SECTION 6 - SUB-SECTION C
COMMUNICATION INFRASTRUCTURE, TELEPHONE SYSTEM AND PUBLIC ADDRESS (PA) SYSTEM

CONTENTS

CHAPTER C1 - COMMUNICATION INFRASTRUCTURES

1.1 Scope of Work

1.1.1 General

The Contractor shall design, supply and install the communication infrastructure for the Inspection Site accordance to the International, Israeli Communication and Bezeq standards.

1.1.2 Communication Systems to be installed

The communication systems shall be installed for four **separated** purposes:

a. "Telephony", "Internet" and PA system communication.

b. "Customs Data" communication.

c. Radiography System and SDMS communication

d. Security & CCTV communication - infrastructures shall be defined by the contractor (outdoor & indoor).

1.2 Communication Infrastructure Content

The communication infrastructure shall consist of the following:

1.2.1 Outdoor Communication to the Site

1.2.1.1 Outdoor communication ducts connecting the main telephone communication room in the Customs House to the nearest outside Bezeq communication facility.

1.2.1.2 The site shall be connected to the outside Bezeq communication facility by a fiber optic cable (24 fibers) and a copper pair cable (200 pair -200x2x0.6 PJ).

1.2.1.3 The Contractor shall coordinate and order the feeding site cables from Bezeq at no additional cost to the Client.

1.3 Outdoor Communication Ducts and Cables

1.3.1 **Main communication room connections**

1.3.1.1 Telephone and " Internet" and PA system - The main communication telephone room at the Customs House (CH) shall be connected to:

a. Radiography Building (R) by manholes by 2X 110mm PVC ducts.

b. Manual Office (MO) by manholes by 2X 110mm PVC ducts.

c. Each gate (Check-in CI, Check out CO) shall be connected by 2X 50 mm ducts.

d. Kennel (K) shall be connected by 2X 50 mm ducts.

1.3.1.2 Customs Data System (CDS) - The main communication (CDS) room at the Customs House (CH) shall be connected to:

a. Radiography Building (R) by manholes by 2X 110mm PVC ducts.

b. Manual Office (MO) by manholes by 2X 110mm PVC ducts.

c. Each gate (Check-in CI, Check out CO) shall be connected by 2X 50 mm ducts.

d. Kennel (K) shall be connected by 2X 50 mm ducts.

1.3.1.3 Radiography and SDMS System - The main communication room at the Radiography Building (R) shall be connected to:

a. Manual Office (MO) by manholes by 2X 110mm PVC ducts.

b. Each gate (Check-in CI, Check out CO) shall be connected by 2X 50 mm ducts.

1.3.1.4 Security Systems - The main communication room at the Manual Office (MO) shall be connected to:

a. Radiography Building (R) by manholes by 2X 110mm PVC ducts.

b. Customs House (CH) by manholes by 2X 110mm PVC ducts.

c. Each gate (Check-in CI, Check out CO) shall be connected by 2X 50 mm ducts.

d. Kennel (K) shall be connected by 2X 50 mm ducts.

e. Camera poles and perimeter fence by 50 mm ducts.

1.3.1.5 The ducts used shall be according to Bezeq standard. The Contractor shall make the necessary road crossings, including excavation and asphalt repair back to the original condition.

1.3.1.6 A minimum clearance of 60 cm shall be maintained between the Customs Data (red) communication ducts to the other communication systems ducts.

1.3.1.7 A minimum clearance of 100 cm shall be maintained between the communication ducts and any other conduit such as RF, power etc.

1.3.1.8 At the building entrance, the ducts shall have a bend radius of at least 1.1 m.

1.3.1.9 The entrance to existing manholes shall be constructed according to Bezeq standards.

1.3.2 **Cable installation**

The Contractor shall supply and install the following outdoor communication cables:

1.3.2.1 Copper cables:

a. From main Telephone communication room in the CH building:
   - by a 50 pairs cable: 50x2x0.6 PJ to R building
   - by a 50 pairs cable: 50x2x0.6 PJ to MO building
   - by a 20 pairs cable: 20x2x0.6 PJ to CI building
   - by a 20 pairs cable: 20x2x0.6 PJ to CO building
   - by a 20 pairs cable: 20x2x0.6 PJ to K building

b. The copper cables at buildings R and MO shall terminate at twisted pairs UTP CAT5E 50 ports patch panels (on both ends) mounted on the communication racks. At the rest of the buildings the cables shall terminate on wall distribution boxes with Krone LSA plus connection modules.

1.3.2.2 Internet Data Fiber Optic cables

a. From main customs data communication room in the CH building:
   - by a 12 Fibers 62.5/125 MM (multi mode OM3/OM4) to R building.
   - by a 12 Fibers 62.5/125 MM (multi mode OM3/OM4) to MO building
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to CI building

b. Outdoor Copper “Data” network cables S/STP GIGADOR 1000 MHz, CAT. 7A outdoor cables (products by Teldor or similar) can be installed from the main communication room in building CH to building CI and CO and if the distance is up to 100 meter , 4 sockets to each building.
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to CO building
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to K building

The fiber cables shall terminate at fiber optic panels with LC Connectors (products by Fibernet or similar approved).

c. Installed on 19” communication racks.

d. Unused connector shall be sealed in order to prevent the fiber optic connector contamination.

1.3.2.3 Customs Data Fiber Optic cables

a. From main customs data communication room in the CH building:
   - By a 12 Fibers 62.5/125 MM (multi mode OM3/OM4) to R building.
   - By a 12 Fibers 62.5/125 MM (multi mode OM3/OM4) to MO building
   - By a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to CI building

b. Outdoor Copper “Data” network cables S/STP GIGADOR 1000 MHz, CAT. 7A outdoor cables (products by "Teldor" or similar) can be installed from the main communication room in building CH to building CI and CO and if the distance is up to 100 meter , 4 sockets to each building.
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to CO building
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to K building

The fiber cables shall terminate at fiber optic panels with LC Connectors (products by Fibernet or similar approved).

c. Installed on 19" communication racks.

d. Unused connector shall be sealed in order to prevent the fiber optic connector contamination.

1.3.2.4 Radiographic and SDMS Data Fiber Optic cables

a. From main data communication room in the R building:
   - by a 12 Fibers 62.5/125 MM (multi mode OM3/OM4) to MO building
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to CI building

b. Outdoor Copper "Data" network cables S/STP GIGADOR 1000 MHz, CAT. 7A outdoor cables (products by teldor or similar) can be installed from the main communication room in building CH to building CI and CO and if the distance is up to 100 meter , 4 sockets to each building.
   - by a 6 Fibers 62.5/125 MM (multi mode OM3/OM4) to CO building

c. The fiber cables shall terminate at fiber optic panels with LC Connectors (Fibernet or similar) installed on 19" communication racks.

d. Unused connector shall be sealed in order to prevent the fiber optic connector contamination.

1.3.2.5 Security Systems cables

The main communication room at the Manual Office (MO) shall be connected by FO / cables to the following buildings according to the contractor's final design:

- Radiography Building (R).
- Customs House (CH)
- Each gate (Check-in CI, Check out CO)
- Kennel building (K).
- Camera poles and perimeter fence.

1.4 Indoor Communication Ducts and Cables

1.4.1 Indoor communication installation

1.4.1.1 Duct dimensions and materials:

a. Ducts for the Telephone, Radiographic and Security systems (BLACK) cabling shall be 30x8.5 cm (main routes) 20x8.5/10X8.5 cm (secondary routes). The ducts shall be wire mesh cable trays from stainless steel.

b. Conduits shall be 29mm diameter for each module in the box (for 4 sockets).

c. Ducts for the Custom data communication systems (RED)
Cabling shall be 30x10 cm (main routes) 20x10 / 12X6 cm (secondary routes). The ducts shall be plastic PVC cable ducts. The minimum distance from red ducts to other systems should be **20 cm**. The distance between red horizontal ducts and black racks should be **100 cm.**

d. Conduits shall be 29mm diameter for each module in the box (for 4 sockets).

e. In the main communication room there shall be a galvanized steel ladder 30 cm wide above the racks and surrounding the room.

1.4.1.2 Main communication systems shall be installed in the ceiling or below the raised floor.

1.4.1.3 Duct width as well as vertical and horizontal bends shall accommodate suitable curving of all duct cables (45 °bend).

1.4.2 Indoor Cable Installation

1.4.2.1 Racks

a. The Contractor shall supply communication racks:

- Floor racks (25”W x 100mmD x 44uH) In buildings MO, CH, R.
- Floor racks (19”W x 60mmD x 15uH) in buildings CO, CI, K.

b. All racks on site shall include: sealed door at the front and back with a lock , shelves for equipment, 24RJ panels, fiber optic panels, brush panels , 50 RJ45 telephone panels ,blank panels, shelves , vents, 6/12 electricity panels

with CEE plugs 16A, grounding kit , and a bottom drawer 3U height (for 44uH racks only).

1.4.2.2 Indoor Cables

Indoor Cabling communication system shall be installed in the building for network cabling – double S/STP GIGADOR 1000 MHz, CAT 7A (Products by Teldor p/n 99XG54XXX or similar)

1.4.2.3 **Outlets**

a. Standard communication outlets/sockets shall be provided in rooms for each customs workstation:

- Telephone – minimum 4 shielded RJ-45, CAT6A outlets, (products by RIT or similar approved).
- Customs Data – minimum 4 shielded RJ-45, CAT6A outlets, (products by RIT or similar approved).

Note: These Customs sockets will be installed at a distance of at least 1m from project outlets.

- At supervisors workstations (app. 15 rooms) needed 8 sockets for each system.
- Radiographic /SDMS –shielded RJ-45, CAT6A outlets, (products by RIT or similar approved) according to contractors final plan.

1.4.2.4 **Patch Panels**

a. Data copper panels shall be products by RIT SMART CLASSix 24 STP RJ-45, CAT6A patch panels , (products by RIT or similar approved) .

b. Patch panel for telephone by 50 port UTP RJ-45 CAT6 Voice panel (products by Tiger or similar approved).

c. Patch panel for 12 / 24 optic fibers LC connectors (products by Fibernet or similar approved).

1.4.2.5 **Patch cords**

a. Copper CAT 7A patch cords - 100 cords RJ-45 to RJ-45 CAT6A in two colors (for CUSTOMS DATA and RADIOGRAFIC systems).

b. Copper CAT 7A patch cords (for Telephone system) - 70 cords RJ-45 to RJ-11,

c. Fiber patch cords – 25 MM cords, connectors to be determined.

d. Lengths signs and quantities of patch cords shall be determined (0.5 / 1 / 2 / 3 meters).

***Note**: Cables, outlets, panels and communication system parts shall be approved by the customer. The equipment shall be the **updated** standards at the installation period with no additional cost.*

1.4.2.6 **SWITCHS** – switches with 24 / 48 RJ-45 CAT6A sockets (like HP ProCurve 2530- 24 / 48 ports), including a MM Gigabit -SX –LC mini-gbic (J4858C).

1.4.2.7 **TV outlets** – approx. 10 shall be installed in **TBD** and shall be connected to a dedicated satellite antenna mounted on the roof (via Israeli satellite TV Provider Company "YES").

1.4.2.8 **Multimedia** – In the meeting rooms in buildings MO and CH :

Communication infrastructures (VGA cables) shall be installed to operate from two points on the center table projection from a computer to a ceiling projector (resolution 1024X768 ,brightness 2500 lumens min.) that shall project on an electric wall 84" screen (1.8X1.8 m) .

The room will include a 55" LED TV, FULL HD that shall be wall mounted and connected bya VGA cables to the center table panel.

1.4.3 Marking and Signs

1.4.3.1 Communication ducts will be marked in HEBREW with clearly visible signs:

"COMMUNICATION" / "DATA COMMUNICATION ".

1.4.3.2 The signs shall be placed along the duct length, with at least 3-m intervals and especially adjacent to all branching points and passages between rooms.

1.4.3.3 All communication outlets shall be marked with clearly visible signs (building-floor-serial number). Colors shall be given at the design stage.

1.5 Installation, Operation and Training

1.5.1 Installation

The installation will be professional, expert and efficient using standard and safe materials and tools complying with Israeli Standards and work practices.

1.5.2 Acceptance Tests

1.5.2.1 The supplier will attach acceptance tests or specifications (copper pass test, fiber optic OTDR test) .

1.5.2.2 The tests will be conducted by the supplier in the presence of customer's representative. Once tests are completed, the supplier will prepare a summary report. The supplier and the customer's representative will append their signatures as mark of approval of the tests and their results.

1.5.3 All approvals will be under the responsibility of the supplier.

1.5.4 Maintenance Commitment

The supplier will be committed to stocking necessary spare parts for a minimum period of 10 years.

1.5.5 Training

Once the system is operating, the supplier will train the customer's employees in system operation, features and capabilities. The training will be based on documentation provided to the customer. The customer will be able to order refresher courses and additional training for a period of 6 month from exchange start-up date, at no additional cost.

1.6 Service and Maintenance

1.6.1 Service

1.6.1.1 Supplier's service center will be ready to provide telephone diagnostic and troubleshooting support. To this end, a professional will be available to respond to queries within 10 minutes from the call for service, or for telephone support.

1.6.1.2 Response time required for urgent failures - Technician arrival within 2 to 4 hours.

1.6.1.3 Ordinary failure response times -

a. For failure message received before 11:00 the technician will arrive the same working day before 15:00. For failure message received after 11:00 the technician will arrive until 11:00 the next working day.

b. The supplier will make sure the customer is available and the faulty equipment is accessible. No technician visit will take place without prior coordination.

1.6.2 Maintenance

1.6.2.1 The supplier will visit the site once in three months. The periodic inspection will include system, peripheral units, ambient conditions etc. Visit report will be submitted to the customer or as pre-assigned.

1.6.2.2 The supplier will keep a maintenance and event log.

1.7 Documentation

1.7.1 While installing the system the supplier will attach the following documentation in Hebrew.

1.7.2 He will be responsible for providing documentation and technical literature as follows:

a. Technical documentation – all equipment user instructions and specifications. This documentation will be forwarded to communication manager on special request within 24 hours.

b. Operating documentation – equipment operating instructions, troubleshooting etc. This documentation will be forwarded to communication manager.

1.7.3 The supplier will provide the customer with 4 documentation sets including:

a. Technical specifications of system and interfaces.

b. System layout with connection and interface points.

c. Detailed user guide for operator and system manager allowing optimal system operation.

d. Operating instructions for end users.

1.7.4 Any other information and documentation pertaining to optimal operation;

1.7.5 The documentation will have a clear and good-looking graphic layout, incorporating advanced graphic features that facilitate reader's comprehension. Documentation samples will be submitted on customer's request.

1.7.6 The documentation will be submitted in a bound book format and, where possible, in Microsoft Word, Autocad, Excel compatible CD- ROM format.

1.8 Ambient Conditions

1.8.1 Required Conditions

The system with all equipment will operate under the following conditions:

a. Temperature: -2°C to 45°C

b. Relative humidity: 20% - 80%

c. Dust: 14 mg/ m^2

1.8.2 Grounding

The supplier will list the equipment grounding requirements and verify their compatibility at the site.

1.8.3 Compliance with Standards

The supplier will attach standards and compliance certificates for all equipment supplied (cables, patch panels, sockets, etc.).

The supplier will attach RFI/EMI compliance certificates according to IS 961, Articles 6.1 and 6.2 for any equipment supplied.

The supplier will attach safety compliance certificates according to Israeli Safety Standard 1124.

1.8.4 Lightning Protection

All supplied equipment will be lightning and surge protected.

The protection will comprise: power sources, electrical sockets, data lines etc.