

SECTION 25 11 00 – DATA PROCESSING EQUIPMENT (DPE)

1.01 SUMMARY:

- A. ^{A19}**Scope:** Scope of work shall be in accordance with Paragraph 1.01 D. of Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), as required, for various systems — including process control systems (PCSs), VDSs, and VRSs — to be provided and installed as part of the Works.^{A19} ^{A16}This Section of the Employer's Requirements shall be read in conjunction with the Sections listed in Table 25 11 00-1.^{A16}
- B. **Related Sections:**

TABLE 25 11 00-1: ^{A9} Related Sections ^{A9}			
1.	Section 01 81 26	-	Communications, Control, Safety, and Security Systems.
2.	Section 11 52 23	-	Video Walls.
3.	Section 27 11 16	-	Cabinets, Racks, Frames, and Enclosures.
4.	Section 27 53 13	-	Time Synchronization Systems.
5.	Section 28 23 19	-	Video Recording System.
6.	Section 28 50 00	-	Evacuation Systems.
7.	Section 35 12 00	-	Vessel Detection Systems.
8.	Section 40 95 13	-	Process Control Hardware.
9.	Section 40 96 45	-	Process Control Software.

1.02 REFERENCE:

- A. **Applicable Publications:** Refer to Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), ^{A9}Paragraph ^{A9} 1.02.

1.03 REQUIREMENTS:

- A. **General Requirements:**
1. The ^{A9}Contractor ^{A9} shall meet all applicable requirements of Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), ^{A9}Paragraph ^{A9} 1.03.
 2. Printers, servers, and workstations shall have Ethernet type LAN ports in accordance with IEEE 802.3. Units for applications requiring redundant LANs shall have separate, dual LAN ports.
 3. ^{A20}DPE manufacturers shall be ISO 9001 certified. ISO 20000 certification is preferred to ensure an ITIL style help desk.^{A20}

4. ^{A5}Hard disks in DPE shall include ample space as required for Employer furnished antivirus and anti-spyware software and the associated DAT files.^{A5}
The contractor may replace hard disks with storage tier 0 Solid State Drives (SSDs) or better units meeting the required number of random read/write operations.
5. Touch sensitive screens shall have a thin film material providing anti-reflection, durable protection, and ease of cleaning. It shall improve readability, be removable and replaceable, and protect from dents, dings, and scratches.
6. ^{A3}Resolution of graphic cards shall be equal to or greater than the maximum resolution that connected monitoring equipment is capable of.^{A3}
- ^{A5}7. DVD drives, where applicable, shall be Blu-ray type or better.^{A5}

B. Hardware:

1. Cables:

- a. **General:** The ^{A9}Contractor ^{A9} shall include all data, power, and video cables necessary for interconnecting DPE.
- b. **Extra Long Monitor Cables:** Shall be shielded, with connectors and length as required for distance between graphics card and display equipment.

2. Computer Video Extenders:

- a. Extenders shall allow going long distances between a computer system unit and the display monitor as required.
- b. Extenders shall include local transmitting and remote receiving units, and shall not degrade original video resolution.

3. Keyboard/Video/Mouse (KVM) Switches:

- a. Units shall provide the most reliable, flexible and secure access, control, and management anywhere, including servers and other network devices. The quantity of equipped ports and users shall be as required by the applications.
- b. KVM switches shall be enterprise-class, fully interoperable and scalable, improving productivity and efficiency. Using KVM over IP is acceptable to the Employer.

4. Monitors:

- a. Unless otherwise specified, standard monitors shall have flat LCD screens with the following or better characteristics:

TABLE 25 11 00-2: ^{A9}Monitor Characteristics ^{A9}	
Colors	16,000,000
Contrast Ratio	1,000:1
Resolution	1,600 x 1,200
Size	533 mm (21") diagonal, or slightly larger
Speakers	Built-in
Type	LCD, OLED, Plasma, or SED

- b. The Employer prefers having monitors with HDMI port(s) too.

5. **Portable Terminals:**

- a. The ^{A9}Contractor ^{A9} shall provide portable terminals as required for each new lock site, each of sturdy construction and durable design adequate for use at transiting vessels, tugs, and other mobile applications.
- b. ^{A3}Units shall be handheld, wireless, WiFi and/or WiMax compatible, and VoIP ready. Terminals shall have the following or better characteristics:^{A3}

TABLE 25 11 00-3: ^{A9}Portable Terminal Characteristics ^{A9}		
Battery	Running Time	3.5 hours
	Standby Time	170 hours
	Type	Rechargeable
Battery Charger		Furnished for each terminal
Screen	Colors	65,000
	Resolution	240×200

6. **Printers:**

a. **General:**

- 1) Except for printers to be used to report events on a line-per-line basis, systems shall use Laser printers with the following or better characteristics:

TABLE 25 11 00-4: ^{A9}Laser Printer Characteristics ^{A9}		
Duty Cycle		^{A10} 30,000 pages/month ^{A10}
Memory		Sized as required, 256 MByte minimum
Print Language		PCL
^{A10} Page Sizes		Legal and letter ^{A10}
Print Speed	Color	^{A10} 8 ppm (for color printers only) ^{A10}
	Black	^{A10} 12 ppm ^{A10}
Resolution	Color	600 dpi (for color printers only)
	Black	1,200 dpi

- 2) Printers shall support all applicable graphic symbols relevant to the system where connected.
 - b. **Black Ink (Monochrome) Printers:** ^{A10}Shall be LaserJet type with original, genuine, and ISO 19752 compliant toner cartridge. ^{A10}
 - c. **Color Printers:** ^{A9}Shall be ColorJet type. ^{A9}
7. **Remote Keyboards:**
- a. A single keyboard with a switching device shall be suitable for an array of multiple video display terminals, including console mounted monitors and video walls in control rooms.
 - b. Video walls shall have a keyboard switch to select use between PCS HMI and video wall.
8. **Remote Mice:**
- a. A single mouse with a switching device shall be suitable for an array of multiple video display terminals, including console mounted monitors and video walls in control rooms.
 - b. Video wall shall have a mouse matrix to merge both consoles’ mice into a single mouse input, so that either console may configure the video wall display.
9. **Servers:**
- a. **Embedded Servers:**
 - 1) The Employer finds acceptable having open process control (OPC) servers built-in in other devices.
 - b. **Non-embedded Servers:**
 - 1) Units shall be blade type, suitable for rack mount and the best data center practices. Servers shall have the following or better characteristics:

TABLE 25 11 00-5: ^{A9} Server Characteristics ^{A9}		
Hard Disks	Array Type	RAID-5
	Total Usable Disk Space	^{A19} Sized as required, 250 GB minimum ^{A19}
Memory		Sized as required, ^{A9} 4 GByte ^{A9} minimum
Processor	Bits	32 or 64
	Type	Quad-core
Redundancy		CPUs and power supplies

- 2) Blade chassis shall include LAN and SAN redundancy switches compatible with Cisco and Brocade infrastructure of the Employer.
- 3) ^{A9} (Reserved) ^{A9}
- 4) ^{A9} (Reserved) ^{A9}

10. **Touch Sensitive Monitors:**

- a. These monitors shall be robust, have a scratch resistant surface, withstand several million touches in any single touchpoint, and maintain full operation without faulty behavior.
- b. Other touch sensitive monitors characteristics shall be in accordance with Table 25 11 00-2, or better.

11. **Workstations:**

- a. Workstations shall have the following or better characteristics:

TABLE 25 11 00-6: ^{A9} Workstation Characteristics ^{A9}		
Hard Disks	Total Usable Disk Space	^{A19} Sized as required, 250 GB minimum ^{A19}
Memory		^{A20} Sized as required, 4 GByte minimum ^{A20}
Processor	Bits	32 or 64
	Type	Dual-core

- b. ^{A9} (Reserved) ^{A9}

C. **Software:**

1. **Antivirus Software:** The Employer will provide the latest version of the antivirus software in use at the time of installation and in accordance with the latest security policies. Currently, this software is Network Associates Technology, Inc. (www.mcafee.com, Santa Clara, CA, USA) McAfee VirusScan Enterprise.
2. **Operating Systems (OSs):** Shall be as manufactured by Microsoft (www.microsoft.com, Redmond, WA, USA), or approved equivalent.
 - a. **Operating System for Servers:** Shall be Microsoft Windows Longhorn Server, or approved equivalent. In case of Windows virtualization, VMWare (www.vmware.com) ESX or better shall be used as Virtual Operating System.
 - b. ^{A3}**Operating System for Laptops and Workstations:** Shall be Microsoft Vista Enterprise, or approved equivalent. ^{A3}

- c. **Operating System for Wireless Devices (except laptops):** ^{A19} Shall be Microsoft Windows Mobile, or approved equal. ^{A19}

D. Installation:

1. General:

- a. The Employer will apply information security and governance policies current at the time of installation.

^{A10}b. DPE in locks’ main control buildings shall be installed in a data center type environment insofar as practical. ^{A10}

- 2. **Computer Video Extenders:** Local transmitting and remote receiving units shall be connected by standard UTP cable.

- 3. **Remote Keyboards and Mice:** Shall be furnished for workstations, on consoles and video walls controllers at control rooms, and for servers at communications rooms.

- 4. **Touch Sensitive Monitors:** Shall be installed for the radio-telephone console in control room of main control buildings.

5. Servers:

- a. Units shall be rack mounted.

- 6. **Web Servers:** Shall be installed outside a firewall and configured to enable visualization only (read only), without any control whatsoever. ^{A20} Authorized external users shall only be able to connect to web servers between them and the firewall, not to system servers. ^{A20}

- 7. ^{A16}**Workstations:** Shall be furnished as required by systems specified in other Sections of the Employer’s Requirements. ^{A16}

1.04 DESIGN CRITERIA/SYSTEM PERFORMANCE:

A. General:

- 1. **Problem to be Solved:** DPE and peripheral equipment shall solve the following business needs:

- a. Provide reliable and fast processing power, for all the applications used in the control and data management of the third set of locks.

- b. Provide high resolution digital video, text, graphics displays and printed imaging, as required for all processes and systems of the third set of locks.

- c. Provide the required communications features to integrate them all, and function appropriately in the networked environment of the ACP.

2. **Restrictions to be Considered:**

- a. Prescriptive information is given in order to meet Employer information technology standards.
- b. Critical servers shall not be virtualized.

B. **Design Criteria:**

1. Server hosting spaces shall be designed in accordance with BICSI-002 and TIA 942, particularly the best practices for data centers.
2. All DPE shall be designed to bring top quality performance and aesthetics in harmony with the working environment.
3. DPE shall be designed ergonomically to provide a comfortable and easy operation for locks personnel.
4. All DPE shall be designed as robust and compact as possible with a long life span and a high duty-cycle.

C. **System Performance:**

1. DPE and peripheral equipment shall have easy of connectivity and consistent performance.
2. DPE shall also have adequate processing power and speed, and allow smooth software installation and upgrades.

1.05 SUBMITTALS: The following shall be submitted for substantiation purposes:

A. **Design:** The following shall be in accordance with Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), ^{A9}Subparagraph 1.05 D: ^{A9}

1. CPM diagram, with monthly updates.
2. Descriptive literature.
3. ^{A20}ISO 9000 (required) and 20000 (preferred) certificates for DPE manufacturers. ^{A20}
4. ^{A20}IT security methods description. ^{A20}
5. Any other data required for review.

B. **Re-Submittals Just Prior to Purchasing Materials:** All items in A. above that have changed from original submittal shall be resubmitted in a Design Conference in accordance with Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), Paragraph 1.05.

C. Upon Receipt of Shipped Items in Panama:

1. Instruction manuals for installation and operation.
2. Packing lists.

D. Prior to Issuance of Taking Over Certificate:

1. List of recommended spare parts.
2. Software licenses.
3. Test reports.

1.06 QUALITY ASSURANCE: Shall include the following in accordance with Section 01 81 26 (*Communications, Control, Safety, and Security Systems*), ^{A9}Paragraph ^{A9} 1.06:

- A. Factory Quality Control Tests (FQCT).
- B. Warranty.

END OF SECTION