**SECTION D 7 – Security System**

**TECHNICAL SPECIFICATIONS**

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**SECTION D 7 – Security System**

**TECHNICAL SPECIFICATIONS**

# C.1 ACS & IAS System

# C.1.1 Purpose

1. To establish the technical, functional, jurisdictional, or regulatory and quality requirements for security and access control systems; which are required to be purchased from vendors. Approved technical specifications define the supply and installations of all security and access control systems and identify approved manufacturers and models.

2. The security system shall consist of implementing an integrated networked Access Control and Video Assessment System (ACAMVAS) that shall control personnel access, provide real time intrusion detection alarm monitoring and provide alarm driven video surveillance for the designated buildings and operations in accordance with the requirements and specifications prescribed in these documents and the approved drawings. The security system shall include the following, where applicable:

* Seamless integration of a digital video management system that will allow system operators to control and maintain the security of the facilities from multiple designated client workstations.
* Installation and/or replacement of door and locking hardware to enable proximity card/tag reader access at designated doors. The doors designated with proximity card/tag reader access shall also allow manual unlocking using the master key system.
* Supply and installation of intrusion detection alarms at designated facilities.
* Supply and installation of interior and exterior motion detection devices to provide alarm coverage at designated facilities.
* Seamless integration of video surveillance systems that provides alarm driven assessment for the intrusion detection equipment at designated facilities.
* Supply and install proximity reader access for vehicle barriers at designated facilities.
* Supply and installation of all control, signal, lighting and power distribution cabling as required for the security equipment including any trenching work required for the completion of the installation.
* Commissioning and testing of the systems and equipment installed as required to meet manufacturers’ specifications and documented installation procedures, and to the satisfaction of the Owner/PMC.
* Training of the Employer’s/User’s personnel to: fully operate, and perform routine maintenance on the systems and equipment installed.
* Provide all associated documentation for the security system upgrades.

# C.1.2 Reference Standards

1. Underwriters Laboratories(UL)
2. American National Standards Institute (ANSI)Standards
3. Federal Communications Commission (FCC)
4. European Conformity (CE)

# C.2 Boom Barriers:

# C.2.1 General

* Normal position of Security Barriers shall be: Boom Barrier- CLOSE and Bollard – RAISED. After physical check of the vehicle, the entry shall be permitted either thru (1) Vehicle Identification Sticker (RFID enabled) or (2) Physical Remote Control/Manual Push Button. Synchronised operations for Boom Barrier to OPEN and Bollards to LOWER shall be triggered
* Boom Barrier: A boom barrier, also known as a boom gate, is a bar, or pole pivoted to allow the boom to block vehicular access through a controlled point. Typically, the tip of a boom gate rises in a vertical arc to a near vertical position.
* Boom barrier should be installed in at all vehicle Entry and Exit points of parking and can be activated remotely.

# C.2.2 Technical Specifications:

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Item** | **Description** |
| 1 | Application | Outdoor |
| 2 | IP Rating & Wind Speed Rating | IP 54 & 10 beaufort scale |
| 3 | Housing | **Barrier Housing Unit:** Powder Coated |
| **Boom:** Powder Coated White RAL 9010 with Red reflective strips. |
| 4 | Housing Dimension | Modular |
| 5 | Housing Material Of Construction | All Aluminum Housing with Base frame in SS-304 for high protection against corrosion. |
| 6 | Protection | All Housing and internal parts will be rust & corrosion free metals or alloys of high strength with suitable Epoxy coating as applicable. |
| 7 | Housing Dimension **(W X D X H)** | 315mm X 360mm X 915mm approximately |
| 8 | Boom Specifications | The Booms shall be extruded aluminum with octagonal profile (straight/articulated) 100mm. X 55mm. X 1.6 mm. shall be the structure of the profile/ Alternatively the boom may also be offered as extruded aluminum with round profile of dia 74 mm X 1.4 mm |
| **S. No.** | **Item** | **Description** |
| 9 | Intelligence | The barrier shall use a Block able **DC High Torque** Drive in combination with CAN bus communication standard interfaced Controller. It shall offer LCD Display & Graphic User Interface for easy control setting. Possibility for integration via standard user interfaces. Control Panel Should be at the TOP of the housing |
| 10 | Digital Inputs | Minimum 8 |
| 11 | Digital Outputs | Minimum 4 |
| 12 | Relay Outputs | At least 6 |
| 13 | Compliance & Safety | ·         Compliance to CE. |
| **Adherence to Safety Requirements of the** |
| ·         EMC Directive 2004/108/EC, |
| ·         Low Voltage Directive 2006/95/EC and |
| ·         The basic requirements of the Machinery Directive 2006/42/EC |
| 14 | Power Supply | 230+/- 10% VAC, 50 Hz. |
| 15 | Maximum Power Consumption | 25 – 35 watts |
| 16 | Opening & Closing Time | 1.3 seconds for Boom Length up to 3.5 Meters |
| 4 seconds for Boom Length Between 3.5 to 6 Meters |
|  |
| 17 | Operating Temperature | -          30 Degree Celsius to + 50 Degree Celsius |
| 18 | Safety | S/W for Detection of Presence of Vehicle in Loop or in the path of Infrared Safety Sensors available. Loops or Sensors to be used to prevent barriers from closing on the vehicle. |
| 19 | Duty Cycle | 100%. Barriers should work 24 Hrs\*7 \*365 days without any resting time. |
| 20 | Integration | Shall function in integration with Smart cards, proximity reader based access control systems etc |
| 21 | Performance Requirement | MCBF- 10 Mil Cycles |
| MTBF- 50,000 Hours |
| MTTR- 30 Minutes |
| 22 | Certificates Required | TUV certificate For Opening & Closing time |
| ISO Certificate of the Company |
| Certification for Ingress Protection |
| EMC Test report |

# C.3 Under Vehicle Scanning System (UVSS)

**QUALITATIVE REQUIREMENTS OF UNDER VEHICLE SCANNING SYSTEM (UVSS) WITH DRIVER IMAGE & AUTOMATED LICENSE PLATE RECOGNITION SYSTEM (ALPRS)**

****

# C.3.1 Specifications of UVSS

* 1. The UVSS should be able to capture a very high resolution and complete composite under body image of any vehicle passing over it using a single high resolution area – Scan GigE IP camera without requiring the vehicle to stop.
  2. The UVSS should be able to handle vehicles moving at different speeds ranging from 0-40 km/hr while the composite image captured by the system should be automatically and dynamically adjusted according to the speed of the vehicle using multiple loop- based sensor / IR sensor
     1. The composite imaging camera should be a high quality, colour Area Scan, GigE type, with minimum XGA resolution of 1024 X 768 or above. The minimum specification of this area- scan camera shall be:
        1. Camera type: Gigabit Ethernet Progressive Area-Scan Colour Camera
        2. Sensor: 1/3” CCD
        3. Horizontal / Vertical Resolution 1024 X 768 Pixels or better
        4. Frame Rate: Minimum 50 fps at full resolution
        5. Camera Certification CE, FCC with 30 fps
        6. Suitable Camera Casing
     2. The UVSS should be capable of producing a clear and undistorted image of the vehicle’s underside, even when a vehicle has completely stopped over the UVSS unit, i.e. it must be able to create a seamless and perfect composite image of the underside irrespective of the vehicle stopping or moving in a non-uniform manner over the scanner.
     3. The UVSS must have a feature to magnify the composite images (current and past), in order to facilitate a closer view of any part of the composite image.
     4. The underside illumination must be adequate and obtained through any state-of-art, long-life LED lighting modules. It should not use Halogen or CFL type lighting elements for illumination of the underside.
        + 1. The UVSS should be able to dynamically and automatically adjust the brightness and contrast of the composite image, so as to ensure good quality images, irrespective of the different external lighting conditions.
          2. The UVSS should also provide a feature to capture the image of the driver captured through a suitable driver view camera.

The UVSS should give a real-time output of all the data simultaneously, i.e. the composite image, driver photos, vehicle front image and license Plate display (If Applicable) & all should be display on the monitor almost instantaneously.

* 1. The UVSS must have a built –in software diagnostics capability, to facilitate any distant software support to be offered offline.
  2. The UVSS applications and operating software should be based on windows/ Linux platform it must have a user friendly GUI with provision for multiple users logging for events and search facility.

The UVSS system must have a facility for backup of all transactions to any usual backup / storage media and also should be able to printout reports.

* + 1. The UVSS underground camera should be enclosed in a suitable all –weather –proof housing of IP 67/66 equivalent or higher standard.
  1. The Operating System should be Windows / Linux
     + 1. The overall installed unit should be properly designed, and its structure should be able to withstand a total vehicle load of up to 40 tons at any given point over the structure, more particularly at the center of the unit, so as not suffer any accidental physical damage to the unit and components under the pit cover. A suitable pit Ventilation system should be provided to cool the UVSS during high temperatures. The installed unit should have automatic wiper system.
     1. The front end of the software should be designed on Microsoft.NET / Linus technology.

1. The back end database should be on latest version of SQL server.
   * 1. The UVSS should have open protocol for integration with other security systems and also networking for any remote monitoring requirements.
        1. The end of the day report should export the driver and the number plates image directly to a Microsoft excel sheet for further use or reference.
   1. The UVSS should also provide a feature to capture the image of the driver for all RHs driven vehicle, captured through a suitable driver view camera.
   2. The UVSS must have a feature to magnify the composite images (current and past), so as to facilitate a closer and zoom-up view of it.
2. **Minimum Specification of Driver Image Camera**
   1. Sensor type shall be CCD/ CMOS
   2. Pixel rate: 2MP
   3. Video format shall be NTSC / PAL
   4. Resolution shall be 520 TV lines or better
   5. Power supply: 12 V DC
   6. Mechanical Structure: Structural Steel / Chequered with Rust Free Stainless Steel top
   7. Camera and light enclosure shall be Minimum IP 66 rated
3. **The Processing Unit should have**
   1. 8 GB RAM or better
   2. 2TB HDD or better

Latest Inter Core i7 processor or better

Minimum 22” Display Monitor, Keyboard, Mouse

Software for full functioning of the system

* 1. Sensor unit shall have Inductive loop sensor / IR Sensors
  2. Suitable Lighting Unit should be LED 220V AC
  3. Operating temperature: -10oC to +55oC
  4. IP 66 or better

# C.3.2 Specification for Automated License Plate Recognition System (ALPRS)

The system should automatically detect a Four Wheeler approaching the installed location my means of inductive loops.

2. On detection of vehicle approach, the system would activate the license plate video capture cameras.

The system shall automatically detect the license plate in the captured video feed in real-time.

* + - 1. The system shall perform OCR (Optical Character Recognition) of the license plate charters (English alpha –numeric characters in standard fonts)
         1. The system shall store JPEG image of vehicle and license plate and enter the license plate number into SQL Server or any other user specified database along with date timestamp and site location details
      2. System should be able to detect and recognize the English alpha numeric license plate in all standard fonts and formats of all four wheelers including cars, HCV, LCV.
  1. The system processing should be real time i.e. Instant the recognition of license number plates.
  2. The system should be able to process and read number plates of vehicles with speed even up to 40 km/hr.
  3. The system should store video clip of the vehicle approaching and leaving the location.
  4. The system should have option to input certain license plates according to category like “Wanted”, “Suspicious”, “Stolen”,” Expired” etc. by authorized personnel. On successful recognition of the number plate, system should be able generate automatic alarm to alert the control room for vehicles which have been marked as “Wanted”, “Suspicious”, “Stolen”,” Expired”. System should have provision/ expansion option to add more categories for future need.
  5. System shall have option to be integrated with other access control hardware/ software on site.
  6. The system shall enable easy and quick retrieval of snapshots, video and other data for post incident analysis and investigation.
  7. The system should be able to generate suitable MIS reports that will provide meaningful data to concerned authorities and facilitate optimum utilization of resources. These reports shall include:

Report of vehicle flow at each of the installed locations for Last Day, Last Week, Last Month.

Report of vehicles in the detected categories at each of the installed locations for Last Day, Last Week, Last Month.

Report of vehicle status change in different Vehicle Categories.

The system shall have option to save custom reports for subsequent use.

* + - 1. The system shall have option to export report being viewed to common format for use outside of the ALPRS or exporting into other systems.
    1. The system should provide advanced and smart searching facility of license plates from the data base. There should be an option of searching number plates almost matching with the specific number entered (up to 1 and 2-character distance).

1. The system should have option to add new category by authorized personnel.

* + - * 1. The system should have option to update vehicle status in specific category by authorized personnel e.g: On retrieval of stolen vehicle, system entry should be changed from “Stolen” to “Retrieved”.
    1. System should provide an option for advanced users to tune the system parameters.
       1. The system should have option to configure site locations and data management settings.
    2. The Central Management Module shall run on the ALPRS Central Server in control room.
       1. The system should work in both day and night conditions with good accuracy.
       2. Power Supply – The complete system shall operate on 230V AC+10% suitable UPS to meet the power requirement with backup of up to 1 hour should be provided.
       3. Miscellaneous – The firm should provide the following documents/literature (in English language along with the equipment’s)
          1. Technical manual with full description of the item
          2. Users handbook
          3. Literature on care and preservation technique/methods
          4. Details regarding periodical checks to be carried out by the user for serviceability of the equipment.
       4. The vendor should impart detailed training free of cost to sufficient personnel at the place(s) specified by the Department.
       5. The supplier should have well-equipped office / workshop for maintenance with qualified engineers in repairs/ service. If the equipment needs repairs it should be carried out within 10 days from the date of receipt of intimation.
       6. The hardware specification for the ALPRS should be a minimum of below:

|  |  |  |
| --- | --- | --- |
| Camera | Interface | IP |
| Format | HDTV 1080 or better |
| Resolution | 2 Megapixel or better |
| Shutter Speed | 1/50 to 1/10000 or better |
| Operating Temperature (oC) | -10 OC to +55OC |
| Frame Rate | 25/30 FPS |
| Lens | Vertical | 5-50mm |
| Electronic IRIS Control | DC Type |
| Mount | C/CS |
| Image Format | ¼”/ 1/3” / ½” |
| IR Illuminator | Wavelength | 850nm (Semi Convert) |
| IR Illuminator Range | 10 – 15m |
| Environment Protection | IP 65/ IP 66 |
| Filters | IR Filter |  |
| Camera Housing | Environment protection Housing | IP 65/ IP 66 |
|
| Processing Unit | Processor | Latest Intel Core i7 processor |
| RAM | 8 GB |
| Hard Disk Capacity | 2 TB |
| Display Monitor | 19” Flat |
| Speed Limit |  | 40 km / Hr |
| Installation and Mounting |  | Pole Mounted |
| Integration | Capable of integration with the overall architecture of surveillance and access control system | |

* + 1. Supplier should have direct authorization from the OEM to participate in the tender. Necessary authorization documents should be made available in this regard. The name of the OEM along with the contact telephone numbers, addresses, fax numbers & E-mail address may be available for confirmations with the OEM about the status of the supplier.

1. Periodical service minimum once in three months during warranty period.
   1. Minimum 3 years warranty for the equipment and for other all accessories.
   2. The Firm should provide AMC for a period of 5 years after the warranty period should be enclosed with the tender proposal.

# C.4 Rising Bollards

# C.4.1 Electro - Hydraulic Bollard System - SCOPE

This defines the specifications for electro-hydraulic Bollard, consisting of four vertical lift retractable Bollards operating (independently or in sets of two, three or four), a Hydraulic Power Unit, the Controls and Logic Circuits and Related Features.

# C.4.2 SYSTEM CONFIGURATION - BOLLARD (S)

1. Bollard Construction: Bollard shall be a below ground assembly containing a heavy steel cylindrical weldment capable of being raised to an above ground guard position. The guard position shall present a formidable obstacle to an approaching vehicle.
2. Bollard Arrangement: The system shall have a total of 8 Bollards arranged in accordance with either 2.1.3 or 2.1.4. Select either 2.1.3 or 2.1.4 to define the operating pattern of the Bollards within the system.
3. Single Bollard Individual Operated: Each individual Bollard shall be operated independently from any other Bollard within the system. Each Bollard shall have its own controls.
4. Multi Bollards Operating in Sets: Bollard system shall have 2 sets. Each set shall consist of 4 Bollards. Each set of Bollards shall have its own controls and operate independently from each other set within the system.
5. Bollard Height: Height of the Bollard shall be 800mm as measured from the top of the foundation frame to the top of the Bollard assembly. (Bollards are available in blocking height from 600 mm to 850 mm)
6. Bollard Diameter: Bollard shall be 275 mm in diameter.
7. Normal Operation: Bollard(s) shall provide excellent security and positive control of normal traffic in both directions by providing an almost insurmountable obstacle to non-armoured or non-tracked vehicles. The Bollard system shall be designed to stop a vehicle attacking from either direction and continue to operate when the vehicle is within the defined weight and velocity characteristics, minor repairs accepted.
8. Bollards are available with impact load 180 kN.
9. Operation time: Each Bollard (or set) shall be capable of being raised or lowered in 5 to 8 seconds. Bollard direction shall be instantly reversible at any point in its cycle from the control stations.
10. Frequency of Operation: Bollard shall be capable of performing to 200 full cycles per hour.
11. Power Off Operation. The accumulator shall be sized to allow minimum three full cycle operations of a single Bollard in the event of a power breakdown.
12. Manual Operation. A hand pump shall be furnished to allow the Bollards to be raised manually in the event of a prolonged power interruption.
13. Axle load bearing capability: The system shall be able to bear axle load of 20 tons of a moving vehicle.
14. Safety Interlock Detector; A Bollard v ehicle detector safety loop (induction loop) shall be supplied to prevent the Bollard from being accidentally raised under an authorized vehicle. The detector shall utilize digital logic have fully automatic tuning for stable and accurate long-term reliability. The output of the detector shall delay any Bollard rise signal (except for emergency command) when a vehicle is over the loop.
15. Environmental Data (Please supply the following): Bollard shall operate satisfactorily under the following environmental conditions:

a) Road blocker shall be operable in –200 C and +600 C.

(b) Rainfall: Yearly average 1000cms. Maximum expected hourly rate 100 cms. /hour

Roadway will be mechanically/manually cleared.

1. Sump Pump: A self-priming sump pump shall be supplied to drain water collected in the water sump arrangement near the Bollards foundations. The pump shall have the capacity to remove 4 inches per minute of rainfall a distance of 20 feet to customer supplied discharge drain. Pump operating voltage shall be 230/1/50).
2. Finish: The foundation and underside of the Bollard shall have asbestos free coating for corrosion protection. The roadway plates shall have a non-skid surface. Bollard shall be white and have yellow/black diagonal stripes (or shall be yellow with black vertical stripes or as per customer specification). There shall be circular illuminating unit (LED based) on the top of the Bollards.

# C.4.3 Hydraulic Power Unit (HPU)

1. Hydraulic Circuit: Circuit Unit shall consist of an electrically driven hydraulic pump, which shall pressurize a high-pressure manifold connected to a hydraulic accumulator. Electrically actuated valves shall be installed on the manifold to allow oil to be driven to the up and/or down side of a double acting hydraulic cylinder to raise and lower the Bollard. The hydraulic circuit shall include all necessary control logic, interconnect lines and valves. Electric motor driving the hydraulic pump shall be fed from 440/3/50. Motor shall be sufficiently sized for the continuous bollards operations.
2. Weather Resistant HPU Enclosure: A lockable weather resistant enclosure shall be provided for the HPU. The design shall provide for easy access to the HPU for maintenance and emergency operation of the hydraulic system. Enclosure shall be provided with a corrosion resistant coating.

# C.4.4 Control And Logic Circuits

1. Control Circuit: The controls will be PLC based. A control circuit shall be provided to interface between all Bollard control stations. This circuit shall contain all relays, timers and other devices necessary for the Bollard operation. The control circuit shall operate on 230 volts, single phase, 50 Hz. An internally mounted transformer shall reduce this to 24 VAC (24 VDC) for all external control stations.
2. Construction. The control circuit shall be mounted in a general-purpose enclosure. All device interconnect lines shall be run to terminal strips. The following control station(s) can be specified
3. Control Panel. A control panel shall be supplied to control the Bollard operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Push Buttons for “UP”, “DOWN”, “STOP” and “MIDDLE STOP” positions for each Bollard (or set) shall be provided. Bollard position indicator lights shall be included for each Bollard (or set). The control panel shall operate on 24 VAC (optionally 24 VDC). (Select Central Control Panel 2.3.4 instead of 2.3.3 if Local Panel 2.3.5 is desired.)
4. Central Control Panel: A central control panel shall be supplied to control Bollard function. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Push Buttons for “UP”, “DOWN”, “STOP” and “MIDDLE STOP” positions for each Bollard (or set) shall be provided. Bollard position indicator lights shall be included for each Bollard (or set). The central control panel shall have a key lockable switch to arm or disarm the local control panel(s). An indicator light shall show if the local control panel is armed. The central control panel shall operate on 24 VAC (optionally 24 VDC).
5. Local Control Panel. A local control panel shall also be supplied to control the Bollard operation. This panel shall have a "panel on" light that is lit when enabled by a switch on the central control panel. Buttons to raise or lower each Bollard (or set) shall be provided. “UP”, “DOWN”, “STOP” and “MIDDLE STOP” positions for each Bollard (or set) shall be provided on the panel. The remote control panel shall operate on 24 VAC (optionally 24 VDC).
6. Integration with other systems: The system shall have the capability of integration with Access Control system, CCTV, loop detector, crash pad attached to boom-barrier and other crash-rated barriers such as Road blocker, Tyre killers, etc.

# C.5 Road Blocker

# C.5.1. Crash-Rated Electro-Hydraulic Road Blocker -Scope

This defines the specifications for Electro Hydraulic Road- Blocker System, consisting of (one, two, three or four) Road blockers operating (independently or in sets of two, three or four), a Hydraulic Power System, the Controls and Logic Circuits, and Related Features.

# C.5.2 System Configuration - Road Blocker (S)

1. Road blocker Construction: Road blocker shall be a below ground assembly containing a heavy steel weldment capable of being raised to an above ground guard position. The guard position shall present a formidable obstacle to approaching vehicles. The blocking segment shall be equipped with two flashing lights, yellow, with 200mm diameter, to avoid any accidents during the operation.
2. Road blocker height: Height of the Road blocker in guard position shall be 1300 mm (site and threat specific) as measured from the top of the foundation frame to the top of the barrier. In raised position, the blocking segment is hydraulically locked with anti-leak device and hydraulically swivelling mechanical support and in final lower position by rigid support.
3. Road blocker width: Road blocker width shall be 6.0m (Road blocker width can be specified keeping in view the requirement and design of the site.
4. Normal Operation: Road blocker (s) shall provide excellent security and positive control of normal traffic in both directions by providing an almost insurmountable obstacle to non-armoured or non-tracked vehicles. The Road blocker system shall be designed to stop a vehicle attacking from priority direction and continue to operate when the vehicle is within the weight and velocity characteristics as defined in paragraph below, minor repairs accepted.
5. Road blocker shall be fully operational after successfully stopping of vehicle(s), in the priority direction, weighing 50 ton and travelling at speed of 80 kmph. Impact load of 5000 kN)
6. Operation time: Each Road blocker (or set) shall be capable of being raised or lowered in 2 to 3 seconds. Road blocker direction shall be instantly reversible at any point in its cycle from control stations
7. Frequency of Operation: 200 per hours minimum
8. Axle load bearing capability: System shall be able to bear axle load of 20 tons of a moving vehicle.
9. Stop/Go Traffic Lights: Red/Green 20 cm. traffic lights shall be supplied to alert vehicle drivers of the Road blocker position. The green light shall indicate that the Road blocker is fully down. All other positions shall be indicated by red light.
10. Safety Interlock Detector: A Road blocker vehicle detector safety loop (induction loop) shall be supplied to prevent the Road blocker from being accidentally raised under an authorized vehicle. The detector shall utilize digital logic have fully automatic tuning for stable and accurate long-term reliability.

The output of the detector shall delay any Road blocker rise signal (except for emergency command) when a vehicle is over the loop.

1. Environmental Data (Please supply the following): Road blocker shall operate satisfactorily under the following environmental conditions:

(a) Road blocker shall be operable in –200 C and +600 C.

(b) Rainfall -Yearly average 1000cms. Maximum expected hourly rate 100 cms. /hour

Roadway will be mechanically/manually cleared.

1. Sump Pump: A self-priming sump pump shall be supplied to drain water collected in the Road blocker foundation. The pump shall have the capacity to remove 20 cms per minute of rainfall at a distance of 20 feet to customer specified discharge drain. Pump operating voltage shall be 230/1/50
2. Finish: Foundation and underside of the Road blocker shall be asbestos free coating for corrosion protection. Road blocker front, back and roadway plates shall have yellow/black or yellow/white diagonal reflective stripes. The roadway plates can also have special coating (anti-skid) to merge with road surface.

# C.5.3 Hydraulic Power Unit (HPU)

1. Hydraulic Circuit Unit: The unit shall consist of an electrically driven hydraulic pump, which shall pressurize a high-pressure manifold connected to a hydraulic accumulator. Electrically actuated valves shall be installed on the manifold to allow oil to be driven to the up and down side of a double acting hydraulic cylinder to raise and lower the Road blocker. The hydraulic circuit shall include all necessary control logic devices, interconnect lines and valves to override and lock out the normal speed control valve(s) for emergency fast operation of the Road blocker (s).
2. Main Power: The electric motor driving the hydraulic pump shall operate on power supply 440/3/50 (voltage, phase and frequency). Motor shall be sufficiently sized for continuous rating.
3. Power Off Operation: The accumulator shall be sized to allow three full cycle operations of a single Road blocker in the event of a power interruption.
4. Manual Operation: A hand pump shall be furnished to allow the Road blocker to be raised manually in the event of a prolonged power interruption. (Bidder shall specify number of strokes and time taken to raise the blocking segment to full height manually. Also, number of strokes and time taken to lower the blocking segment)
5. Weather Resistant HPU Enclosure: A lockable weather resistant enclosure shall be provided for the HPU. The design shall provide for easy access to the HPU for maintenance and emergency operation of the hydraulic system. Enclosure shall be provided with a corrosion resistant coating.

# C.5.4 Control And Logic Circuits

1. Control Circuit: A control circuit shall be provided to interface between all Road blocker control stations and hydraulic power unit. This circuit shall contain all relays, timers, programmable logic controller and other devices necessary for the Road blocker operation. The control circuit shall operate from a supply 230 volt, 50 Hz or 24 VDC. An internally mounted transformer shall reduce this to 24 VAC (24 VDC) for all external control stations.
2. Control Panel: A remote control panel shall be supplied to control the Road block operation. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Push buttons to ‘Up-Stop-Down’ with status lamps indicator for each Road blocker (or sets of Road blocker) shall be provided. The remote control panel shall operate on 24 VAC (optionally 24 VDC). (Select Central Control Panel 2.3.3 instead of 2.3.2 if Local Control Panel 2.3.4 is desired.)
3. Central Control Panel: A central control panel shall be supplied to control Road blocker function. This panel shall have a key lockable main switch with "main power on" and "panel on" lights. Buttons to raise and lower each Road blocker (or set) shall be provided. Road blocker "up" and "down" indicator lights shall be included for each Road blocker (or set). The central control panel shall operate on 24 VAC (optionally 24 VDC).
4. Local Control Panel: A local control panel shall also be supplied to control the Road blocker operation. This panel shall have a "panel on" light that is lit when enabled by a switch on the remote control panel. Buttons to raise or lower each Road blocker (or set) shall be provided. Road blocker "up" and "down" indicator lights shall be included for each Road blocker (or set). The local control panel shall operate on 24 VAC (optionally 24 VDC).
5. Integration with other systems: The system shall have the capability of integration with Access Control system, CCTV, loop detector, boom-barrier and other crash-rated barriers such as bollards, tyre killers, etc.

# C.6 Specialized Scanner: X-RAY Baggage

Large X Ray Baggage Scanner shall be installed at Entry Gates.

# C.6.1 Technical Specifications:

1. Tunnel Dimensions – 600 mm (W) x 400 mm (H) (min) or more and have an Operational Weight of not more than 450kg

2. Conveyor Height –690 mm approx.

3. Conveyor belt speed should be between 0.2 / 0.24 (m/s). Conveyor movement bi-directional.

4. Machine should operate on 230 VAC, 50 Hz power supply and should be able to withstand voltage fluctuations in the range of 170V to 260 V. Single Phase, 3 to 5 Amp. Machine should be of Steel Construction with Steel Panels mounted on Roller Castors.

5. Conveyor Capacity – 165 Kg. (364 lbs) or more.

6. Sensors> 1152 diodes, L-shaped detector (folded array type), In case of defective diode arrays, scanning should be disabled and error message should be displayed on the screen.

7. X-Ray Voltage – 160 KV operating

8. Duty Cycle – 100%, no warm-up procedure required.

9. Cooling – Hermetically Sealed oil bath

10. The X-ray beam divergence should be such that the complete image at maximum size of bag is displayed without corner cuts. Beam divergence should be diagonal.

11. The radiation level should not exceed accepted health standard (0.1m R/Hr at a distance of 5 cm from external housing). Relevant certificate from AERB.

12. The operating temperature should be – 0-degree C to 40-degree C

13. Storage temperature – 20-degree C to 60-degree C.

14. Humidity –10%- 90% non-condensing.

15. Resolution: The machine should be able to display single un-insulated tinned copper wire of 40 AWG equivalent to 44 SWG. All penetration and resolution condition should be met without pressing any functional key and should be on line.

16. Penetration should be 35 mm thickness of steel or more.

17. Continuous Electronic Digital Zoom facility should be available to magnify the chosen area of an image Sixteen times (64x). Image features shall be keyboard controllable and should not be controlled using any other External device like a mouse.

18. Video display –19” LCD Monitor High resolution, low radiation, flicker free, resolution at least 1280 x 1024, 24 bit colour real time processing.

19. The machine should have features of Advanced Multi Energy X-ray imaging facility where materials of different atomic number will be displayed in different colours to distinguish between organic and inorganic materials. With this method to distinguish high-density organic materials including explosives. Machine should have variable colour or materials stripping to facilitate the operator to monitor images of organic materials for closer scrutiny. All suspicious items (Explosives, High density, material narcotics) should be displayed in one mode and that should be on line.

20. The machine should have the feature of selective detection of organic substances with relative atomic number numbers Zeff 7, 8, or 9. By pressing a single key it must be possible to toggle between the atomic numbers 7, 8 or 9. The image becomes a black and white image and only the image parts representing materials with the selected atomic number will be displayed in red.

21. The machine should have feature of automatically detecting sections of high absorption. The materials which are difficult to penetrate should be improved without deteriorating the image information of other image sections.

22. The machine should have the feature of warning the operator by stopping of the belt incise of presence of high absorbing material in a baggage.

23. Radiation Safety

The machine must comply with requirements of health and safety regulations with regard to mechanical electrical and radiation hazards. Before installation of the machine, the supplier/manufacture should furnish relevant certificate from Atomic Energy Regulatory Board of India regarding radiation safety. The company manufacturing the equipment should have ISO certification for manufacturing and serving of X-ray Screening machines.

24. Film Safety Guaranteed safety for high-speed films up to ISO1600. The machines should be film safe. In other words, photographic films must not be damaged due to x-ray examination. Valid Film Safety Certificate should be provided.

25. Machine should be rodent protected Dust proof cover is to be provided for covering when system is not in use.

26. Facility for variable contrast must be incorporated to allow enhancement lighter and darker portion of the image.

27. The machine should be so designed that software enhancement can be easily implemented to take care of new technique in image processing and pattern recognition.

28. Through put should be 400 bags per hour or more.

29. Full diagnostic built in test facility. All models should have software-controlled diagnosis report facility and system should give printout if printer is connected.

30. All software features of machine should be online and password protected.

31. Machine should be capable for recalling 15-20 previous images.

32. It should have the capability of archiving 100,000 images.

33 Control desk with security housing and locking provision should be available. The operator personal identification number can be entered the keyboard.

34. Facility of image enhancement and software enhancement should be available.

35. All models should have online recording facility and images can be recorded in CD R/W and a USB drive.

36. Lead impregnated safety screens should be available at either ends of the tunnel. Idle rollers to be provided at either ends of the tunnel to facilitate placing of baggage at input and output.

37. System should work on one software only. All software features should be controlled from key board of machine only. Keyboard function should be user friendly. To enable/disable the software features system should not be rebooted.

38. If the machine fails to penetrate a particular item then an alarm video and audio both should be generated to notify the operator.

39. The threat image projection (TIP) system software to be incorporated in X-Ray BIS operation. This feature should be online and active in the X-Ray Machine.

40. Copy of all software including X-Ray Software with recovery CD must be provided.

41. Operational Training-Operating staff has to be provided free training.

42. One operating & service manual shall be provided with each machine.

43. Other features.

a) Super Enhancement/Crystal Clear

b) Negative/Inverse Video

c) Fast initial warm-up

d) Pseudo colour

e) Date & Time display.

f) High Density Alert/Threat Density Alert/Density Alert

g) HI-SPOT/Equivalent feature

44. Computer: Industrial Computer will be preferred

i) Industrial Processor Preferred /OEM desired

ii) OEM Motherboard.

iii) Memory: 2x512 MB

v) Hard Disk Drive: 160 GB

viii) Ports: 6 USB Ports

ix) Cabinet: Industrial Cabinet

x) DMI: DMI 2.0 compliance and support.

xi) CD-R/RW Drive: CD Writer

xii) Operating Systems should be LINUX/WINDOWS VISTA

Note:

a) The X-Ray Machine shall be supplied, Installed, Maintained by the Original Equipment Manufacturer

b) Bidders should technically demonstrate the offered model as per the specifications of the Tender

c) The OEM of X-Ray Machine should supply Country of Origin Certificate issued by Chamber of Commerce of the Country of manufacturing

# C.7 Door Frame Metal Scanners DFMD for Outdoor Use

Door Frame Metal Detector to be installed at each pedestrian entry areas.

# C.7.1 General Specifications

The required Walk-Through Metal Detector (WTMD) shall be of latest technology (Enhanced) and it shall have very high threat detection uniformity over the whole transit area and shall have ultra-high discrimination of personal metallic effects of people that transit through the gate in order to ensure a high throughput.

The WTMD shall be as per European standard and certified by relevant authority.

# C.7.2 Detection Performance Requirements & Alarm Indications

1. **Detection Capability**

* The equipment shall detect metal weapons carried on a person, however they are worn through the WTMD, independently of their orientation, trajectory and transit speed. More specifically, the equipment shall be able to detect magnetic, nonmagnetic and magnetic/nonmagnetic mixed alloy metal weapons singularly, assembled and/or disassembled (considering for each weapon the highest metallic contribution) or combined.
* The detection capability of the WTMD shall be stable without variation. The WTMD shall not require periodic recalibration.
* The sensitivity of the WTMD shall be adjustable in order to provide the widest dynamic threat object detection range from guns to very small blades like a half cutter blade (HCB security level).

1. **Cancellation Effects**

* The detection capability shall not be degraded by combinations of different types of metals.

1. **DETECTION SPEED**

* The Metal Detector shall detect the metal test pieces independently of their speed of transit through the WTMD (range: 0.3 … 15m/s). This requires constant sensitivity for variations in speed.

1. **Ergonomics – Visual And Acoustical Indications**

* The WTMD shall be fitted with four full-height luminous bars, placed two at the entrance (right and left side) and two at the exit side of the WTMD (right and left side) to provide very clear visual indications according to the different conditions of the daylight.
* Zone indication shall be with minimum 20 vertical floating zones for the best pinpointing of the detected metal object and the maximum resolution with a total of 60 zones (20 vertical x 3 horizontal) in the complete WTMD.
* The four multi-zone display bars shall be programmable independently as entry Stop/Go (pacing lights) indication and/or localization lights in order to improve the ergonomics and visibility of the indications and the easiness of installation.
* It shall be possible to operate the WTMD in both transit directions. Pacing lights (Stop/Go indication) and/or localization lights shall be activated simultaneously on both sides of the WTMD.
* Metal type indication: in case of alarm, the control unit shall be able to display the type of metal detected (ferrous/no ferrous). It shall be possible to enabled/disabled the metal type indication through the WTMD programming.
* The WTMD must have an automatic procedure for daily test activated with a Chip-card. The test result shall be displayed on the control unit.

# C.7.3 Technical Specifications

1. **Mechanical Dimensions/Weights**

* The minimum WTMD’s passage width shall be 700 mm and the minimum WTMD’s passage height shall be 2010 mm.
* The WTMD’s external dimensions shall be lower than 880 x 2300 mm (Width x Height).

1. **Mechanical Characteristics**

* The WTMD mechanical structure shall maximize the protection against wear and tear. The WTMD mechanical structure shall be very robust in order to guarantee the maximum protection against damages.
* The construction of the WTMD shall be modular and designed in order to minimize the number of components.
* The WTMDs shall be designed in order to be assembled and disassembled quickly. The maximum allowed time for the assembling of the complete gate shall be lower than 10 minutes.
* The WTMD shall be a stand-alone unit, provided with smooth, robust and washable surfaces.
* The WTMD shall be equipped in the lower side with protections against damages due to bumps of floor cleaning machineries and sprinkling of water or other substances.
* All of the electronics shall be mounted to the crosspiece at the top of the WTMD.
* The WTMD shall be equipped with four anchoring points to the floor.
* The equipment shall have the IP65 rating for outdoor applications.

1. **Electrical Characteristics**

* The WTMD shall be designed in order to provide the highest immunity towards external electrical and mechanical interferences in order to improve the easiness of installation in any kind of environment-layout.
* The correct working of the WTMD is required even when two WTMDs are installed at a reciprocal gate distance of 15 cm, without the use of synchronization cable(s) and/or jumpers.
* The WTMD shall be equipped with a self-diagnosis system which ensures the immediate signaling of faults or performance changes at start-up and during operation as well.
* The WTMD shall be equipped with two photocells for an automatic and very high precision bidirectional counting (number of entering and exiting persons) and statistical evaluation of transiting people and alarms.
* For security reasons the WTMD shall be always active. The use of photocells (infrared sensors) to avoid the alarm of the WTMD caused by nearby moving metallic materials or external electrical interferences is not allowed.
* The maximum allowed power absorption of the WTMDs shall be 40W.

1. **Programming And Connectivity**

* The WTMD shall have a minimum of five programming methods:
  + Chip-card
  + Local using keypad on the control unit
  + Remote through a RS232 port and a laptop
  + Infrared (IR) Remote Control (password protected)
  + Bluetooth
* The selection of the security level shall be extremely quick by the use of dedicated chip-card.
* The WTMD’s programming access shall be protected by a mechanical lock and by a password made up of 6 alphanumeric characters. The WTMD shall have two independent levels of programming (user and super user), each one protected by a password.
* The equipment shall be designed in order to improve the easiness and quickness of programming and set-up: a “one touch self-installation” procedure shall be available. The self-installation procedure shall consist of a sequence of tests and adjustments, regarding the following aspects: operation of the signaling devices, relevant electrical parameters, WTMD configuration and the electromagnetic compatibility with the installation site (instruction for each step shall be displayed on the control unit display).
* A function that searches automatically a suitable transmission channel, i.e. a channel with minimum interaction with possible sources of interference present in the installation site, shall be available. The selected transmission channel shall be shown at the end of the process.
* The equipment shall be able to acquires the value of the signals received by the probe and shall adjust itself in order to increase its immunity against possible sources of interferences (environmental noise adjustment function). An additional function shall provide in the control unit display the read out of the signals measured by the probe as a percentage of the alarm threshold in order to identify a suitable detector position if the installation site contains sources of interferences.
* A procedure to acquire and compensate the interferences generated by mechanical vibrations due, for instance, to floor oscillations, strong air compressions or wind shall be available.

1. **Environmental Characteristics**

* Storage temperature: from -31°F (–35°C) to 158°F (70°C).
* Working temperature from -4°F (-20°C) to 158°F (+70°C).
* Relative storage humidity: from 0 to 95 % without condensation
* Relative working humidity: from 0 to 95 % without condensation

# C.7.4 Electrical Safety, Harmlessness and Certifications

* The WTMD shall be certified by an accredited and operating independent Laboratory as conforming to International Standards on the Human Exposure to Electromagnetic Fields. Manufacturer shall provide documentation.
* Electrical Safety: for safety reasons, in order to avoid any probability of electrical hazard, the WTMD shall be powered by a nominal voltage to ground not exceeding 50V (CAT.0) to prevent the risk of people in transit coming into accidental contact with parts of the gate powered at mains voltage.
* The WTMD must use CW (continuous wave) magnetic fields (pulsed fields are not allowed) for best pace-maker and vital supports harmlessness.
* The WTMD shall not interfere with medical devices such as hearing aids, cardiac stimulators, defibrillators, neurological stimulators.

# C.8 Hand Held Metal Detector

Hand Held Metal Detector to be used by the security guards scanning at each entry point

# C.8.1 Technical Specifications

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Technical Specifications** | |
| 1 | Technology | Pulse induction technology, transmitter / receiver with automatic instant retune and should be compliant to NIJ-0602.02 |
| 2 | Operating Frequency | Approx. 95 KHz. + 5 KHz. |
| 3 | Audio Frequency | Approx. 2 KHz |
| 4 | Weight | Approx. 400 gm. |
| 5 | Operating Voltage / current | 7 to 9 Volt DC < 50mA |
| 6 | Power source & endurance | Standard 9V rechargeable / disposable battery. Provided with CONTACTLESS **Battery** charger. The charger should be recharging without electrical contact. |
| 7 | Detection Range | |
| a). | Should detect a small metal object like Gem Clip from a distance of 1 inch. | |
| b) | Instant response to all metals. | |
| 8 | Indicators | |
| a) | Audio & Visual alert & vibration | |
| b) | Low battery indicator | |
| 9 | Power Control | Push button / Press ON / OFF Switch |
| 10 | Adjustments and provisions | |
| a) | Provisions for adjustment of Sensitivity | |
| 11 | Safety | |
|  | Safe for heart pacemakers & non-interference with magnetic recording material. | |
| 12 | Operating Time | -150 C to +650 C |
| 13 | Protection against environmental conditions, 0 to 95% humidity | |
| 14 | Warranty, after | One year minimum warranty |
|  | Sale, service & Availability of Spare parts | Availability of suitable repair service centre & spares parts in Delhi. |
| 15 | Construction | Fabricated with sturdy, high impact proof, water proof, plastic. Interior circuitry should preferably be SMD component based. |
| 16 | Control | Should be operator friendly. Pres / Push button as ON / OFF switch. Immediate automatic tuning. |
| 17 | Size | Comfortable small size with or without handle. |
| 18 | Sensitivity | |
|  | Minimum detection distance equal / more than | |
| a) | Medium size pistol – 6 inches | |
| b) | Razor blade- 2 inches | |
| c) | Hatpin – ½ inches | |
| d) | Copper metal piece (05 gm)- 20 mm | |
| e) | Detonator (aluminum)- 30 mm | |
| f) | Single Al-Pin- close proximity | |
| 19 | Voltage | 6.8 to 10 VDC |
| 20 | Current | 5 mA typical |
| 21 | Battery : Battery Life | 100+ Hours continuous Service (AA NiMH batteries 2500mAh); up to 200 Hours with Automatic Sleep Mode |

# C.9 Turnstiles – With Access Control

The Turnstiles shall be provided at the pedestrian entries of Main Gate 1 and 2.

# C.9.1 Technical Specifications

| **Sr. No.** | **Technical Specifications** | |
| --- | --- | --- |
| 1 | Height | Cabinet: 1035 MM approx. |
| 2 |  | Rotor Arm height from ground: 870 MM approx. |
| 3 | Technology | · Motorized - brushless DC motor with  high output torque for fast acceleration and deceleration; shaft rotates freely without power; no gearbox resulting in no backlash or wear and tear |
| ·  Direct Drive mechanism without any pulley and belts |
| 4 | Rotation/Type | 120 degree stop (Tri-arm) |
| 5 | Walkway/ Passage Clearance | 515mm Arm length ; Passage width 565mm |
| 6 | Dimension | Cabinet: 1300 x 260 x 1035 MM (L x W x H) |
| 7 | Material of construction | 1.     Body: SS-304 |
| 2.     ARMS: 304 SS recessed into the cabinet |
| 8 | Internals | Corrosion, abrasion and rust free alloy of high strength |
| 9 | IP Protection | IP 44 |
| 10 | Power | 230 VAC +/- 10% |
| 11 | Frequency | 50 Hz. |
| 12 | MCBF | 10 million cycles |
| 13 | Duty Cycle | 100% |
| 14 | Open/Close time | 0.5 secs |
| 15 | Throughput | 40 persons per minute |
| 16 | Power consumption | Max 65 Watts |
| 17 | Power Off | Automatic Arm Drops down creating a free passage |
| 18 | Certification | CE |
| 19 | Operation | Bi-directional |
| 20 | Passage control | Passage to be controlled in one or either direction |
| 21 | Locking | The arm will rotate in steps giving an alarm. This is to prevent the mechanism from getting damaged |
| 22 | Action lock | Positive action lock which prevents two passage at one time |
| 23 | Integration (Input) | With any access control device like smart card Reader and / or Finger Print Reader (biometrics based Access Control System |
| 24 | Operating Temperature | -25 to 55 degree C |
| 25 | Humidity | 90% non-condensing |
| Lane Indicator |
|  | Humidity | Green and Red on both sides |
| 26.1 | Lane Indicator |
| 26.2 | Installation | Fixed to Concrete Floor by means of Anchor bolts, supplied with the Turnstile |
| 27 | Blocked /Disable Mode | If someone tries to vandalize the arms would rotate in steps while creating an alarm. This is to prevent the mechanism from getting damaged in power on mode |
| 28 | Documents to be submitted | Datasheet, Compliance vetted by OEM on their letterhead, MAF |
| 29 | Other Additional features | Automatic return drop arm for optimal or emergency egress conditions – no manual intervention required; drop arms will automatically return to home position upon restoration of power |
| Super smooth arm movements with minimal force and no kickback for utmost safety – will not spring forward at end of travel (i.e. hit child in back of head) |
| Bi-directional control – selectable |
| Forced entry/exit and impact detection |
| Card readers/keypad mounting plates standard |
| High speed, noise free and maintenance free operation |
| Pulse storage – for multiple card swipes, etc |
| Easy to program controller for common lane configurations |
| 9 digital inputs, 6 relay outputs and 4 MOSFET outputs; LEDs and display for operation and error diagnostics; adjustable operation parameters via dip switches |
|  |

# C.10 Flap barriers – with Access Control Readers

The Flap Barriers shall be provided at each entry gate, all Karkhana block entries, Custom office, Entrance lobby to commercial building block.

# C.10.1 Technical Specifications

|  |  |  |
| --- | --- | --- |
| **S.No** | **Specification** | **Description** |
| 1 | Application | Indoor |
| 2 | Height | Min 1000 mm |
| 3 | Material of Construction | Painted polyurethane / stainless steel-304 or better |
| 4 | Movement of barrier element | Retractable |
| Drive | The Combination of a Brush-less DC Motor with in-built resolver shall make it a Drive with no wear & tear components. Additionally the absence of limit Switches & Slip Clutches shall provide trouble free operation w/o the need for constant maintenance, no belts and pulleys |
| 5 | Wings | Soft Wing with metal re- enforcement |
| 6 | Operating time /Throughput | 20 persons/min |
| Operational | Bi-Directional |
|  | Power Consumption | 35 W for standard and 117 W for Wide lane |
|  | Opening/closing time | 0.3 sec for standard lane and 0.6 sec for wide lane |
| 7 | Power fail protection | Fail Safe |
| 8 | Clear Walkway | Min 520mm |
| Electronic Logic Control | Digital Microprocessor based logic with timer, LED indicators, counters. |
| 9 | Status Lights | Arrow, Cross and stop |
| 10 | Relay I/P | Min 3 |
| Relay O/P | Min 4 |
| 11 | Power Supply | 230 VAC (±10%), 50 Hz |
| 12 | IP Rating | IP32 |
| Temperature Range | 0 to 40 °C |
| 13 | Humidity | 0-95% non-condensing |
| 14 | MCBF | Not less than 10 million cycles |
| Integration | Shall function in integration with Smart cards, proximity reader based access control systems, Bio- metric systems etc. |
| 15 | Duty Cycle | 100% |
| 16 | Safety | Soft flaps & the use of Brush-less DC motor for very quick reversibility and enhanced pedestrian safety |
| Protection | All Housing and internal parts will be rust & corrosion free metals or alloys of high strength or with suitable epoxy coating |
| 17 | Certifications/ Approval | CE |
| 18 | Braking | Dynamic Braking for smooth resting of flaps. |

# C.11 Proximity Readers - Mifare smart Card Reader Technical Specifications: -

|  |  |  |
| --- | --- | --- |
| Sr No. | **Technical Specification** | |
| 1 | Read Range | 4 -9 cms |
| 2 | Data Read | CSN/Sector |
| 3 | Type | Smart Card (Mifare Classic) |
| 4 | Transmit Frequency | 13.56 MHz |
| 5 | Card (Transponder ) | Mifare® Series (ISO14443-A) |
| 6 | Card Read Time | 0.1 sec |
| 7 | Output Interface | Wiegand Format( 32 bits) |
| 8 | LED Indicator | Bi color LED |
| 9 | Power supply | 12 V DC @ 100mA |
| 10 | Dimensions | 80W X 83 H X 21 D |
| 11 | Material | ABS Plastic |
| 12 | Color | Black |
| 13 | Cable Specs (Recommended) | 5 core, 7/36 shielded cable |
| 14 | Cable Distance from Controller: | 80m (Wiegand) |
| 15 | Card should be read in1 sec | |
| 16 | A Wiegand output that easily interfaces with most existing Wiegand protocol access control panels. | |
| 17 | Compact and Elegant. Easily installed on walls and doors. | |

# C.12 Parking Management System:

1. Intelligent Parking System is an extension of the Access Control System and Visitor Management – indicating the number of vehicles getting into the basement and number of vehicles exiting.
2. The system should be able to show the number of parking slots available
3. The system should also be able to show the total number of parking slots designated for visitors.
4. The algorithm which is based on the difference between the total number of cars for authorised parking coming inside the facility and total number of cars exiting the facility is to be developed by the vendor in the Access Control System software.
5. The output is to be displayed on a large purpose built LCD screen that only shows the total number of parking slots available for the designated authorized parking for the user type i.e. employee (where in the employee will only park in the designated company slots);
6. It is to be mandated that the boom barriers are installed at basement entry and exit points along with access control readers
7. Basement Parking shall have separate Server for Parking Management.
8. However, there shall be separate Server for Parking Guidance System. (Ultrasonic detector-based vehicle occupancy status system) for Basement.



