 Nos.
3	Supply of 1.1 KV Grade, 1.5 sq. mm, multi- strand, armoured Two pair twisted cable		2000 meters.
5	Supply of Junction Box of suitable size to accommodate control electronics & battery backed up power supply.		8 Nos.

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