REPUBLIC OF KENYA
MINISTRY OF HEALTH

EAST AFRICA’S CENTERS OF EXCELLENCE FOR SKILLS AND TERTIARY EDUCATION IN BIOMEDICAL SCIENCES

PROPOSED CONSTRUCTION OF EAST AFRICA’S KIDNEY INSTITUTE COMPLEX AT KENYATTA NATIONAL HOSPITAL (KNH) GROUNDS NAIROBI, KENYA

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BIDDING DOCUMENT – VOL 3.5
CCTV SURVEILLANCE AND ACCESS CONTROL SYSTEMS INSTALLATION
(ALL RATES EXCLUSIVE OF TAXES)

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# Table of Contents

1.0 **PART A: GENERAL REQUIREMENTS** ............................................................................................................. 3

1.1 **GENERAL**: ............................................................................................................................................... 3

1.2 **REFERENCE SITES**: ................................................................................................................................. 3

1.3 **CABLE MANAGEMENT**: .......................................................................................................................... 3

1.4 **THE INTEGRATED SECURITY MANAGEMENT SYSTEM REQUIREMENTS**: ........................................ 3

1.5 **COMMENCEMENT OF WORKS**: ................................................................................................................ 3

1.6 **SCOPE OF THE CONTRACT WORKS**: ....................................................................................................... 3

1.7 **ORDERING OF MATERIALS**: .................................................................................................................... 4

1.8 **BUILDER’S WORK REQUIREMENTS**: ......................................................................................................... 4

1.9 **TENDER RETURN ITEMS**: ....................................................................................................................... 5

1.10 **STANDARDS AND REGULATIONS**: .......................................................................................................... 5

1.11 **DOCUMENTATION**: ................................................................................................................................. 5

1.12 **DEFECTS LIABILITY AND SPARES**: .......................................................................................................... 5

1.13 **INSPECTION, TESTING AND COMMISSIONING**: ..................................................................................... 5

2 **PART B: PARTICULAR SPECIFICATIONS** .................................................................................................... 7

SECTION 1: **INTEGRATED SECURITY MANAGEMENT SYSTEM** ................................................................. 7

2.1 **GENERAL** ............................................................................................................................................... 7

2.2 **SEAMLESS INTEGRATION** ....................................................................................................................... 7

3 **SECTION 2: IP CCTV SURVEILLANCE SYSTEM** ....................................................................................... 9

3.1 **GENERAL** ............................................................................................................................................... 9

3.2 **NETWORK VIDEO RECORDER (NVR)**: ...................................................................................................... 9

3.3 **CABLES**: .................................................................................................................................................. 10

3.4 **INTELLIGENT CAMERA AND LENSES**: .................................................................................................. 10

3.5 **INDUSTRIAL NETWORK POE SWITCH FOR IP CAMERAS**: ................................................................. 11

3.6 **SOFTWARE SPECIFICATION**: ................................................................................................................ 12

4 **SECTION 3: ACCESS CONTROL & INTRUDER ALARM SYSTEM** ............................................................... 14

4.1 **GENERAL** ............................................................................................................................................... 14

4.2 **SEAMLESS INTEGRATION** ....................................................................................................................... 14

4.3 **SYSTEM CAPACITY** ................................................................................................................................. 15

4.4 **ID MANAGEMENT SYSTEM** .................................................................................................................... 15

4.5 **VISITOR MANAGEMENT MODULE** ....................................................................................................... 15

4.6 **BROWSER-BASED VISIT HOST APPLICATION** ..................................................................................... 16

4.7 **BI-DIRECTIONAL DATA EXCHANGE** ..................................................................................................... 16

4.8 **CLIENT/SERVER RELATIONAL DATABASE MANAGEMENT SYSTEMS** ........................................... 16

4.9 **DESTINATION ASSURANCE** .................................................................................................................... 16

4.10 **NETWORK ACCOUNT MANAGEMENT** ................................................................................................ 17

4.11 **ACCESS CONTROL** ................................................................................................................................ 17

4.12 **HARDWARE SPECIFICATIONS** .............................................................................................................. 21

4.13 **SYSTEM CONTROLLER SPECIFICATIONS** .......................................................................................... 21

5 **PART C: BILLS OF QUANTITIES** ............................................................................................................. 24

VOL 3.5/i
5.1 GENERAL NOTES TO TENDERERS ................................................................. 24
5.2 BILLS OF QUANTITIES ............................................................................. 25

6 PART D: TECHNICAL SCHEDULE ............................................................... 33
  6.1 DOCUMENTATION REQUIREMENTS .................................................... 33
  6.2 TECHNICAL SCHEDULE ...................................................................... 34

7 PART E: DRAWING SCHEDULE ................................................................. 36
  7.1 DRAWING SCHEDULE: ....................................................................... 36

VOL 3.5/ii
1.0 PART A: GENERAL REQUIREMENTS

1.1 General:

The site of the proposed project shall be situated at Kenyatta National Hospital, Off Ngong Road, and Nairobi.

The Security systems shall be controlled and maintained at the Security Control Room. The system and equipment used will be the state-of-the-art technology available today, reliable and robust and of open protocol for integration with other vendors systems.

1.2 Reference Sites:

The offered equipment shall have been sold in sufficient quantities to provide good proof of a Tenderer’s capability of handling similar projects. Tenderers shall supply a detailed record of similar equipment’s that have been installed by them.

The contractor shall in the preliminary section of the pricing allow for the following:

- Factory inspection/Training of the system (SMS) to allow the Engineer and Client Staff familiarize themselves with the systems functions and installations procedures.
- Site inspection of at least two sites where the proposed systems has been installed.

In addition to ensure continued support of the proposed equipment from the manufacturer, the Tenderer must submit documentary evidence that they are indeed authorised and accredited distributor/reseller of the manufacturer.

1.3 Cable Management:

The necessary infrastructure i.e. cables, accessories, devices (excluding conduit work and raceways) for the Security System shall be done by the Security Contractor.

1.4 The Integrated Security Management System Requirements:

The Integrated security Management systems shall comprise of the following:

- Integrated Security Management System.

1.5 Commencement of Works:

The Tenderer in submitting his bid shall be deemed to have allowed for commencing the works on site immediately upon appointment.

1.6 Scope of the Contract Works:

The Contract Works shall comprise the supply, delivery, erection, testing, commissioning and setting to work of the complete integrated security management system as detailed in this Specification and accompanying Contract Drawings.
The Tenderer shall include for all apparatus and appliances not particularly called for in this Specification or on the Contract Drawings but which are necessary for the successful completion and satisfactory functioning of the Contract Works.

It is deemed that if, in the opinion of the Contractor at the time of tendering there exists a discrepancy in the Specification, Drawing or both, that the Contractor clarifies this difference with the Engineer before tendering.

The Tenderer shall provide as an integral part of his bid a statement of compliance in which he shall clearly declare any items of the Specifications to which his offer does not comply and an alternative which is included in the offer.

The Contractor shall be obliged to liaise with other parties involved in the project and to provide any necessary information as and when required.

No claims for extra payment shall be accepted from the Contractor due to his failure to adhere to the above requirements.

The work to be installed under the Contract shall comprise but not restricted to the supply and installation of the following complete as specified elsewhere in this Specification:

1. Access control zonal counter.
2. Access control readers.
3. Access control cards.
4. Panic buttons.
5. Security integration management system and Software
6. Viewing & Management
7. Management Recording Servers
8. Integrated Time & Attendance
9. CCTV surveillance

All equipment as far as is practicable shall be designed and manufactured by a single preferred manufacturer. In any case equipment shall be of uniform standards compatible in operation and spare parts trained support and maintenance facilities being available. In this regard the Tenderer shall produce a letter of guarantee and commitment from the equipment manufacturer for production at tender opening. Any tender without such a commitment letter will be rejected.

1.7 **Ordering of Materials:**

The Contractor shall order materials from quantities taken from his own approved working drawings and not from the quantities shown on the Contract Drawings or in the Specification.

1.8 **Builder’s Work Requirements:**

All chasing, cutting away and making good of walls and slabs will be by the Security Contractor to the satisfaction of the Architect & Engineer.
1.9 **Tender Return Items:**

Drawings and publications illustrating the systems and equipment being offered against the schedules shall be returned with the Tender, together with a comprehensive description of the systems being offered to meet the requirements detailed elsewhere in the Specification.

1.10 **Standards and Regulations:**

The design, manufacture, selection, installation, testing, commissioning and subsequent maintenance of all equipment and materials described in this Specification shall comply with internationally recognised standards.

1.11 **Documentation:**

Record Drawings, Operating instructions, log book and certificates of installation and commissioning shall be provided adjacent to the control and indicating equipment at the end of the Contract.

Operating and Maintenance Instructions shall be provided before the system is accepted. The instructions shall describe the system operation, zoning, routine care and maintenance, fault finding procedures and the function and settings of all controls.

The instructions shall include a full set of drawings, other manufacturer’s handbooks and proprietary items and a complete list of spare parts provided and which are available. Full details shall be provided of all manufacturers and suppliers.

1.12 **Defects Liability and Spares:**

The Contractor shall provide a comprehensive routine and emergency call out service for the defects liability period, and shall confirm the response time to be provided. This service shall include routine examination and any adjustments, cleaning, replacement of parts as required to keep the system in full working order.

All equipment shall have a minimum 1 year warranty period from the manufacturer.

The Tenderer shall include details of a proposed Maintenance Contract to provide regular maintenance from the start of the defects liability period, in accordance with this specification. The Client is not bound to accept the offer from the Contractor.

An appropriate set of spares shall be provided, including consumable and modular items, which can be replaced by on-site maintenance staff. A list of the proposed spare parts shall be provided with the Tender.

1.13 **Inspection, Testing and Commissioning:**

The Contractor shall inspect, test and commission the works in accordance with the equipment manufacturer’s recommendations. The results of all tests shall be recorded on the standard test forms unless otherwise specified.

Before completion of the installation the Contractor shall submit to the Engineer for acceptance, a method statement of the procedure to be used for testing and commissioning, which has been agreed with the equipment manufacturers.
Before cables are terminated each cable shall be tested for continuity, insulation resistance, polarity and markings. Following satisfactory testing, cables shall be terminated in the equipment only by the manufacturer’s appointed representative.

Power supplies shall be tested prior to making connections to the control equipment. The Contractor shall allow for all necessary attendance during the testing and commissioning of any ancillary systems interconnected with the security system.
2 PART B: PARTICULAR SPECIFICATIONS

SECTION 1: INTEGRATED SECURITY MANAGEMENT SYSTEM

2.1 General

The System must be designed to perform a wide variety of feature rich functions as part of a Total Security Management Solution. These System functions are categorized into System modules which will be integrated with the overall platform. The various features and modules include

A. Access Control
B. CCTV Integration
C. Data Integration Services
D. Alarm & Event Monitoring
E. Time & Attendance
F. E Mobile Integration
G. Central Control Module
H. Credential Management
I. ID Badging
J. Digital Video Management
K. Asset Management
L. Patient Tagging
M. Remote Access Level Management
N. BMS Integration
O. System Administration
P. Graphical Maps
Q. Third Party Integration
   a. Fire Detection System
   b. Building Management System
   c. Intercom Systems
   d. Wireless Locks
   e. Elevators
R. Mobile Enterprise Solutions
S. Screen/Forms Creation
T. Software Development Kit
U. Bi-Directional Data Exchange
V. API Development Toolkit
W. Server Redundancy
X. Licenses

2.2 Seamless Integration

All System application modules, features, and functions shall be generated from a single source code set. The access control, alarm monitoring, asset management, digital video management, intrusion detection, remote access level management, and visitor management, and credential management modules of the software shall be created from this single source code set.

One or All systems shall be from ONE manufacturer.
All System modules shall be seamlessly integrated to feature a single System, single code base, single graphical user interface, and single database.

The system shall allow for ease of maintenance and allow for the ease of future upgrades and enhancements. All System features and functionality listed in the specifications shall ship with each System. Features and functionality available to the client shall be determined through licensing and shall be controlled by a hardware/software license key – the license should be a onetime buy and should not.

All System data shall reside in a single database on the network and be instantly accessible from every/any client workstation connected to the network that is licensed to do so. This shall provide automatic change propagation to all client workstations on the System as well as a common database to consolidate all information and allow for better disaster recovery. As such, any modifications made to cardholders, time zones, assets, or access levels shall be downloaded in real-time to all related Intelligent System Controllers.
3 SECTION 2: IP CCTV SURVEILLANCE SYSTEM

3.1 General

The Closed Circuit Television system shall cover the following areas:

- Entrance/Exit doors
- Control room
- Reception
- Lobbies

All the systems shall be monitored and controlled at the Control Room.

CCTV System shall be integrated with other system like Access Control, Master Clock, Music System, Voice Evacuation Nurse Call, BMS etc.

3.2 Network Video Recorder (NVR):

- Optimized for Megapixel Video Recording
- Hardware RAID Subsystem
- Data Protection, RAID 5, 6
- Real-time network camera discovery
- Versatile views of various screen divisions
- HTML and image overlays
- Multiple views supported
- View patrolling for single or multiple views
- Real time video/event alarm display
- Instant playback
- Video clip bookmarking
- Drag-n-drop camera manipulation
- Directional camera display
- Hierarchical map structure
- Real time event alert
- Instant live video of camera
- Multiple maps supported
- Pan, tilt, zoom operations (dependent of camera)
- Built-in, floating PTZ control panel
- Preset position (dependent of camera)
- Scheduled or continuous camera patrolling
- Event-driven camera patrolling
- On Screen PTZ control
- Up to 16 monitors
- Supports live view, playback, eMap functions
- Direct display to secondary monitor(s)
- Search by date, time, camera
- Search by pre-defined recent time
- Search by VI event combinations
- Search over multiple days
- Search over multiple cameras
- Video clip bookmarking and commenting
- Search via built-in VI analyzer
- Customizable bookmark
- Intuitive, video thumbnail search results
- Cue-in, cue-out and repeat
- Quick playback by video thumbnail
- 1/8, 1/4, 1/2, 1x, 2x, 4x, 8x, 16x play, pause, stop
- AVI-formatted video clip export
- 4-channel synchronized playback
- Supported in video alarm, event alarm, view functions
- Pre-defined playback durations
- Video clip bookmarking
- General motion detection
- Missing object detection
- Foreign object detection
- Intrusion detection
- Forbidden area detection
- Tampering detection
- Virtual fence
- Object counting

Full functional operation & management via standalone VMS Client should support web clients

- Video codec: H.264, MPEG4, MJPEG
- Image enhancement
- Video privacy mask
- Digital zoom in, zoom out
- Log viewer
- Windows lockup
- Client auto login
- Digital I/O management
- Automatic storage recycling
- Client-server architecture
- Guaranteed performance of long period recording
- Customizable appearance of Surveon logo
- Configurable video retention period
- Digital watermark proofing
- Support DDNS Function
- Support CH Products USB joystick
- Support Ethernet I/O device
- Support NTP Server synchronized

3.3 Cables:

All cables used for the installation shall be 4 – pair CAT 6 unshielded twisted pair (UTP) unless otherwise stated installed by other however, sub-contractor shall allow for all necessary accessories to make system functional.

3.4 Intelligent Camera and Lenses:

Cameras offered shall have an image sensor of 1/2.7” 3 megapixel progressive scan. All lenses used must be automatic iris with a variable local length of 3.3 – 12mm.

Min. Illumination - 0.01 Lux @ F1.2 (B/W) 0.1 Lux @ F1.2 (Color)
Camera Angle Adjustment - Pan 0° ~340°, Tilt 30°~90°

Video Compression - H.264/MPEG-4/MJPEG

Resolution - Up to 2048 x 1536 Video Resolution

Video Stream - Dual stream at H.264, MPEG-4, and MJPEG simultaneously

Video Control - AGC (Auto Gain Control), AWB (Auto White Balance), AES (Auto Electronic Shutter), BLC (Back Light Compensation), image adjustment

Intelligent Video - Motion detection, tampering detection (blocked, redirected, defocused, or spray-painted)

Supported Protocols - IPv4, ARP, TCP, UDP, ICMP, DHCP, NTP, DDNS, SMTP, FTP, HTTP, CIFS, PPPoE, UPnP, RTP, RTSP, RTCP, 3GPP

Ethernet - 10/100 Base-T / RJ45

Power Consumption - Max. 7.5W IP66 rated for indoor/outdoor use

3.5 Industrial Network Poe Switch-for IP Cameras

Features:

PoE Injectors, which complies with 802.3af
Embedded 200W AC power supply
10/100/1000TX support auto MDI/MDI-X function with 2 Gigabit combo interfaces
PD parametric information and power testing
QoS/CoS support
VLAN tagging (up to 4K)
802.3ad LACP
GVRP (256 groups)
Port mirroring / Port security
IGMP Snooping and Query mode
IGMP multicast groups
DHCP Client
802.1X RADIUS
SNTP support
Ingress / Egress packet filtering
User access authorization
Login IP source authorization
SNMP v1, v2
Remote upgrade support

3.6 Software Specification:

Monitors suitable for commercial applications shall be suitably installed in the areas as earlier mentioned. They shall have an impedance switch in the 75 ohms or in the ‘High Impedance’ position.

<table>
<thead>
<tr>
<th>Management</th>
<th>SNMP/ Telnet/ web-browser/ CLI management</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNMP MIB</td>
<td>RFC 1157 SNMP, RFC 1213 MIB, RFC 1643 Ethernet, RFC 1493 Bridge, RFC 2674 VLAN, private UPS, RFC3621 Power Ethernet MIB</td>
</tr>
<tr>
<td>RFC standard</td>
<td>RFC 2030 SNTP, RFC 2821 SMTP (option), RFC 1215 Trap, RFC 1757 RMON 1</td>
</tr>
<tr>
<td>Type of Trap</td>
<td>Cold start, link down, link up, authorization fail, Trap station up to 3. Private trap for power supply device.</td>
</tr>
<tr>
<td>Software Upgrade</td>
<td>TFTP and console firmware upgradeable.</td>
</tr>
<tr>
<td>Port Trunk</td>
<td>Support IEEE802.3ad with LACP function. Up to 7 trunk groups and group member up to 4. The trunk port within 24-port 10/100TX and extension module.</td>
</tr>
<tr>
<td>Spanning Tree</td>
<td>Support IEEE802.1d spanning tree, IEEE802.1w RSTP</td>
</tr>
<tr>
<td>VLAN</td>
<td>Port based VLAN IEEE802.1Q Tag VLAN VLAN groups up to 256</td>
</tr>
<tr>
<td>Class of Service</td>
<td>Per system supports high and low queues. The priority service rule: first come first service, all High before Low, WRR for High or low weight.</td>
</tr>
<tr>
<td>Port-based Priority</td>
<td>Support 3 settings: “Disable, Low or High priority”. When set to “Disable”, the income packet will follow QOS policy; Otherwise, the packet will follow port priority setting to “High/Low” queue.</td>
</tr>
<tr>
<td>IGMP</td>
<td>It supports IGMP snooping for multimedia application and supports 256 groups.</td>
</tr>
<tr>
<td>Port Security</td>
<td>It supports ingress and egress MAC address filter and static source MAC address lock.</td>
</tr>
<tr>
<td>Port Mirror</td>
<td>Global system supports 3 mirroring types: “RX, TX and Both packet”. The maximum of port mirror entries is up to 25.</td>
</tr>
<tr>
<td>Bandwidth Control</td>
<td>Per port supports bandwidth control. Per level 100Kbps.</td>
</tr>
<tr>
<td>802.1x Authentication</td>
<td>Supports IEEE802.1x User -Authentication and can report to RADIUS server. Reject / Accept / Authorize / Disable.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DHCP</td>
<td>DHCP client</td>
</tr>
<tr>
<td>Packet filter</td>
<td>Broadcast storm filter</td>
</tr>
<tr>
<td>Port configuration control</td>
<td>Port Disable / Enable.</td>
</tr>
<tr>
<td></td>
<td>PD detect control (enable/disable), Classification detect control (enable/disable)</td>
</tr>
<tr>
<td>Fault status detect</td>
<td>Null: no PD present</td>
</tr>
<tr>
<td></td>
<td>Overload: current support over 475mA @ DC 48V and over 50 milliseconds</td>
</tr>
<tr>
<td></td>
<td>DR fail: PD discovery resistor is not in the limited range</td>
</tr>
<tr>
<td>Mode status</td>
<td>System detects status, it will show I–sample, V-sample and R-detect.</td>
</tr>
<tr>
<td>Parametric information</td>
<td>It will show current PD parameters, it include Discover-resistor detected value, current, voltage, power consumption, classification current and determined class</td>
</tr>
<tr>
<td>SNTP</td>
<td>Supports RFC 2030 Simple Network Time Protocol</td>
</tr>
<tr>
<td>System log</td>
<td>System Log record up to 1000 entries.</td>
</tr>
<tr>
<td>Power monitor</td>
<td>Support power supply monitoring function for AC power, DC power, fan status Additional power supply can be installed with POE switch and POE-UPWM.</td>
</tr>
<tr>
<td>Power testing</td>
<td>Support test function to testing power supply.</td>
</tr>
<tr>
<td>PoE Management</td>
<td>PoE Enable/Disable, Power limit by Classification; Power limit by management, Power feeding priority Detect Legacy Signature</td>
</tr>
</tbody>
</table>
4 SECTION 3: ACCESS CONTROL & INTRUDER ALARM SYSTEM

4.1 General

The System must be designed to perform a wide variety of feature rich functions as part of a Total Security Management Solution. These System functions are categorized into System modules which shall include:

A. Access Control
B. Alarm Monitoring
C. Credential Management
D. Digital Video Management
E. Intrusion Detection Management
F. Asset Management
G. Visitor Management
H. Remote Access Level Management
I. Third Party Interfaces
J. System Administration
K. Mobile Enterprise Solutions
L. Badge Layout Creation
M. Screen/Forms Creation
N. Graphical Map Creation
O. Application Programming Interfaces
P. Data Import
Q. Bi-Directional Data Exchange
R. API Development Toolkit
S. Server Redundancy

4.2 Seamless Integration

All System application modules, features, and functions shall be generated from a single source code set. The access control, alarm monitoring, asset management, digital video management, intrusion detection, remote access level management, and visitor management, and credential management modules of the software shall be created from this single source code set.

All systems shall be from ONE manufacturer.

All System modules shall be seamlessly integrated to feature a single System, single code base, single graphical user interface, and single database.

The system shall allow for ease of maintenance and allow for the ease of future upgrades and enhancements. All System features and functionality listed in the specifications shall ship with each System. Features and functionality available to the client shall be determined through licensing and shall be controlled by a hardware/software license key.

All System data shall reside in a single database on the network and be instantly accessible from every/any client workstation connected to the network that is licensed to do so. This shall provide automatic change propagation to all client workstations on the System as well as a common database to consolidate all information and allow for better disaster recovery.
As such, any modifications made to cardholders, time zones, assets, or access levels shall be downloaded in real-time to all related Intelligent System Controllers.

4.3 System Capacity

The System shall support an unlimited number of card readers, input points, video cameras, intrusion detection points, and relay outputs.

The System database server shall support an unlimited number of cardholders, visitors, and assets limited only by the memory located in the Intelligent System Controllers in which cardholder information shall be downloaded.

The database server shall also support an unlimited number of System events and System Operator transactions in the history file. The System shall support an unlimited number of client workstations.

A fully loaded System shall guarantee a one half-second response time for access granted/denied decisions from the time that a cardholder swipes his/her badge.

4.4 ID Management System

The System shall include a seamlessly integrated credential management module. The credential management functionality must allow the enrollment of cardholders into the database, capturing of images, biometric data, and signatures, as well as the import/export of employee data. This functionality shall also allow the System Operator to assign and/or modify the access rights of a cardholder.

The System shall include a seamlessly integrated state-of-the-art, 32-bit, credential creation and production System. This shall allow for the creation of different badge types based on a database field, the linking of that field to a badge type to automate the process of credential production, and the use of security colors, chromakey, and ghosting, to allow officers to quickly identify personnel access authority.

The System shall have capabilities for biometric verification. Through the enrollment and comparison of hand geometry (the size and shape of an individual’s hand and fingers), or fingerprints, the identity of an individual shall be verified.

The System shall have the ability to crop and rotate an image automatically based on the orientation of the eyes found in the image. This shall include photographs captured from digital cameras, live cameras, scanned images and imported images.

4.5 Visitor Management Module

The System shall include a seamlessly integrated visitor management module. The visitor management module shall be a desktop-based application utilizing technology that allows the client to enroll and track visitors of the organization.

It shall allow the client to enroll visitors, sign them in or out, assign them to an employee, capture a photo, capture a signature, and track the visitors as they move throughout the facilities. It shall allow System Operators to enter and pre-schedule visits. It shall allow System Operators to print visitor badges and shall incorporate complete audit trail and reporting capabilities.
4.6 Browser-based Visit Host Application

The System shall provide a browser-based visit host application. The browser-based visit host application shall utilize n-tier architecture. The browser-based visit host application shall support single sign-on.

The browser-based visit host application shall allow for the registration of new visitors by the System User. The System User shall be able to create a new visitor and enter demographic information about the visitor, including first name, last name, address, and phone number. The System shall allow for the System User to add additional user defined fields to the list of demographics fields. The visitor and the visitor’s information shall be saved on the System database and shall be able to be utilized by other components of the System.

4.7 Bi-Directional Data Exchange

The System shall support a real time, bi-directional data interface to external databases such as Human Resources, Time and Attendance, Food Service Systems. The interface shall allow data to be imported into or exported out of the System in real time or in a batch mode basis. Data used for import shall be retrieved directly from an external database or through an import file. Data provided for export shall be applied directly to an external database or through an export file. Any data shall be imported or exported including image data. The file used for import or created by export shall have the ability to be structured in a wide variety of ways, but shall always be in ASCII text format.

The System shall also support a one-step download and distribution process of cardholder and security information from the external database to the System database, all the way down to the Intelligent Field Controller (ISC) database. This shall be a guaranteed process, even if the communication path between the System database server and the ISC is broken. If the communication path is broken, the data shall be stored in a temporary queue and shall be automatically downloaded once the communication path is restored.

4.8 Client/Server Relational Database Management Systems

The System shall support industry standard Open Database Connectivity (ODBC) compliant relational database management Systems. This shall include relational database management Systems such as Microsoft SQL Server 2005 and Microsoft SQL Server 2008 and Oracle Server 10g, and 11g.

These databases, through ODBC, shall be true client/server, high performance, and ANSI standard capable of handling high transaction rates and multiple users concurrently accessing and modifying the database.

4.9 Destination Assurance

The System shall provide an advanced destination assurance feature that reports instances of cardholders not going directly to their required locations after entering a specified card reader checkpoint. Once a cardholder passes through a checkpoint reader, that cardholder shall have a predefined amount of time to reach his or her destination card reader. Destination Assurance proves beneficial for entry and exit readers at hazardous locations, for example, where an alarm can be generated if a cardholder has not exited the hazardous location within a given length of time.
4.10 Network Account Management

The System shall support a Network Account Management module. The System’s Network Account Management Module shall integrate System cardholders with external user network accounts. Through linked accounts, System Administrators shall be able to perform a set of administrative tasks in Windows domains from the System Administration Module. The Network Account Management functionality shall also enable System Administrators to create a link between physical access control and logical domains. The System shall additionally be combined with the management of cardholders’ digital certificates stored on a smart card.

The integration shall provide a number of benefits, including the ability to do the following:

1. Perform administrative functions on Windows user accounts from within the System Administration Module.

2. Enable interaction between Physical Access Control Cardholders and Windows logical domains. For example, if badge is lost, a designated Windows account shall disable.

3. Control access to Computer Anti-Passback Areas

4.11 Access Control

4.11.1 Time Zones

The System must be capable of creating and storing up to two hundred fifty (250) time zones. Each time zone must have a minimum of six (6) intervals. Each interval shall be assignable to any day of the week and capable of being restricted on a minimum of eight (8) types of holidays.

4.11.2 Access Levels

All users shall have access based on facility, reader, time, and day. These time zones for each day are to be pre-defined by the client and must be able to be modified quickly by the System Administrator without vendor intervention.

4.11.3 Holidays

The System must allow the System Administrator to designate certain dates as holidays. As well, the dates for Daylight Saving Time shall be definable and shall automatically take effect without System Administrators/System Operators intervention.

4.11.4 First Card Unlock

The System shall support a First Card Unlock feature. When configuring the default attributes of a card reader in System Administration, a first card unlock setting shall be selectable. First Card Unlock requires that a valid access grant shall be received at a card reader (by an authorized cardholder) after the time zone change has occurred before placing the reader into an unsecured mode.
4.11.5 Database Segmentation

The System shall employ advanced database segmentation functionality. Each segment shall be allowed to have its own unique set of cardholders, hardware, and system parameters including access control field hardware, time zones, access levels, etc., which shall allow System Administrators to expand upon current hardware constraints. For example, each segment shall have its own 32,000 access levels, 250 time zones, and 250 holidays. As such, only credentials that are assigned access levels to card readers in a segment need to be downloaded to the Intelligent System Controllers in that segment.

Cardholders shall be allowed to belong to one segment, many segments, or all segments.

4.11.6 Field Hardware Communications

The System shall communicate with the Intelligent System Controllers (ISC) by either RS-485 or RS-232 EIA standard. The System shall have the ability to communicate with ISCs by LAN/WAN connections utilizing TCP/IP communications protocol. The System shall also have the ability to communicate with the ISCs through remote dial up capabilities.

4.11.7 Dual Path Field Hardware Communications

The System shall support dual path communications between the database server and the Intelligent System Controllers. This shall allow for two paths of communication: a primary and secondary path. The primary path shall communicate between the database server and the Intelligent System Controllers (ISC) by either RS-485 or RS-232 EIA standard, LAN/WAN connections utilizing TCP/IP communications protocol, or through remote dial up capabilities using modems. The secondary path shall communicate via RS-485 or RS-232 EIA standard (dial-up shall not be the primary connection using this method), LAN/WAN connections utilizing TCP/IP communications protocol or remote dial up capabilities using modems.

Upon sensing a loss of communications via the primary communication path, the ISC shall automatically initiate the switching of communications to the secondary communications path. Once communications is switched from the primary path to the secondary path, the host shall periodically check and determine if the primary communications path has been restored. Upon restoration of the primary communications path, the host shall restore communications back to the primary communications path. Alarms shall be posted to alarm monitoring client workstations when the primary communications path is lost and/or restored. The currently active path shall be displayed with the Intelligent System Controller status in the System Hardware Status Tree.

4.11.8 Area Control

The System shall provide five (5) area control features: Global Hard Anti-passback, Global Soft Anti-passback, Timed Anti-passback, Two Person Control, and Occupancy Limit. Area control shall be a security method of preventing a person from
passing their badge to another person for dual entry into a single location utilizing one card.

**4.11.9 Two Person Control**

Two Person Rule shall be provided to restrict access to certain areas unless there are two (2) cardholders present. This restricts individuals from being alone in restricted or highly secure areas.

**4.11.10 Designated One-Person Control**

The System shall allow for a special One-Person Mode. This mode shall require that a designated cardholder is present before anyone else is allowed to access a certain area. This restricts individuals from accessing a restricted or highly secure area when not accompanied by the designated cardholder.

**4.11.11 Occupancy Limit**

Occupancy Limit shall restrict the number of cardholders that shall be present in an area at any given time. The Occupancy Limit area shall be able to be defined by the System Administrator to limit up to 65,000 users to be in that area at any given time. Once the occupancy limit has been reached, a cardholder must swipe out of the exit card reader before the next cardholder may enter. Each area for which Occupancy Limit is enabled shall be definable with up to 64 entry/exit card readers. Multiple Occupancy Limit Areas shall be definable.

**4.11.12 Muster**

The System shall support advanced Mustering functionality. The Mustering function shall provide an automatic capability for registering cardholders that are on site during an incident. Designated exit and entry card readers shall be used to enter and leave hazardous locations and safe locations. When an incident occurs, a Muster Report shall be generated that consists of a listing of all personnel that are within the hazardous locations as well as all personnel that have registered in a safe location.

i) **Safe Locations**

A Safe Location shall be defined using entry and exit readers associated with the location. Safe Locations shall have both entry and exit card readers at all portals. Safe Locations shall require that a reader be used to enter and exit an area. Entry and exit readers shall be able to span across multiple ISCs.

ii) **Muster Mode Operation**

A Muster Mode shall mean that an incident has occurred and an evacuation is required of one or more Locations. A location shall enter into Muster Mode either automatically via an occurrence of a given hardware event transaction (such as an Alarm Input going active) or manually via a System Operator placing the Location into Muster Mode.

When a Location goes into Muster Mode, all associated Alarm Monitoring Workstations shall be notified with a breakthrough notification and Muster Reporting shall begin.
4.11.13 Global Input/output/Event Linkage
The System shall support a global linkage feature whereby any input/output/event shall be linked to any other input/output/event in the System. Input/output Linkages shall be able to span across Intelligent System Controllers.

System Administrators shall be able to create global I/O function lists, each consisting of a sequence of actions to be performed, such as changing card reader modes, activating outputs, and opening or closing anti-passback areas. Each function list may include up to six actions.

System Administrators shall then be able to link events to the aforementioned global I/O function lists such that a particular device change will execute a function.

The System shall allow for the creation of correlation logic to execute a function only when two or more events occur within a specified time window. This correlation logic shall support both mandatory correlation of ALL members of a user specified a set of inputs (AND), and correlation of ANY members of a user specified set of inputs (OR). This correlation function must accommodate events that occur in close proximity but not necessarily overlapping. Simple Boolean logic does not satisfy this requirement.

4.11.14 Guard Tour
The System shall support advanced Guard Tour functionality. A tour shall consist of one or more checkpoints defined as card readers or alarm inputs that a guard shall check during a guard tour.

Security Clearance Levels

Security clearance levels shall optionally be created and assigned a name. Security clearance levels shall be assigned to one or more guard tours.

A Security Clearance Level is a means of limiting the number of ‘tour guards’ when a tour is launched. Particular Security Clearance Levels shall be assigned only to guards who will need access where the tour will take them. When a tour is launched, only those guards with the security clearance levels shall be listed.

4.11.15 Scheduling Utility
The System shall support an advanced Scheduling Utility. The Scheduling Utility shall allow System Administrators to schedule actions to occur on a one-time or a recurring basis. Recurring schedules shall be configured to begin immediately, last indefinitely, or have optional start and end dates.

4.11.16 Multiple Card Formats
The System shall support an unlimited number of card formats. Magnetic stripe and Wiegand card formats shall be supported. Each ISC shall support a minimum of eight (8) access control card formats and if applicable, eight (8) asset formats. As such, each card reader shall also be able to support a minimum of eight (8) access control card formats. If applicable, asset readers shall be able to support a minimum of eight (8) access control card formats and eight (8) asset management card formats. The System shall support any magnetic stripe format that uses card number, facility code, and issue code combinations with a maximum of a nine-digit card number and two digit issue code. The System shall support any industry standard Wiegand card format.
4.12 Hardware Specifications

(a) Biometric Reader

- CPU: 400MHz DSP
- Memory: 8MB flash + 16MB RAM
- Fingerprint Sensor: Minimum 500 dpi optical sensor
- Identification Speed: Minimum 2,000 matches in 1 second
- Fingerprint Capacity: 5,000 fingerprints (10,000 templates)
- Log Capacity: 50,000 events
- RF Card Options: EM, Mifare / Desfire
- Authentication: Finger / PIN / Card
- Network Interface: TCP/IP, RS485
- Wiegand: 1 channel (input/output switchable)
- Operating Voltage: 12VDC
- Environmental Rating: IP65

Credential Specification:
- Dimensions: 2.127" x 3.375" x 0.033" max. (5.40 x 8.57 x 0.084 cm)
- Weight: 0.20oz (5.7 g)
- Card Construction: Thin, flexible polyvinyl chloride (PVC) laminate.
- Operating Temperature: -40° to 158° F (-40° to 70° C)
- Operating Humidity: 5-95% non-condensing
- Operating Frequency: 13.56 MHz
- Memory Type: EEPROM, read/write
- Multi-application Memory: 2k bit (256 Byte) card
- Endurance: Min. 100,000 cycles

(b) Door Controller Specifications

- Number of Readers Supported: 2 or 4
- Power Requirements: 12 or 24 VDC power supply
- Communications: RS-485 2-wire or 4-wire Multidrop
- Reader Port Compatibility: Wiegand Data1/Data0 Clock/Data and OSDP-compatible RS-485 readers and keypads
- Primary and Auxiliary I/O: Six Form-C 5 A at 30 VDC relay outputs.
- Door contact supervision (open/closed)
- REX push-button monitor
- Strike control output

Additional Features:
- Dedicated tamper and power failure circuits
- Support for offline reader access mode
- On-board jumpers for termination
- On-board regulator allows 12 VDC reader support from 24 VDC power source
- DIP switch-selectable addressing

4.13 System Controller Specifications

4.13.1 Communications:
On-board Ethernet 10/100Base-T. DHCP and fixed IP addressing supported. DNS device naming through DHCP extended commands additional RS-232 9600 to 115.2 Kbps async RS-485 (2-wire) 9600 to 38.4 Kbps async

4.13.2 Memory:

6 MB of available on-board, non-volatile flash memory. Battery-backed, non-volatile storage of 50,000 events.

4.13.3 Firmware Management:

Firmware stored in flash memory, background download of firmware updates supported
Number of Simultaneous Card Formats Supported
Up to 16 different formats (8 card formats and 8 asset formats)
Access levels, Time zone and reader support
Up to 32,000 access level permissions
250 holidays with grouping
250 time zones, each with 6 intervals
Individual extended held open and strike times
Up to 9-digit user PIN codes

Other features:

. 2 dedicated inputs for tamper and power failure status
. 12 or 24 VDC input power
. Advanced Encryption Standard (AES) 128-bit algorithm for communications
PART C

BILLS OF QUANTITIES
5 PART C: BILLS OF QUANTITIES

5.1 GENERAL NOTES TO TENDERERS

1. The Bills of Quantities form part of the contract documents and are to be read in conjunction with the contract drawings and general specifications of materials and works.

2. The prices quoted shall be deemed to include for all obligations under the sub-contract including but not limited to supply of materials, labour, delivery to site, storage on site, installation, testing, commissioning (excluding 16% VAT).

3. All prices omitted from any item, section or part of the Bills of Quantities shall be deemed to have been included to another item, section or part thereof.

4. The brief description of the items given in the Bills of Quantities are for the purpose of establishing a standard to which the sub-contractor shall adhere. Otherwise alternative brands of equal and approved quality will be accepted.

5. Should the sub-contractor install any material not specified here in before receiving written approval from the Project Manager, the sub-contractor shall remove the material in question and, at his own cost, install the proper material.

6. The grand total of prices in the price summary page must be carried forward to the Form of Tender for the tender to be deemed valid.

7. The Bills of Quantities are divided generally into three sections:-

   a. Contractual Requirements – Bill 1

     Sub-contractors contractual requirements as called for the bill of quantities shall be priced and included in the tender. However the Tenderer is free to include and price any other items he deems necessary taking into consideration conditions he is likely to encounter on site.

   b. Installation Items – Other Bills

     The brief description of the items in these Bills of Quantities should in no way modify or supersede the detailed descriptions in the contract Drawings, conditions of contract and specifications. The unit of measurements and observations are as per Volume 1 or as indicated in the Bills of Quantities.

   c. Summary

     The summary contains tabulation of the separate parts of the Bills of Quantities carried forward with provisional sum, summary volume included. The sub-contract shall insert his totals and enter his grand total tender sum summary of prices of Volume 1.
5.2 **BILLS OF QUANTITIES**

**SECTION D.W. 1.0 TITLE: PRELIMINARIES & CONTRACTUAL REQUIREMENTS**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.W. 1.0</td>
<td><strong>CONTRACTUAL REQUIREMENTS</strong></td>
<td></td>
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</tr>
<tr>
<td>A.</td>
<td>Preparation of working drawings, printing and distribution.</td>
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<td></td>
<td>Sum</td>
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<tr>
<td>B.</td>
<td>Preparation of ‘As Installed Drawings”, printing and distribution as specified. Drawings to include:</td>
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<tr>
<td></td>
<td>(a) Blue Prints - 4 sets of each.</td>
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<td></td>
<td>Sum</td>
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<tr>
<td></td>
<td>(b) AutoCAD on CD – 2 No.</td>
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<td>Sum</td>
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<tr>
<td></td>
<td>(c) Operational Instructions, manuals and test certificates</td>
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<td></td>
<td>Sum</td>
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<tr>
<td>C.</td>
<td>Any other item necessary to complete the installations in this section (please state)</td>
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<td></td>
<td>Sum</td>
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Total Carried to Main Summary of Prices
### SECTION D.W. 2.0 TITLE: IP CCTV SURVEILLANCE SYSTEM

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.W. 2.0</td>
<td><strong>IP CCTV Surveillance System</strong></td>
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<tr>
<td></td>
<td>For the supply and Installation of the following complete as specified. (<a href="#">attach Catalogue</a>)</td>
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</tr>
<tr>
<td>A.</td>
<td>720p IP Outdoor Bullet camera with advanced remote monitoring via POE, WDR and IR mode for night time conditions as AXIS M1124-E Network Camera or Approved Equivalent. (<a href="#">attach Catalogue for other brand</a>)</td>
<td></td>
<td>No. 4</td>
<td></td>
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<tr>
<td>B.</td>
<td>1080p IP PTZ dome camera with advanced remote monitoring via POE, auto focus lens and IR mode for night time conditions as AXIS M5525-E PTZ Network Camera or Approved Equivalent. (<a href="#">attach Catalogue for other brand</a>)</td>
<td></td>
<td>No. 5</td>
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<tr>
<td></td>
<td>• Ground Floor</td>
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<td></td>
<td>• First Floor</td>
<td></td>
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<tr>
<td>C.</td>
<td>360°/270°/180° panoramic views in up to 5 MP resolution dome camera with advanced remote monitoring via POE, auto focus lens and IR mode for night time conditions as AXIS M3037-PVE Network Camera or Approved Equivalent. (<a href="#">attach Catalogue for other brand</a>)</td>
<td></td>
<td>No. 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>4MP IP Outdoor Bullet Fixed camera with advanced remote monitoring via POE, auto focus lens and IR mode for night time conditions as AXIS M2026-LE Mk II Network Camera or Approved Equivalent. (<a href="#">attach Catalogue for other brand</a>)</td>
<td></td>
<td>No. 6</td>
<td></td>
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</tr>
<tr>
<td>E.</td>
<td>4MP IP Indoor Bullet Fixed camera with advanced remote monitoring via POE, auto focus lens and IR mode for night time conditions as AXIS M2026-LE Mk II Network Camera or Approved Equivalent. (<a href="#">attach Catalogue for other brand</a>)</td>
<td></td>
<td>No. 33</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Basement Floor</td>
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<tr>
<td></td>
<td>• Ground Floor</td>
<td></td>
<td>No. 41</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• First Floor</td>
<td></td>
<td>No. 33</td>
<td></td>
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<tr>
<td></td>
<td>• Second Floor</td>
<td></td>
<td>No. 19</td>
<td></td>
<td></td>
</tr>
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Total carried forward to next page
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
</table>
| F.   | 4MP IP Indoor Dome Fixed camera with advanced remote monitoring via POE, auto focus lens and IR mode for night time conditions as AXIS M3104-LVE Network Camera or Approved Equivalent. (attach Catalogue for other brand)  
  - Ground Floor  
  - First Floor  
  - Second Floor                                                                                                           |      |     |      |      |
| G.   | Allow use and configuration of the above system with Structured Cabling done by others (Cables by others)                                                                                                                                                                                                                                                                                                    |      |     |      |      |
| H.   | Any other item necessary to complete installation in this section (Please state)                                                                                                                                                                                                                                                                                                                                                                                      |      |     |      |      |

Total carried forward to Main Summary of Prices
### SECTION D.W. 3.0  TITLE : IP CCTV SURVEILLANCE SYSTEM - STORAGE SYSTEM

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D.W. 3.0</strong></td>
<td><strong>IP CCTV Surveillance System - Storage Equipment System</strong></td>
<td></td>
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<tr>
<td></td>
<td>For the supply and Installation of the following complete as specified.</td>
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</tr>
<tr>
<td>A.</td>
<td>Rack mountable 64 Channel Network video recorder with minimum 24TB HDD expandable to 32TB, Camera Station video management software with universal licenses for 64 channels and other necessary system software, Dual stream Ethernet connectivity, support remote viewing outputs, Back up SAS / NAS storage and alarm inputs as AXIS S1048 Mk II Recorder or Approved Equivalent. <strong>(Attach Catalogue for other brand).</strong></td>
<td>No.</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>Desktop work station complete with keyboard, programing mouse configured to support minimum 25 concurrent users via live viewing software preconfigured with terminal software as AXIS S9002 Desktop Terminal or Approved Equivalent. <strong>(Attach Catalogue for other brand).</strong></td>
<td>No.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>Video Surveillance Control Board modular system comprises of joystick, keypad and jog dial units with Accurate and easy to control the PTZ cameras as AXIS T8310 Video Surveillance Control Board or Approved Equivalent. <strong>(Attach Catalogue for other brand).</strong></td>
<td>No.</td>
<td>1</td>
<td></td>
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</tr>
<tr>
<td>D.</td>
<td>Allow use and configuration of the above system with Structured Cabling done by others (Cables by others)</td>
<td>Sum.</td>
<td></td>
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</tr>
<tr>
<td>E.</td>
<td>Allow for interconnection and programming of the above System</td>
<td>Sum.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td>Allow for interfacing with other system like Public Address System, Master Clock System, Nurses Call System, CCTV System and Fire Detection &amp; Alarm System as call for and approved by Engineer.</td>
<td>Sum.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total carried forward to next page
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.</td>
<td>Installation, testing &amp; commissioning</td>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H.</td>
<td>Labeling, Documentation, 2 year Warranties, associated Training and certification.</td>
<td>Sum</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>N.B; Provide comprehensive list of spare part and associated part numbers for above system</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>I.</td>
<td>Any other item necessary to complete installation in this section (Please state)</td>
<td>Sum.</td>
<td></td>
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</tbody>
</table>

Total carried forward to Main Summary of Prices
### SECTION D.W. 4.0  TITLE : IP BASED ACCESS CONTROL SYSTEM

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.W. 4.0</td>
<td><strong>IP Based Access Control System:</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>For the supply and Installation of the following complete with wiring as specified.</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.</td>
<td>IP Based Intelligent Dual Reader controllers, (5 year lithium battery or 3 months full run) 6 MB standard cardholder flash memory, 50,000 of Event memory, maximum of 32 devices, On-board Ethernet, on-board two door control, eight inputs, four outputs, cabinet tamper and power fault input monitors. RoHs, CE marked and UL294.</td>
<td>No.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪  Basement</td>
<td>No.</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪  Ground Floor</td>
<td>No.</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪  First Floor</td>
<td>No.</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>▪  Second Floor</td>
<td>No.</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>IP Based Open prox card reader complete with Biometric, PIN facility, magnetic door lock, door controllers (Dual Reader interface Module (series 2 - Supports OSDP Readers) - 12/24 VDC, 2 reader interface, W/M, 8 inputs, 6 (%A) form C relays, RoHS, CE and UL294 certified and power supply unit with batteries).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>Allow for proximity card equipment printer</td>
<td>No.</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>Proximity Cards printed and customized</td>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Break' glass sensor for emergency evacuation/override</td>
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<td>20</td>
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</tr>
<tr>
<td>F.</td>
<td>Allow use and configuration of the above system with Structured Cabling done by others (Cables by others)</td>
<td>Sum.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td>Allow for interconnection and programming of the above System</td>
<td>Sum.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total carried forward to the next page
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.</td>
<td>Allow for interfacing with other system like Public Address System, Master Clock System, Nurses Call System, CCTV System and Fire Detection &amp; Alarm System as call for and approved by Engineer.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I.</td>
<td>Installation, testing &amp; commissioning</td>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J.</td>
<td>Labeling, Documentation, 2 year Warranties, associated Training and certification.</td>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N.B; Provide comprehensive list of spare part and associated part numbers for above system</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K.</td>
<td>Any other item necessary to complete installation in this section (Please state)</td>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total carried forward to Main Summary of Prices
# SECTION D.W. 5.0 TITLE: CONTROL ROOM AUDIO VISUAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>D.W. 5.0</strong></td>
<td><strong>Control Room - Audio Visual System</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Supply, installation, testing and commissioning of the following items complete with necessary accessories to complete the installations:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.</td>
<td>LED Video wall of between 1075x548mm flat panel screens, Fitted to mount patterns up to 3225x1644mm Video wall profile (Commercial version), Pop-up functions included, Support 3x3 flat 1075x548mm panel Screens and multi-viewing, Video Wall Terminal Software, User friendly; control multiple displays with resolutions up to 1920x1080 mounting brackets and associated accessories</td>
<td>No. 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>Video Wall Terminal Software</td>
<td>No. 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>Software Controller for content design software I/O DVI/HDMI platform</td>
<td>No. 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>8 x 8 Matrix/Matrox/Switcher/server for above video wall to support displaying BMS system, security systems, public address etc to above video wall complete with required cables and accessories</td>
<td>No. 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>Power Distribution unit for pull out Rack with a 15 Amp power capacity operating on 240 volt AC unit. Include both over and under voltage protection, surge/ suppressors complete with 8no. (uk ) rear outlets</td>
<td>No. 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td>High speed HDMI FLAT cable</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>20m</td>
<td>No. 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3m</td>
<td>No. 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td>USB Extender Kit</td>
<td>No. 2</td>
<td></td>
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</tbody>
</table>

Total carried forward to the next page
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Qty</th>
<th>Rate</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.</td>
<td>Allow use and configuration of the above system with Structured Cabling done by others (Cables by others)</td>
<td></td>
<td></td>
<td></td>
<td>Sum</td>
</tr>
<tr>
<td>I.</td>
<td>Labeling, Documentation, 2 year Warranties, associated Training and certification.</td>
<td></td>
<td></td>
<td></td>
<td>Sum</td>
</tr>
<tr>
<td>J.</td>
<td>Any other item to complete the installation in this section [Please state]</td>
<td></td>
<td></td>
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</tbody>
</table>

Total carried forward to Main Summary of Prices
## SECURITY SYSTEM INSTALLATIONS

### MAIN SUMMARY OF PRICES

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>QTY</th>
<th>Unit</th>
<th>KShs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DW 1.0</td>
<td>Section 1 Preliminaries and Contractual Requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DW 2.0</td>
<td>Section 2 IP CCTV Surveillance System</td>
<td></td>
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</tr>
<tr>
<td>DW 3.0</td>
<td>Section 3 Storage Equipment</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>DW 4.0</td>
<td>Section 4 IP Based Access Control System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DW 5.0</td>
<td>Section 5 Control Room - Audio Visual System</td>
<td></td>
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</tr>
</tbody>
</table>

Sub Total

Total Carried Forward to Main Summary of Volume I
6.1 **Documentation Requirements**

<table>
<thead>
<tr>
<th>Document</th>
<th>With Bid</th>
<th>Before Manufacture</th>
<th>During FAT</th>
<th>Upon Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary general arrangement drawing (with dimensions)</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QA / QC Plan in accordance with ISO 9001:2008</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General arrangement drawing (with dimensions)</td>
<td>YES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schematics/Line diagrams for construction</td>
<td>N/A</td>
<td>YES</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Recommended Spares List</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>YES</td>
</tr>
<tr>
<td>Routine Test Reports / Certificates</td>
<td></td>
<td></td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Type Test Reports / Certificates</td>
<td>N/A</td>
<td>N/A</td>
<td>YES</td>
<td>N/A</td>
</tr>
<tr>
<td>Commissioning Procedure</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>YES</td>
</tr>
<tr>
<td>As-built General arrangement drawing</td>
<td></td>
<td></td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>As-built Schematics</td>
<td></td>
<td></td>
<td>YES</td>
<td></td>
</tr>
<tr>
<td>Site Test Reports / Certificates</td>
<td></td>
<td></td>
<td></td>
<td>YES</td>
</tr>
<tr>
<td>Special Test Reports / Certificates</td>
<td>N/A</td>
<td>N/A</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>
6.2 **Technical Schedule**

The tenderer **MUST SUBMIT** comprehensive manufacturer’s technical brochures and performance details for all items listed in this schedule (fill forms attached).

<table>
<thead>
<tr>
<th>ITEM No.</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>CCTV system</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Access Control System</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Video Wall System</td>
<td></td>
</tr>
</tbody>
</table>
7 PART E: DRAWING SCHEDULE

7.1 DRAWING SCHEDULE:

As shall be provided during project implementation.