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Bill of Quantities

Instructions to Bidders

The CCTV system design used in these bidding documents is critical in terms of camera locations, camera field of view, video cable routing, Digital Video Recording servers, Uninterruptible Power Supplies, and other such equipment.

In addition to the bids that are submitted that are compliant with these Bidding Documents, Bidders are encouraged to submit alternative features that will improve camera functionality, reduce prices and add to the overall success of the system.

It should be noted that non compliant bids/bidders cannot be accepted even though an acceptable alternative CCTV system has been submitted.

The delivery schedule expressed as weeks/months stipulates hereafter a delivery date which is the date of CIF delivery directly to the Melville Hall Airport. In order to determine the correct date of delivery hereafter specified, the Purchaser will take into account the additional time that will be needed for transit from the Port of Roseau to the Project Site or to another common place.

General

The client who will manage and use this CCTV system is the Dominica Air and Sea Ports Authority (DASPA). They already use CCTV systems installed at the Port Facility at Woodbridge Bay, the Cabrits Cruise Ship Terminal and the Roseau Ferry Terminal to provide surveillance at these facilities. **The CCTV system supplied must be compatible with these systems to enable remote viewing of the cameras by DASPA management.**

All cameras must be connected to a dedicated Uninterruptible Power Supply in the CCTV Control Centre to ensure ongoing operations during the brief period of power failure, i.e. before the generator becomes fully operational.

Value Added Tax

The Bidder is required to show the value added tax on all equipment and services where applicable, as a separate item. The funding organization does not pay value added tax on the items provided.

Equipment Requirements

The following items of equipment are required to be delivered and installed by the supplier. Delivery is required 12 weeks from the date of the award of the contract.

The Purchaser has described the location of each camera. Bidders/suppliers are required to ensure that they know these camera locations and the relevant conduit that routes to the CCTV Control Centre. The bidder/supplier should contact the Project Supervisor or the Consultant in cases of doubt as to where the camera location or the conduit is in doubt.

The relevant technical specifications applicable to this equipment are in the following section titled Technical Specifications.

Cameras, including auto-iris lenses, mountings, enclosures and power supplies		
No.	Qty	Description
1	3	Wall Mounted, 1/3" CCD, Interior colour cameras, Night Vision, 480 lines, vari-focal, 2.8 – 12.0 mm. Ref: Cameras 1, 2 and 5
2	2	Ceiling Mounted, 1/3" CCD, Interior colour cameras, Night Vision, 370 lines, vari-focal, 2.8 -12.0 mm. Ref: Cameras 3 and 4
3	6	Ceiling Mounted, 1/3" CCD, Interior colour cameras, 480 lines, vari-focal, 2.8 -12.0 mm. Ref: Cameras 7, 8, 16, 17, 18, and 19.
4	1	Ceiling Mounted, 1/3" CCD, Weatherproof, Exterior colour cameras, 480 lines, vari-focal, 2.8 -12.0 mm Ref: Camera 25
5	2	Pole Mounted, 1/3" CCD, Weatherproof, Exterior colour cameras, 480 lines, vari-focal, 2.5 – 6 mm. Ref: Cameras 37 and 47
6	12	Ceiling Mounted, 1/3" CCD, Weatherproof, Exterior colour cameras, 370 lines, vari-focal, 2.8 -12.0 mm. Ref: Cameras 26, 27, 28, 30, 31, 32, 33, 34, 35, 41, 42, and 46.
7	1	Wall Mounted, 1/3" CCD, Weatherproof, Exterior colour cameras, 370 lines, vari-focal, 2.8 -12.0 mm. Ref: Cameras 24.
8	3	Pole Mounted, 1/3" CCD, Weatherproof, Exterior colour cameras, 370 lines, vari-focal, 2.5 - 6.0 mm. Ref: Cameras 36, 43 and 44.
9	1	Ceiling Mounted, 1/3" CCD, Interior colour camera, 370 lines, vari-focal, 2.5 – 6.0 mm. Ref: Camera 6
10	5	Wall Mounted, 1/3" CCD, Interior colour cameras, 370 lines, vari-focal, 2.8 -12.0 mm. Ref: Cameras 9, 11, 12, 21, and 22.
11	2	Ceiling Mounted, 1/3" CCD, Interior colour cameras, 370 lines, vari-focal, 2.8 -12.0 mm. Ref: Cameras 20 and 29.
12	2	Tower Mounted, Weatherproof, Pan, Tilt, and Zoom, Low light, colour camera 5.6 – 112 mm. Ref: Cameras 23 and 38.
13	3	Ceiling Mounted, Interior Pendant, Pan, Tilt, and Zoom, Low light, colour camera 2.5 – 50 mm. Ref: Cameras 10, 14 and 15.
14	1	Pole Mounted, Weatherproof, Zoom, Low light, colour camera 5.0 - 100 mm. Ref: Camera 39.
15	3	Pole Mounted, Weatherproof, Pan, Tilt, and Zoom, Low light, colour camera 5.6 – 112 mm. Ref: Cameras 40, 45 and 48.
	47	

Coaxial Cable, Electric Cables and Accessories		
No	Qty	Description
16	2000 ft.	Video Coaxial RG59U
17	5000 ft.	Video Coaxial RG6U
18	150	BNC Connector Pairs
19	As Req'd	Electrical Fittings

Wireless Equipment and Accessories		
No	Qty	Description
20	5	Single Channel Wireless Transmitter/Receiver – 5.8 GHz
21	5	PTZ Wireless Controllers
22	10	10-foot Masts and Mountings capable of supporting PTZ Cameras
23	2	20-foot Galvanized Steel Tower to support PTZ Camera

Digital Video Recording Servers, Software, and Accessories		
No	Qty	Description
24	3	Rack mounted DVR servers 2 GB memory, 16 Video Inputs, 1.6 TB Hard Disk drives, Network Cards, and CD/DVD writer, 2 x 19-inch Flat Monitor, CCTV Keyboard, operating software and DVR applications suite with archiving and backup routines
25	1	Equipment Rack for 3 servers
26	1	52-inch LCD or Plasma Colour Monitor with wall mounting rack
27	1	Video Switch to connect DVRs to display images on 52-inch Monitor

Uninterruptible Power Supplies		
No	Qty	Description
28	2	3000 kV UPS with 4 duplex receptacles to protect from power failures, brownouts (Low voltage), sags, power surges, high voltage spikes, switching transients, line noise, frequency variations, and harmonic distortion; one for cameras and one for servers
29	1	Electrical Distribution Panel equipped with 48 circuit breakers for the 48 cameras
30	1	Electrical Distribution Panel equipped with circuit breakers for the servers

Remote Viewing Stations		
No	Qty	Description
31	4	Personal Computers with the 1 GB Memory, 80 GB Disk Drives, Network Cards and 19-inch Flat Screen Monitor and Windows XP® operating software and Remote Viewing software

Local Area Network Equipment		
No	Qty	Description
32	1	8-Port Fast Ethernet Hub or Switch – 10/100/1000 mbps
33	500 ft	10 Base T Cable - UTP
34	10	Wall Receptacles
35	25	Cable ends

Services
Civil Works, Installation, Training, and Commissioning

Camera Locations

<u>No.</u>	<u>Location Description</u>	<u>Camera Description</u>	<u>Notes</u>
1	On north wall of stairwell (C2-19) to Navigation Tower, facing grill in door 89-	Night Vision, Auto Iris, BLC, 480 lines , 2.8 – 12.0 mm, vari-focal	The images from this camera will be shown on a Remote Viewing Station in the Control tower to identify visitors
2	Wall mounted on west wall (C2/D-18a) of Room 49 facing stairs from Ground Floor	Night Vision, Auto Iris, BLC, 480 lines , 2.8 – 12.0 mm, vari-focal	To identify visitors to Technical Floor
3	Ceiling mounted in Staff Lounge (Room 44), (F/E-20/19) 2 feet from west wall, 9 feet from door 29, facing door 29	Night Vision, Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	This camera may be set to provide an alarm if motion is detected after business hours
4	Ceiling mounted in centre of corridor (C-18) 20 feet from door 30 outside CCTV Room 2 facing door 30	Night Vision, Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
5	Wall mounted (C-16/17) in Arrivals Entry, facing Arrivals Entry to identify entering passengers	Night Vision, Auto Iris, BLC, 480 lines , 2.8 – 12.0 mm, vari-focal	This camera will also observe visitors to the Technical Floor
6	Ceiling mounted in CCTV Control Centre (Room 44), to view Operators	Auto Iris, BLC, 2.5 – 6.0 mm, vari-focal	Images from this camera are to be recorded but not to be displayed on the monitors in the CCTV Control Centre
7	Ceiling mounted, pendant, on bottom of cross beam, 25 feet (C1/C2 – 13/14) behind Immigration Control	Auto Iris, BLC, 480 lines , 2.8 – 12.0 mm, vari-focal	These two cameras are to be located so as to identify visitors and should cover all Immigration Lanes
8	Ceiling mounted, pendant, on bottom of cross beam, 25 feet (C1/C2 – 13/14) behind Immigration Control	Auto Iris, BLC, 480 lines , 2.8 – 12.0 mm, vari-focal	
9	Wall mounted in the corner (B-15) behind the Customs Control Area in the Arrivals Concourse, facing Customs desks	Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
10	Ceiling mounted, pendant in centre of Arrivals Concourse – (C2 -14)	PTZ with 2.5 – 50 mm	To monitor Arrivals Lounge
11	Wall mounted on southern wall (C/D-12/11) of corridor from Departure Lounge leading to VIP Lounge facing Door 44	Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
12	Wall mounted on northern wall (C1-11/12) of corridor 35 leading to VIP Lounge facing Door 40	Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
13	Not Required		

<u>No.</u>	<u>Location Description</u>	<u>Camera Description</u>	<u>Notes</u>
14	Ceiling mounted, pendant in centre of Departures Lounge – (D -10)	PTZ with 2.5 – 50 mm	To monitor Departures Lounge
15	Ceiling mounted, pendant in centre of Departures Lounge – (D -8)	PTZ with 2.5 – 50 mm	
16	Ceiling mounted (C2/D-9) close to southwest corner of Security Screening Room 17, facing entry door 6	Auto Iris, BLC, 480 lines , 2.8 – 12..0 mm, vari-focal	To identify passengers
17	Ceiling mounted close to northwest corner of Security Screening Room 17, facing the middle of the room	Auto Iris, BLC, 480 lines , 2.8 – 12..0 mm, vari-focal	To identify passengers
18	Ceiling mounted in southwest corner (C/C1-5/6) of Waiting room for Baggage Screening Room 20	Auto Iris, BLC, 480 lines , 2.8 – 12..0 mm, vari-focal	To identify passengers whose baggage must be screened. The location of these cameras may be changed to suit the layout of the room
19	Ceiling mounted 20 feet (C2/D-6) from the western edge of the Inspection table and 3.25 feet from southern wall in Baggage Screening Room 20, facing the Inspection Table	Auto Iris, BLC, 480 lines , 2.8 – 12..0 mm, vari-focal	
20	Ceiling mounted at southwest corner (F-6) of Baggage Screening Room 20, facing Air Side door 21	Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
21	Wall Mounted (D-4/5) on exterior wall of Room No. 29 behind airline counter opposite a point between doors 11 and 12	Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
22	Wall Mounted (D-3/2) on exterior wall of Room No. 28 behind airline counter opposite door 13	Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
23	On 20 foot galvanized steel tower at northwest corner (Air Side) Fire Station Building	Weather proof, Sunshade enclosure, Auto Iris, , BLC, PTZ 5.6 - 112 mm	To view both ends of the runway.
24	Wall mounted 10 feet east (D- -2) of Gate 93 facing Gate 92	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
25	Ceiling mounted in middle of Covered Sidewalk Roof (Ground Side) (B/C-12/11) outside the ATM Room 13, facing the Exit (door 2) of Arrivals Concourse	Weather proof, Sunshade enclosure, Auto Iris, BLC, 480 lines , 2.8 – 12..0 mm, vari-focal	To identify passengers leaving the Arrivals Concourse
26	Ceiling mounted in middle of Covered Sidewalk Roof (Ground Side) (B/C-6), facing the south along the Covered Sidewalk	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	

<u>No.</u>	<u>Location Description</u>	<u>Camera Description</u>	<u>Notes</u>
27	Ceiling mounted in middle of Covered Sidewalk (Ground Side) (B/C-6), facing the north along the Covered Sidewalk	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
28	Ceiling mounted in middle of Covered Sidewalk Roof (Ground Side) (B- 1) at start of Covered Sidewalk, facing the south along the Covered Sidewalk	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
29	Ceiling mounted in corridor (D-18) outside Room 42, facing door 73	Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
30	Pole mounted on the Light Standard on Air Side nearest to south west corner of Air Terminal – Pole overlooks Staff Parking Lot	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	To monitor Arrivals Entry, and Door to Room 39
31	Under the canopy on the column (G-6) in front of the low wall on the runway side of the Air Side corridor parallel with Room 19 (Restaurant) facing Baggage Screening Entry and northern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
32	Under the canopy on the column (G-4) in front of the low wall on the runway side of the Air Side corridor parallel with Rooms 29 and 30 (Private offices) facing Baggage Screening Entry and southern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
33	Under the canopy on the column (G-4) in front of the low wall on the runway side of the Air Side corridor parallel with Rooms 29 and 30 (Private offices) facing Airline Offices and northern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
34	Under the canopy on the column (G-2) in front of the low wall on the runway side of the Air Side corridor opposite partition between Rooms 27 and 26 (Airline offices) facing Airline Offices and southern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	

<u>No.</u>	<u>Location Description</u>	<u>Camera Description</u>	<u>Notes</u>
35	Under the canopy on the column (G-2) in front of the low wall on the runway side of the Air Side corridor opposite partition between Rooms 27 and 26 (Airline offices) facing Airline Offices and northern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
36	15 feet up on pole or a light standard behind fence north of Relocated Cargo Sheds, facing entrance to Cargo Sheds	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.5 - 6.0 mm, vari-focal	
37	15 feet up on pole or a light standard behind fence at the Secure Apron Gate, facing Secure Apron Gate entrance	Weather proof, Sunshade enclosure, Auto Iris, 480 lines , BLC, 2.5 – 6.0 mm, vari-focal	Access Control of Secure Apron Gate
38	On 20 foot galvanized steel tower (Air Side) northeast of Air Terminal Building	Weather proof, Sunshade enclosure, Auto Iris, , BLC, PTZ 5.6 - 112 mm	To view both ends of the runway.
39	On 5 foot mast above Parking Toll Booth at entrance to Airport	Weather proof, Sunshade enclosure, Auto Iris, , BLC, Motorized Zoom 5.0 - 100 mm	
40	Pole mounted 20-feet high on a Light Standard at the entrance to the Parking Lot	Weather proof, Sunshade enclosure, Auto Iris, , BLC, PTZ 5.6 - 112 mm	To monitor Parking lot
41	Under the canopy on the column (G-13) in front of the low wall on the runway side of the Air Side corridor opposite Arrivals Concourse facing door 25 and northern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
42	Under the canopy on the column (G-10) in front of the low wall on the runway side of the Air Side corridor opposite the Departures lounge facing Departure gates 24, facing door 22 and 23, and northern Air Side Corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12.0 mm, vari-focal	
43	15 feet up on pole or a light standard the Ground Side corridor at the northeast corner of the Air Terminal Building facing the entrance to the Concessions Area	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.5 – 6.0 mm, vari-focal	

<u>No.</u>	<u>Location Description</u>	<u>Camera Description</u>	<u>Notes</u>
44	15 feet up on pole or a light standard the Air Side of the Fire Station facing the west so as to monitor north access gate	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.5 – 6.0 mm, vari-focal	
45	Pole mounted on a light standard between Cargo Shed and northwest corner of Air Terminal Building	Weather proof, Sunshade enclosure, Auto Iris, , BLC, PTZ 5.6 - 112 mm	To view traffic and movement on the roadway
46	Under the canopy on the column (G-13) in front of the low wall on the runway side of the Air Side corridor opposite Arrivals Concourse facing door 25 and northern Air Side corridor.	Weather proof, Sunshade enclosure, Auto Iris, BLC, 2.8 – 12..0 mm, vari-focal	
47	10 feet up on pole or a light standard behind fence at the recommended Cargo Secure Apron Gate, facing recommended cargo Secure Apron Gate entrance	Weather proof, Sunshade enclosure, Auto Iris, 480 lines , BLC, 2.5 – 6.0 vari-focal	Optional. This camera is required when access to the runway via the Maintenance Apron is secured with a gate
48	10 feet up on a 15 foot mast in the northeast corner of the Airport Manager's residence facing the communications facility and antenna	Weather proof, Sunshade enclosure, Auto Iris, , BLC, PTZ 5.6 - 112 mm	To monitor unauthorized activity at the communications facility

Schedule of Service Requirements

Instructions to Bidders

The Building Contractor will supply all conduits for the Air Terminal. There may be situations where conduit may be required for cameras to be installed in exterior locations. **Any additional conduit installation requires the approval of the Project Supervisor.**

Services Details

The following services are required from the supplier for the CCTV systems at the Melville Hall Airport. Services must be separately priced and should be based on the proposed time (number of days or hours), unit cost and proposed unit price.

- 1.1 Installation and connection of the following video surveillance cameras at the locations and routing of coaxial cable as noted are required over the next 8 weeks after the equipment has been received by the client.**

The Purchaser has described the location of each camera. Bidders are required to note these camera locations and contact the Consultant in cases where the camera location is not found. Installation includes aiming and focusing the camera and connection to the power supply and DVR. Connection includes pulling the coaxial cable and the power cable through the appropriate conduits to the CCTV Control Centre, and connection to the DVR and UPS as appropriate.

Consult the Technical Specifications in regard to mounting and demounting of cameras.

Connections

<u>No.</u>	<u>Location Description</u>	<u>Connection Type</u>	<u>Routing</u>
1	On north wall of stairwell (C2-19) to Navigation Tower, facing grill in door 89-	Siamese Coaxial Cable	Through 1/2-inch conduit down to space in drop ceiling and then to CCTV Control Room
2	Wall mounted on west wall (C2/D-18a) of Room 49 facing stairs from Ground Floor	Siamese Coaxial Cable	Through 1/2-inch conduit down to space in drop ceiling and then to CCTV Control Room
3	Ceiling mounted in Staff Lounge (Room 44), (F/E-20/19) 2 feet from west wall, 9 feet from door 29, facing door 29	Siamese Coaxial Cable	Through 1/2-inch conduit through the space in drop ceiling and then to CCTV Control Room
4	Ceiling mounted in centre of corridor (C-18) 20 feet from door 30 outside CCTV Room 2 facing door 30	Siamese Coaxial Cable	Through 1/2-inch conduit to the space in drop ceiling and then to CCTV Control Room
5	Wall mounted (C-16/17) in Arrivals Entry, facing Arrivals Entry to identify entering passengers	Siamese Coaxial Cable	Through to 1/2-inch conduit to the space in along the wall and then to CCTV Control Room
6	Ceiling mounted in CCTV Control Centre to view operators	Siamese Coaxial Cable	Along the wall to UPS Panel and DVR
7	Ceiling mounted, pendant, on bottom of cross beam, 25 feet (C1/C2 – 13/14) behind Immigration Control	Siamese Coaxial Cable	Through 1/2-inch conduit to the space in drop ceiling and then to CCTV Control Room
8	Ceiling mounted, pendant, on bottom of cross beam, 25 feet (C1/C2 – 13/14) behind Immigration Control	Siamese Coaxial Cable	Through 1/2-inch conduit to the space in drop ceiling and then to CCTV Control Room
9	Wall mounted in the corner (B-15) behind the Customs Control Area in the Arrivals Concourse, facing Customs desks	Siamese Coaxial Cable	Through a 1/2-inch conduit up to the space in drop ceiling and to the soffit duct then to CCTV Control Room
10	Ceiling mounted, pendant in centre of Arrivals Concourse – (C2 -14)	Siamese Coaxial Cable	Through a 1/2-inch conduit up to the space in drop ceiling and through special conduit to CCTV Control Room
11	Wall mounted on southern wall (C/D-12/11) of corridor from Departure Lounge leading to VIP Lounge facing Door 44	Siamese Coaxial Cable	Through a 1/2-inch conduit up to the space in drop ceiling and to Ground Side duct then to CCTV Control Room
12	Wall mounted on northern wall (C1-11/12) of corridor 35 leading to VIP Lounge facing Door 40	Siamese Coaxial Cable	Through a 1/2-inch conduit up to the space in drop ceiling and to Ground Side duct then to CCTV Control Room

<u>No.</u>	<u>Location Description</u>	<u>Connection Type</u>	<u>Routing</u>
13	Not required		
14	Ceiling mounted pendant in south centre of Departures Lounge, (D – 10)	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
15	Ceiling mounted pendant in north centre of Departures Lounge, (D – 8)	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
16	Ceiling mounted (C2/D-9) close to southwest corner of Security Screening Room 17, facing entry door 6	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
17	Ceiling mounted close to northwest corner of Security Screening Room 17, facing the middle of the room	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
18	Ceiling mounted in southwest corner (C/C1-5/6) of Waiting room for Baggage Screening Room 20	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
19	Ceiling mounted 20 feet (C2/D-6) from the western edge of the Inspection table and 3.25 feet from southern wall in Baggage Screening Room 20, facing the Inspection Table	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
20	Ceiling mounted at southwest corner (F-6) of Baggage Screening Room 20, facing Air Side door 21	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
21	Wall Mounted (D-4/5) on exterior wall of room no. 29 behind airline counter opposite a point between doors 11 and 12	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
22	Wall Mounted (D-3/2) behind airline counter opposite door 13	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side soffit duct then to CCTV Control Room
23	On a 20-foot galvanized steel tower at the northwest corner (Air Side) off Fire station	Wireless	Transmitter on mast at camera site and receiver on mast above CCTV Control Centre

<u>No.</u>	<u>Location Description</u>	<u>Connection Type</u>	<u>Routing</u>
24	Wall mounted 10 feet east (D- -2) of Gate 93 facing Gate 92	Siamese Coaxial Cable	Through a 1/2-inch conduit to Ground Side soffit duct then to CCTV Control Room
25	Ceiling mounted in middle of Covered Sidewalk Roof (Ground Side) (B/C-12/11) outside the ATM Room 13, facing the Exit (door 2) of Arrivals Concourse	Siamese Coaxial Cable	Through a 1/2-inch conduit to Ground Side soffit duct then to CCTV Control Room
26	Ceiling mounted in middle of Covered Sidewalk Roof (Ground Side) (B/C-6), facing the south along the Covered Sidewalk	Siamese Coaxial Cable	Through a 1/2-inch conduit to Ground Side soffit duct then to CCTV Control Room
27	Ceiling mounted in middle of Covered Sidewalk (Ground Side) (B/C-6), facing the north along the Covered Sidewalk	Siamese Coaxial Cable	Through a 1/2-inch conduit to Ground Side soffit duct then to CCTV Control Room
28	Ceiling mounted in middle of Covered Sidewalk Roof (Ground Side) (B- 1) at start of Covered Sidewalk, facing the south along the Covered Sidewalk	Siamese Coaxial Cable	Through a 1/2-inch conduit to Ground Side soffit duct then to CCTV Control Room
29	Ceiling mounted in corridor (D-18) outside Room 42, facing door 73	Siamese Coaxial Cable	Through a 1/2-inch conduit in the space in drop ceiling and to Ground Side duct then to CCTV Control Room
30	Pole mounted on the Light Standard on Air Side nearest to south west corner of Air Terminal – Pole overlooks Staff Parking Lot – Camera is to monitor Arrivals Entry, and Door to Room 39	Siamese Coaxial Cable	Through 1-inch buried conduit connecting with in place 4-inch conduit and then to the CCTV Control Room
31	Under the canopy on the column (G-6) in front of the low wall on the runway side of the Air Side corridor parallel with Room 19 (Restaurant) facing Baggage Screening Entry and northern Air Side corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre
32	Under the canopy on the column (G-4) in front of the low wall on the runway side of the Air Side corridor parallel with Rooms 29 and 30 (Private offices) facing Baggage Screening Entry and southern Air Side corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre

<u>No.</u>	<u>Location Description</u>	<u>Connection Type</u>	<u>Routing</u>
33	Under the canopy on the column (G-4) in front of the low wall on the runway side of the Air Side corridor parallel with Rooms 29 and 30 (Private offices) facing Airline Offices and northern Air Side corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre
34	Under the canopy on the column (G-2) in front of the low wall on the runway side of the Air Side corridor opposite partition between Rooms 27 and 26 (Airline offices) facing Airline Offices and southern Air Side corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre
35	Under the canopy on the column (G-2) in front of the low wall on the runway side of the Air Side corridor opposite partition between Rooms 27 and 26 (Airline offices) facing Airline Offices and northern Air Side corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre
36	15 feet up on pole or a light standard behind fence north of Relocated Cargo Sheds, facing entrance to Cargo Sheds	Siamese Coaxial Cable	Buried 1-inch conduit from the pole or light standard along fence at the back of Cargo and Maintenance area (300 feet) to south west corner of Air Terminal through the wall up to the Air Side duct across the drop ceiling to the Ground Side duct and then to the CCTV Control Centre
37	10 feet up on pole or a light standard behind fence at the Secure Apron Gate, facing Secure Apron Gate entrance	Siamese Coaxial Cable	Buried 1-inch conduit from pole or light standard along fence south of Staff Car Park to join the 2-inch conduit that connects camera 36 to the south west corner of Air Terminal, then through the wall up to the Air Side duct across the drop ceiling to the Ground Side duct and then to the CCTV Control Centre

<u>No.</u>	<u>Location Description</u>	<u>Connection Type</u>	<u>Routing</u>
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38	On a 20 foot galvanized steel tower (Air Side) north east of Air Terminal Building	Siamese Coaxial Cable and Control Cable	Buried 1-inch conduit through to the wall the Air Side duct or the vacant buried conduit and to the CCTV Control Room
39	On 5 foot mast over the Parking Toll booth at entrance to Airport	Wireless	Transmitter on mast at camera site and receiver on mast above CCTV Control Centre
40	Pole mounted 20-feet high on a Light Standard at the entrance to the Parking Lot	Wireless	Transmitter on mast at camera site and receiver on mast above CCTV Control Centre
41	Under the canopy on the column (G-13) in front of the low wall on the runway side of the Air Side corridor opposite Arrivals Concourse facing door 25 and northern Air Side corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre
42	Under the canopy on the column (G-10) in front of the low wall on the runway side of the Air Side corridor opposite the Departures lounge facing Departure gates 24, facing door 22 and 23, and northern Air Side Corridor.	Siamese Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre
43	15 feet up on pole or a light standard the Ground Side corridor at the northeast corner of the Air Terminal Building facing the entrance to the Concessions Area	Siamese Coaxial Cable	Buried 1-inch conduit from pole or light standard through terminal wall up to the Ground Side duct and then to the CCTV Control Centre
44	15 feet up on pole or a light standard the Air Side of the Fire Station facing the west so as to monitor north access gate	Wireless	Transmitter on mast at camera site and receiver on mast above CCTV Control Centre
45	On 5 foot mast at northwest corner between Cargo shed and Air Terminal Building	Coaxial Cable and Control Cable	2-inch conduit through the wall to Air Side duct across the drop ceiling and to the CCTV Control centre
46	Under the canopy on the column (G-13) in front of the low wall on the runway side of the Air Side corridor opposite Arrivals Concourse facing door 25 and northern Air Side corridor.	Coaxial Cable	Through 1/2-inch conduit at the back of the column across the ceiling through terminal wall up to the Air Side Corridor to the Air Side duct across the drop ceiling to the Ground side duct and then to the CCTV Control Centre

<u>No.</u>	<u>Location Description</u>	<u>Connection Type</u>	<u>Routing</u>
47	15 feet up on pole or a light standard behind fence at the recommended Cargo Secure Apron Gate, facing recommended cargo Secure Apron Gate entrance	Siamese Coaxial Cable	Buried 1-inch conduit from pole or light standard along fence south of Staff Car Park to join the 2-inch conduit that connects camera 36 to the south west corner of Air Terminal, then through the wall up to the Air Side duct across the drop ceiling to the Ground Side duct and then to the CCTV Control Centre
48	10 feet up on a 15 foot mast in the northeast corner of the Airport Manager's residence facing the communications facility and antenna	Wireless	Transmitter at top of 15 foot mast and must face Receiver at corner of Air Terminal building

Installations

2.1 Installation of Siamese video cables.

The supplier is required to install and "pull" all video and electrical cables through the installed conduits, some of which may include an installed length of rope to assist in the installation. These conduits are routed from individual camera locations to the CCTV Control Centre.

On camera locations less than 300 feet from the CCTV Control Centre the camera power supply may be installed in the CCTV Control Centre and connected to the UPS.

On camera locations greater than 300 feet from the CCTV Control Centre the camera power supply must be installed as close as possible to the camera; the power circuit on the Siamese cable is connected and energized from the UPS in the CCTV Control Centre.

2.2 Installation of wireless video and communications

The Supplier is also required to install and test the wireless video and data communications system. This includes constructing the bases for the masts, erecting the masts, unpacking the equipment, installing all components, connectors and fittings, connection to the electric utility, setting up and configuring units, testing and verifying the equipment and system are operational

2.3 Installation of the Uninterruptible Power Supplies

Prior to the installation of the Digital Video Recording servers and software, it is necessary for the supplier to install the Uninterruptible Power Supplies and the electrical distribution panels. Installation includes unpacking the equipment, installing all components, connectors and fittings, connection to the public utility, setting up and configuring units, testing and verifying the equipment is operational and switches off when the generator/utility is back online. Both 3000 VA UPS are to be installed in the CCTV Control Centre. Each camera will be connected to a circuit breaker the distribution panel which will be connected to one of the two UPS for protection. The other UPS will protect DVRs and monitors.

2.4 Installation of the Local Area Network, Remote Viewing Station Personal Computers and software

This is required by the supplier in the after the receipt of the equipment. Installation includes unpacking the equipment, installing all hardware components and fittings, connecting to the power supply, installing the network cables, cable ends, network switch or hub, all required operating

software, configuring the personal computers, completing the connection to the high speed Internet or the network.

Also included is the installation of the application software, setting the required operating parameters, testing and verifying the entire system is operational. One Remote Viewing Station Personal Computers is to be installed in the Control Tower, the others in Airport Management offices.

2.5 Installation of the Digital Video Recording servers and software

The DVR servers and 52-inch Colour Monitor are to be installed in the CCTV Control Centre. This is required to be done by the supplier in the 8 -10 weeks after the receipt of the equipment. Installation includes unpacking the equipment, installing all hardware components and fittings, connecting all components, installing all required operating software, configuring the servers, creating the native mode network, installing the application software, setting the required operating parameters and camera controls, testing and verifying the entire system is operational.

Training, Commissioning and Handover

The supplier is required to make provision to:

- Develop a training plan and train up to 10 persons in the operation and use of the CCTV system, including archiving and backup procedures, basic troubleshooting, camera cleaning, etc.
- Commission the CCTV system by testing of the Remote Viewing Stations and the complete CCTV DVR systems including each camera control, developing and delivering all necessary operating documentation, setting up the maintenance schedules and procedures, testing all archiving and backup procedures, labelling and documenting camera locations, and various other aspects of the CCTV system prior to handing over all systems in an orderly fashion..
- Handover of the system includes the procedures for changing the user codes and passwords on the DVRs. Parts of the CCTV system will be in operation before then, however, the planned handover date is 31 March 2008.

Implementation Plan

Although not an essential service, bidders are advised to prepare an Implementation Plan detailing how the conduit and other infra-structure will be put in place and how the video cameras, control equipment and other components will be installed.

Technical Specifications

Equivalency of Standards and Codes

Wherever reference is made in these Technical Specifications to specific standards and codes to be met by the goods and materials to be furnished or tested, the provisions of the latest current edition or revision of the relevant shall apply, unless otherwise expressly stated in the Contract. Where such standards and codes are national or relate to a particular country or region, other authoritative standards that ensure substantial equivalence to the standards and codes specified will be acceptable.

All Video Surveillance Cameras

All video surveillance cameras must have the following common specifications:

1. All cameras must be sealed and waterproof as the location is subject to wind borne corrosion from sea blast.
2. Weather proof cameras must be sealed from wind and wind driven rain.
3. Colour cameras, except where Night Vision or infrared is specified
4. Use the Closed Coupled Device (CCD) type pick up element or sensor is to be no less than 1/3 inch
5. 380 lines per inch or 480 lines per inch horizontal resolution must be as specified
6. The two acceptable video standards are NTSC (National Television System Committee) video standard from the United States of America, or Phase Alternate Lines (PAL) video standard from Europe
7. **Cameras may be powered by 12 VAC or 24 VAC. The supplier will connect camera power supply to the electrical circuits from the UPS in the CCTV Control Centre either to a standard power receptacle close to the camera location or from the camera power supply installed in the CCTV Control Centre. It is up to the supplier to ensure the required camera power supply is compatible with the standard voltage of 240 VAC 50 Hz.**
8. The use of Siamese cables i.e. with power and video signal in one housing, is recommended with appropriate standards – ***See 2.1 Installation of Siamese Video Cables***
9. Auto-iris is essential, to enable the iris to be electronically adjusted to compensate for the available light
10. Back light compensation (BLC), is essential, to enable the camera to focus on an object with a bright background. This feature is essential where the camera may be focused on doorways or windows that are subject to early morning or late afternoon sunlight.
11. Digital Signal Processing (DSP), is required to enable the minimizing of colour distortion when viewing patterned objects
12. The correct mounting, brackets must be not subject to corrosion, (preferably stainless steel, aluminium, severe service plastic or composite material) and must be included with the camera

13. Ceiling mounted cameras may require the utilization of a pendant as a result of the high ceiling in some parts of the building; these must be provided.
14. All outdoor cameras and housing must be able to withstand and operate tropical weather conditions (including hurricane).
15. All cameras must be physically robust and rugged and vandal resistant
16. All cameras must be readily demounted for servicing, or replacement, or storage in case of severe weather.
17. All cameras must be fully compatible with the control and recording equipment specified for the CCTV systems
18. All cameras must operate in the temperature range between +10° C to +50° C
19. All cameras must operate in the relative humidity range between 50% and 95%.

Night Vision Surveillance Cameras

1. Light Emitting Diodes – LEDS may be used on the camera.
2. Minimum illumination (colour) is 0.9 Lux
3. Minimum illumination (monochrome) is 0.05 Lux

Low Light Surveillance Cameras

1. Minimum illumination (colour) is 1.8 Lux
2. Minimum illumination (monochrome) is 0.1 Lux

Vari-focal Video Surveillance Cameras

1. Be truly weather proof for exterior locations as they will operate in a corrosive sea blast environment
2. Be corrosion resistant in interior locations as the Terminal Building will be naturally ventilated
3. Include sunshades for all outdoor locations
4. Be vari-focal to facilitate manual focusing during setup so as to optimize the sharpness of the image and the scene under surveillance
5. Lenses are 2.8 – 12 mm and 2.5 – 6 mm

Pan, Tilt and Zoom (PTZ) Video Surveillance Cameras

1. Be truly weather proof for exterior locations as they will operate in a corrosive sea blast environment
2. Be corrosion resistant in interior locations as the Terminal Building will be naturally ventilated
3. Lenses are 5.6 – 112 mm and 2.5 – 50 mm
4. Deliver a pan range of 360° continuous, and a tilt angle between +2° and -75°
5. Be capable of rotating through 90° in 1 second
6. Be capable of a minimum of 5 preset rotation sequences
7. Be capable of tilting to -75° in 1 second
8. Remote control must be fully compatible with CCTV control and recording system (all menus accessible from control and recording system)

9. Must accept RS-422A or RS-485 telemetry control signals
10. Operating temperature must be equal to or better than -10°C to +50°C

Zoom Surveillance Cameras

1. Be truly weather proof as it will operate in a corrosive sea blast environment
2. Lenses are 5.0 -100 mm
3. Remote control must be fully compatible with CCTV control and recording system (all menus accessible from control and recording system)
4. Must accept RS-422A or RS-485 telemetry control signals
5. Operating temperature must be equal to or better than -10°C to +50°C

Video Cables

There are three types of video cable that may be used for the CCTV systems.

1. For short cable runs, less than 750 feet (228m), RG59U with a 22-gauge centre conductor, which has a DC resistance of about 16 ohms per 1,000 feet (304 m) is required. The electrical conductors are separately insulated.

For longer runs up to 1000 feet (304m), the 20-gauge variety which has a DC resistance of approximately 10 ohms per 1,000 feet will work well. In either case, cables with polyurethane or polyethylene as the dielectric material are readily available.

2. For installations requiring cable runs between 750 (228 m) and 1,500 feet (457 m), RG6U is required. Having the same electrical characteristics as RG59, its outer dimension also is about equal to that of RG59. Due to its large-diameter centre conductor of about 18 gauge, RG6U has a DC resistance of approximately 8 ohms per 1,000 feet (304 m) and can deliver a signal farther than RG59. The electrical conductors are separately insulated.
3. RG11 video cable is required to exceed the capability of RG6. Once again, the electrical characteristics of this cable are basically the same as the others. The centre conductor can be ordered in 14- or 18-gauge sizes, producing a DC resistance of approximately 3-8 ohms per 1,000 feet (304 m). Being the largest of the three cables at 0.405 inches, it is more difficult to handle and install. This video cable is required in all runs between 1200 feet (366 m) and 2000 feet (609 m). This video cable is not included in the Bill of Quantities.

All cables need proper termination fittings and accessories

Telemetry Cables

It is recommended and required that all the telemetry signals to and from the Pan, Tilt and Zoom Nd the Zoom surveillance cameras should be transmitted on separate twisted pair cables and not 'down the coax.' Although this entails the installation of additional cables; separating the video and telemetry signals makes for a more efficient telemetry distribution system and helps when trouble-shooting and fault finding.

Wireless Video Communications System

The following are the general specifications for this equipment:

- Radiated Power 50 mV/m @ 3m
- Range (Line-of-Sight) 3000 feet
- Video Scrambling Circuitry
- User Selectable Channels 5.725 GHz to 5.875 GHz
- Transmitter Antenna Type 3dB Internal Fixed Directional Patch
- Receiver Antenna Type 6dBi Directional Patch Beam Width^o 35 Horizontal 40^o
- Video Format NTSC or PAL
- Video Connector BNC female @ 75 OHMS – 1 Volt p-p
- Audio Line Level Connector BNC male @ 600 OHMS – 1 Volt p-p
- Temperature Range -30^oF to 170^oF
- Relative Humidity Range -50% to 95% non condensing
- Power Supplies required 12 to 14 VDC – Polarity Protected
- FCC (USA) Approval required
- NEMA 4 Rated Enclosures

Digital Video Recording Servers and DVR software

The basic technical specifications of the Personal Computer Server and DVR software are as follows:

- 2 GHz Pentium Processor or equivalent minimum
- 1 GB Memory minimum
- Video Card with 128 Mb memory minimum
- 16 Camera Inputs
- 1.6 TB Disk Drives
- 2 Network Interfaces
- S – Video Output
- 2 Universal Serial Bus (USB) Interfaces
- DVD R/RW Drive
- 56 Kbps Modem
- Surveillance Keyboard with integrated Joystick for controlling selected Pan, Tilt and Zoom Cameras
- Single Point of Control whereby the keyboard can switch among up to 4 servers
- Mouse
- Compatible with large plasma monitors
- Two (2) 19-inch Monitors
- 240 VAC, 50 Hz
- Multiple Camera Displays for Live Viewing or Playback While Recording
- Continuous, Motion Detection, Alarm, Pre-Alarm, and Scheduled Recording Modes
- Recording speed minimum, 15 frames per second per camera input; playback speed minimum, 15 frames per second per camera.
- High-Speed Searching (Date, Time, and Alarm) without interruption of recording
- Event and Video Motion Search Capability
- Playback by Date, Time, and Camera without interruption of recording
- Copying of any set of stored images in MPEG format
- 8 Alarm Inputs and 8 Control Outputs minimum to interface with other systems
- Recognition of Image Alteration
- Automatic recovery of all functions after a failure
- Security and firewall protection to prevent unauthorized access to images and cameras
- Camera Pan/Tilt/Zoom Control Via RS-422
- Remote Viewing, Access, and Control Via PSTN, and TCP/IP (LAN/WAN/INTERNET)
- Any or all 16 cameras to be displayed
- Alarm on camera or disk failure
- Capable of being rack mounted
- Archiving and backup software to DVD
- Windows XP® or Linux Operating System
- Native mode networking (without hub or switch)

- Remote Viewing Software is required

52-inch Colour Monitor

- Diagonal Screen Size 52"
- Aspect Ratio 16:9
- DTV Capability HDTV
- LCD Panel or Plasma
- Number of Pixels (dots) 1920 x 1080
- Luminance (cd/m2) 450
- Native Contrast Ratio 3000:1
- Contrast Ratio 3,000:1
- Viewing Angles (H x V) 160° x 160°
- Lamp Life (Hours) 60,000
- Backlight 5-Wavelength
- Response Time 4ms
- Audio Output 15W + 15W
- HDMI In 3 (1080p compatible)
- DVI-I with Audio In 1 (1080p compatible)
- Audio L/R In (4)
- RF (1)
- RS-232C (1)
- Power Source AC Input 240 VAC/50 Hz
- Inputs
 - RGB 1 (analog) 15-pin mini D-sub
 - Video 1 S-Video 4-Pin DIN
 - Video 2 S-Video 4-Pin DIN

Video Switch

- 4 - Channel – 1 per DVR
- S-Video Output
- S-Video input
- Display segmentation

Uninterruptible Power Supply Equipment

The specifications are as follows:

- Input Voltage 240VAC
- Output Voltage 240/120 VAC
- Input/Output Frequency 50 Hz
- Backup time, full load with 1 Battery, must be 5+ minutes
- Protection from Power failures
- Brownouts (Low voltage)
- Sags
- Power Surges
- High voltage spikes
- Switching transients
- Line noise,
- Frequency variations
- Harmonic distortion
- Full system self-test on power up
- Automatic on overload or UPS failure
- Ambient Operating temperature 20° to 40°C (68 to 104°F)

Remote Viewing Stations

The specifications are as follows:

- Pentium 4 Processor rated at 2 GHz minimum
- 1 GB memory
- Video Card with 128 MB of onboard memory
- Network Card
- 80 MB Partitioned Hard Disk
- 19-inch plasma monitor
- Windows ® XP operating software
- Remote viewing applications software
- Automatic IP address connection with user code/password prompts.

Conduit

If conduits are to be used for burial and surface applications they must be PVC plastic pipe meeting Schedule 40 specification. Conduit in buildings whether in the ceiling or along interior/exterior walls must be firmly fastened to the ceiling or wall.

Conduit traversing any site must be buried as follows:

1. For areas in any reinforced concrete slab, at a depth of 6 inches in a narrow trench to fit the conduit, and encased in equivalent concrete
2. For asphalt and earthen areas subject to vehicular traffic at a depth of 18 inches in a trench 8 inches wide and covered with at least 6 inches of well-packed sand or encased in concrete to allow the movement of loaded vehicles without damage.
3. For all other areas at a depth of 6 inches in a trench 6 inches wide and covered with 4 inches of well-packed sand.

Fittings include connectors, joints, elbows and other pieces necessary for proper placement. Pull Boxes must be installed at the juncture points or every 100 feet of 2-inch and 4-inch conduit to facilitate installation and maintenance.

Conduit should be used to protect the video coaxial cables at all times, unless an existing duct or conduit to protect and conceal the cable.

Conduit should be used to protect the electrical cables at all times; multiple electrical cables may be installed in large diameter conduit.