

## **ATTACHMENT # 3 SPECIFICATIONS**

*A translation to Spanish will be given as a courtesy. If a discrepancy is found between the version in Spanish and the version in English, the version in English will prevail.*

The description of the work for this project is detailed below. The work will be completed at the Chambacú Building in Cartagena, Colombia.

### **GENERAL DESCRIPTION OF THE PROJECT**

Contractor is solely responsible for providing complete construction services necessary to meet the requirements of this contract within the established schedules. General description of the project includes but is not limited to:

- Construction of the ICE embassy branch office at the Chambacú Building which will include a main office, a reception area, a conference room, office area (work stations) and a security area.
- The furniture (supply and installation) is not included in this contract. The contractor shall construct the new offices in coordination with the furniture contractor and all systems (electrical, data, communications, lightning, safety) shall be coordinated.

Limit of Work:

- The Contract shall include all work within the rented property. All work shall be coordinated with the building administration and all regulations and procedures established by the building shall be followed during the execution of the work.
- Contractor shall verify existing site conditions

Permits and Licenses:

- As required by the local authorities and/or the building's administration.

The cost of this work includes materials, tools and labor, and all necessary operating costs, such a personnel transportation and board and lodging for personnel. See description, location, specifications and designs in the following paragraphs and on the attached plans.

### **DETAILED DESCRIPTION OF THE PROJECT**

The following work will be completed for this project on a firm fixed price basis:

#### **1. PRELIMINARY ACTIVITIES**

##### **1.1 Locating and layout:**

The contractor shall survey the area, based on the design supplied. The bidder shall double-check the measures of the area assigned.

##### **1.2 Dismounting of Existing tiles:**

The Contractor shall demolish and remove the existing tile located in the area where the construction will take place (see drawing A003). The contractor shall be responsible for damages caused to any element on site while they will be withdrawn. The works include demolition tools and transportation in trucks to authorized sites.

##### **1.3 Relocation of existing A/C Grills:**

This work includes relocating the existing A/C grills and ducts in order to match the new proposed layout of the office.

Items should be dismantled carefully, so that none of them get damaged, but if any recoverable item should get damaged, the cost thereof will be borne 100% by the contractor.

#### **1.4 Demolish wall section for electrical panel board:**

The Contractor shall demolish and remove the wall section located in the area where the construction will take place (see drawing A003), in order to install the new electrical panel board.

The contractor will be responsible for damages caused to any element on site while they will be withdrawn. The works include demolition tools and transportation in trucks to authorized sites.

#### **1.5 Dismounting of Existing ceiling:**

The Contractor shall dismount and remove the existing ceiling in order to be replaced by a new ceiling. The contractors shall take all provisions to remove the existing lighting system and other elements on along the ceiling before dismounting. The contractor shall be responsible for damages caused to any element on site while they will be withdrawn. The works include demolition tools and transportation in trucks to authorized sites.

#### **1.6 Demolish concrete slab section for installation of metallic beam:**

The Contractor shall demolish and remove the concrete slab section located in the area where the construction will take place (see drawing A003), in order to install a reinforcement metallic beam for the installation of a security door. The contractor will be responsible for damages caused to any element on site while they will be withdrawn. The works include demolition tools and transportation in trucks to authorized sites.

## **2. CEILING**

### **2.1 Mineral Fibre Ceiling**

'Celotex' mineral- fiber ceiling with a sand texture and indented edge, or USG equivalent, shall be supplied and fitted by the contractor, with suspension tape and supported on 1" x 3/4" visible and automatically-assembling metal profiles, and with a white electrostatic paint finish. The ceiling profiles will be indented from the ceiling panels. The ceiling sheets will measure 60cm. x 60cm. When ceilings are being fitted, it should be remembered that small pieces or sections of panels of less than one third panel size shall not be accepted. Ceilings shall be perfectly level, and with well-finished joints between profiles.

The manufacturer's instructions shall be followed when storing, transporting and fitting the ceiling. The contractor shall leave on site an amount equivalent to 3% of the quantity of ceiling fitted, for replacement purposes and effects, together with profiles so that maintenance or repairs can be done in the future.

## **3. HARDLINE WALLS**

### **3.1 New Walls 5 - Minute FE:**

Internal wall for the security area that divides the entrance from the offices area shall be built from floor to ceiling, as shown on the drawings (See drawings No. A004 and attachment No.1). These walls should be built using 50 x 150 x 1.9 m vertical galvanized steel C-studs, tack welded at 200 mm. O.C. to 50 x 150 x 1.9 m galvanized steel ceiling and floor runners. Steel runners are anchored with 10 mm. diameter x 70 mm. drop anchors at 460 mm. O.C. Attach horizontally, each face, 25 x 150 mm. Douglas fir (or equivalent) boards to each vertical metal stud with 6 x 65 mm. self drilling screw at 150 mm. O.C. maximum vertical spacing. Finish both sides with a layer of 10 mm. gypsum board (or equivalent). The DOS model number for this design is GPK-05N-DOS-03. (See attachment No.1). The contractor shall include the patch and paint work required to guarantee a smooth surface including sanding of the surfaces, pasting in order to receive the paint.

### **3.2 Existing Walls: Sheet of steel Plate 5 mm:**

Perimeter existing walls for the security area shall be reinforced, as shown on the drawings (See drawings No. A004). These walls shall be reinforced using a 3/16 inch (5 mm.) sheet of steel plate on the protected side of the

wall. The steel plate shall be welded to the longer leg of a 3 x 5 x 1/4 inch (75 x 125 x 6 mm) thick angle iron that is anchored to the ceiling, floor and adjacent walls with 3/8 inch (10 mm.) expansion bolts or other DS/PSP/PSD approved anchorage system. Anchorage bolts shall be spaced 18 inch. (460 mm.) O.C. Use 4 inch (100 mm.) stitch welds, spaced 4 inch (100 mm.) end to end, to attach the steel plate to the angle iron. Adjacent plates shall be joined by attaching the iron angle to the plate with the specified 4 inch (100 mm.) stitch welds and then welding the two angles together with the 4 inch (100 mm.) stitch welds. All anchors shall be located on the protected side of the steel plate. These surfaces shall be duly finished and painted.

### **3.3 Supply and install reinforcement metallic beam IPE-300:**

The contractor shall supply and install two metallic beams reference IPE-300, with dimensions according to the structural concept and the standard NSR-10 and properly anchorage to the existing structure of the building, in order to serve as reinforcement for the installation of one of the security doors. The metallic beams shall be installed above and below the security door frame.

## **4. FLOOR AND WALL FINISHES**

### **4.1 Floor tiles:**

The contractor shall consider the installation of new floor tile along the complete office area. These floor tiles shall be 60x 60 cm. PORCELANATO type or equivalent, white beige, non-slip ceramic tiles commercial traffic 5, with the corresponding ceramic tile skirting. This item includes floor-tile join material, floor smoothed down and the threshold. **Samples should be submitted to the COR before purchasing and installing them for approval.**

### **4.2 Walls Paint:**

Three (3) coats of protective vinyl (Koraza type) covering, matching the existing paint, shall be applied on the clean and finished surface of interior walls; the coats shall be applied in different way so as to achieve better fix. The contractor shall apply this paint for the whole interior walls of the office, including the new walls 5-minute FE and the existing reinforced type. Lines, edges and extensions shall be included.

### **4.3 Existing tile joint:**

On the floor tiles of the existing bathroom contractor shall apply floor-tile join material similar type as used for the new floor tile.

## **5. METAL CARPENTRY**

### **5.1 Installation of security doors and frames.**

The contractor shall include only the installation of two (2) steel security doors and frames with factory installed hardware SHW-2 (See attachment No.2). The first door (access) is to DOS level 2141 (5-minute forced entry) and the second one (security area) is a half vision door to DOS level 1141 (5-minute forced entry with glass). The nominal size of the doors are 3' x 7' for mounting into new steel stud wall, additionally including a 3/4 inch metal inside web of the stud. And for mounting on existing masonry wall the nominal size of the doors is 3' x 7' but additionally the contractor shall include only the installation of a subframe plate (3/8 inch x 6 inch) with Hilti HY 150 epoxy anchors or similar (See attachment No. 4). The contractor shall take into account the electrical installation of the electric strike and electromagnetic locking device which are 120 VAC/24VDC with capacity of 1A. An UPS of 700 VA shall be included for this system (refer to attachment No. 2).

### 5.2 Installation of Metal Detector

The contractor shall include only the installation of an INTELLISCAN 33 metal detector. (See picture and attachment No. 3)

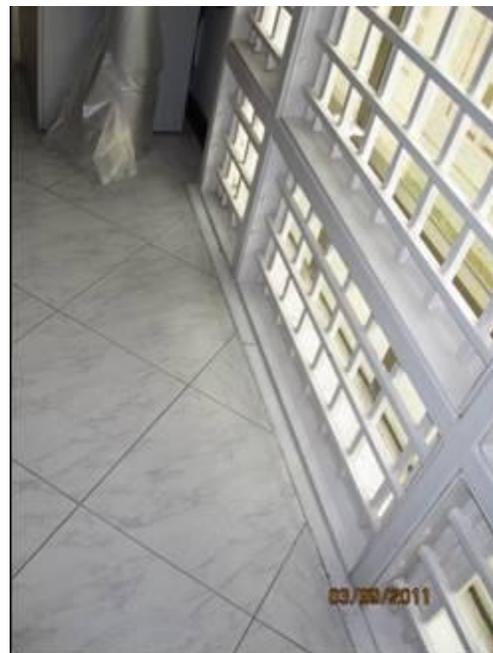


### 5.3 Supply and Installation of metallic grilles

The contractor shall include the supply and installation of a 5-minute forced entry metallic grilles along the window – door that leads to the existing terrace, matching existing grilles (See pictures and attachment No. 5), having the following material specifications:

- Angles:  $F_y=250$  MPa (min)
- Reinforcing Bars:  $F_y= 400$  MPa (min)
- Square Bars  $F_y= 250$  MPa (min)

The door shall have the possibility to open, so a security lock that meets the 5-minute forced entry regulation shall be included.



## **6. CARPENTRY**

### **6.1 Existing wood and aluminum furniture**

The contractor shall take into account doing some adjustments to the existing wood and aluminum doors and furniture to guarantee the correct functioning of each element.

### **6.2 Security Door Finishing**

The contractor shall consider the installation of a flitch along the metallic door frame of the access security doors in order to match the finishing of the doors. The finishing of the flitch shall be in Pintuco barnez lacquer or equivalent transparent or dark as it applies.

## **7. WINDOWS BLIND**

### **7.1 Blinds**

The contractor shall supply and install white mini-blinds on the door-windows that leads to the terrace of the building. These blinds shall be in aluminum and be capable of withstanding deformation. The colour will be chosen by the Embassy.

## **8. ELECTRICAL INSTALLATIONS**

### **8.1 Electrical Standard Scope**

Any electrical installation which is done by the contractor shall comply with the following electrical standards: NTC 2050 last upgrade and chapters 1,2,3,4 and section 645, NEC 250 last upgrade, NTC 3471/UL 67, EIA/TIA 607, EIA/TIA 568-569 last upgrade, ANSI/IEEE C62.41-C62.45, NEPA 780, NTC 4552, IEEE-80, IEEE-77, RETILAP and RETIE last upgrade. The bidder shall include in his proposal catalogs and technical sheets of materials, parts and elements to be used in the project. The awarded contractor shall also count with an electrical/electronics engineer, who shall manage and control the execution of the electrical and communication work, the proposed electrical/electronics engineer shall also sign the installation conformity and material conformity acts requested on RETIE. The bidder shall include in his proposal the curriculum vitae of the proposed engineer.

### **8.2 Equipment, parts and supplies**

The awarded contractor shall make use of equipment, part and supplies certified by RETIE and high quality products with manufacturing date minor to six months. This issue applies to local and foreign products. The awarded contractor shall submit the custom clearance papers (nationalization act) of the imported assets, in order to accredit afterwards the assets' ownership.

### **8.3 Removal of existing lamps**

The bidder shall quote for removing the existing lamps, excepting the restroom area. The power ends and existing piping shall not be removed; however it will be marked with indications of the power circuit branch correspondence. The removed lamps will be inventoried and listed accordingly and submitted to proposed COR.

### **8.4 Removal of the main circuit branch 208VAC**

The bidder shall quote for removing the existing main circuit branch which runs from the offices to be modified up to power building's substation, approximately 80 meters from both ends; in fact bidder shall be responsible to review such length. The awarded vendor shall also remove existing current protection in power building's substation (3X63A).

### **8.5 New main circuit branch system (208/120VAC)**

The bidder shall quote for supply and install a new main circuit branches, running from the new general circuit board to be provided by the awarded contractor up to power building's substation. The new circuit branch shall be type THHN/THNW, three phase system plus grounding line, 4XAWG No 3/0 +1XAWG No 1/0. The cabling to be supplied and installed by awarded contractor shall be RETIE certified.

### **8.6 Main circuit branch raceway system**

The bidder shall quote for supply and install a raceway, which runs from the power building's substation up to offices to be refurbished. Raceway shall be done in galvanized metallic pipe. The awarded contractor shall mark the pipe every 1.5 meters along, markings to be used shall be defined during project execution. The bidder shall quote for supply and install junction boxes according to distance; taking into account that direction changes shall not exceed 180 degrees in continuous curves. The junction boxes to be provided and installed shall be metallic type, 15cm X 15cm. The proposed junction boxes to be used shall be RETIE certified. The item also includes civil work, poke-through in walls, painting and repairing of the affected areas. The installation work shall be coordinated with building's administration.

### **8.7 Main circuit branch current protection**

The bidder shall quote for supply and install a set of two industrial three-poles breaker, thermo-magnetic trigger, voltage operational rated for 208/120 VAC, current capacity up to 3X150A. The new breakers shall be installed as follows: one in the power building's substation and the second one into the new panel board, which shall be located at the offices to be refurbished. The new devices to be supplied and installed shall be certified RETIE, Legrand, ABB, Siemens or similar certified brand.

### **8.8 Main distribution panel board (MDPB)**

The bidder shall quote for supply and install a new electrical panel board, which allows the electrical distribution for the proposed services on the offices to be refurbished, including existing panel board and new secondary board to be supplied and installed. The new unit is located as shown in Plan E1. The new panel board shall have space for the main breaker, three-pole, adjustable, nominal current protection as requested above.

The new circuit board shall have barriers for phases, neutral and ground (copper). The phases' barriers shall be protected by an acrylic sheet or any other RETIE certified mechanism, in order to avoid direct manipulation (Dead front). The new panel board to be supplied and installed shall be done in metal and it shall comply with Colombian standard NTC 3475 or US standard UL67. The new panel board shall have a current capacity up to 400A (See capacity accordingly in NTC 3475, table 11.2), voltage isolation rate 600VAC and interruptive current capacity up to 10KA.

The new panel board shall count with a power meter PM820, which shall be supplied and installed by the awarded contractor. This new unit is installed inside of a metallic enclosure with door, lock and window inspection, in order to avoid direct manipulation from non-qualified personnel as well as water filtration.

The new panel board shall be placed into a metallic enclosure IP 54, NEMA 3R, which shall be supplied and installed by the awarded contractor. The new enclosure shall have frontal door, lock, inspection window and external signaling. The new electrical board shall be mounted in wall and it shall be located beside the existing panel board, inside the offices to be refurbished. The bidders shall quote the work required to install and connect the new panel board and the main circuit branch, which runs from power building's substation as well as the secondary panel boards inside the offices to be refurbished.

The new enclosure shall be made in CR BWG No 14-16 and it shall be painted with special treatment in order to support oxidation due to environment saline conditions, which are present in the area. The internal spaces shall comply with the US standard IEEE-142. Colombian standard NTC 2050 and RETIE shall be

considered during installation. The minimum dimensions for the new metallic enclosure are as follows: 40cm (front), 25cm (depth) and 50cm (height).

The new panel board shall also have a TVSS unit class B, which shall comply with US standard ANSI/IEEE C62.41-C62.45, interruption capacity up to 180KA, protection modes L-L-L-N, L-G, reject filtering rated > -30dB, led indicator of status, operational voltage 208VAC/120VAC, three-poles system. The unit shall be externally installed. The bidder shall annex in his proposal the NEMA LS-1 format, specifying the equipment's technical sheet to be supplied.

The new panel board shall have three current protection breakers as follows: 3X100A for the new secondary panel board, 3X63A for the existing panel board and one unit for the TVSS (Which shall be provided according to maker specifications). Please see annexed file "Electrical calculations.xls" for more details. The panel board shall be marked as per instruction of the NAS-COR.

### **8.9 New secondary panel board (NSPB)**

The proposal shall quote for supply and install a secondary panel board, which shall be located as shown in plan E1. The new circuit board shall be three-phase type, it shall have space for a main breaker, with three-pole breaker of 3X100A (as same feature as requested for the general circuit board), circuit board brand Legrand, Luminex or similar RETIE certified, barrages for phase, neutral and ground, insulation voltage up to 600VAC and current interruptive capacity up to 10KA. The circuit board's power sheet is shown in annexed file "Electrical Calculations.xls". The new circuit board shall have capacity of 24 circuits. The new panel boards shall be marked according to NAS COR instructions. The new circuit board shall be embedded in wall.

### **8.10 Secondary circuit branch MDPB-NSPB**

The bidder shall quote for supply and install a circuit branch, which shall run from **MDPB** to **NSPB**. The new secondary circuit branch shall be cabling in 4xNo4 + TN06, distance of 8 meters approximately (Length shall be verified by awarded contractor).

### **8.11 Secondary circuit branch raceway MDPB-NSPB**

The bidder shall quote for supply and install a pipe EMT 1 ½ which shall connect both panel boards, such as indicated in plan E1. The segment shall include a metallic junction box, 10cm x 10cm. The new raceway shall run through the suspended roof and the floor concrete plate. The item shall include accessories for piping installation accordingly.

### **8.12 Secondary circuit branch MDPB-Existing Panel Board (EPB)**

The bidder shall quote for supply and install a circuit branch, which shall run from **MDPB** to **EPB**. The new secondary circuit branch shall be cabling in 4xNo4 + TN06, distance of 2 meters approximately (Length shall be verified by awarded contractor).

### **8.13 Secondary circuit branch raceway MDPB-EPB**

The bidder shall quote for supply and install a pipe PVC 1 ½ which shall connect both panel boards, such as indicated in plan E1. The raceway shall be wall embedded. The item shall include civil work required to install the new duct accordingly.

### **8.14 Distribution raceway (Metallic tray)**

The bidder shall quote for supply and install a metallic tray 30cm X 12cm, BWG N0. 14-16, MECANO or similar REITE certified brand, which shall run such as shown in plan E6. The new metallic raceway shall be grounded by using an isolated copper wire caliber AWG No.8; this cable (Grounding Line) shall be tied down into the MDPB's grounding bar. The grounding line shall be screwed every meter along the raceway,

complying with electrical standard EIA/TIA 607. The raceway shall be plenum ventilation type (escalerilla) and shall comply with Colombian standard NTC 2050 article 318.

#### **8.15 Distribution raceway (Metallic)**

The bidder shall quote for supply and install a metallic raceway with metallic splitter, 12cm X 5cm, to be installed along the existing wall, BWG No 14-16, electrostatic painting, which shall be deployed such as shown in plan E6. The upper portion (first cavity) shall be used to carry-in data wiring; lower portion (second cavity) shall be used to carry-in power cabling. The new metallic raceway shall be grounded by using an isolated copper wire caliber AWG No.8; this cable (Grounding Line) shall be tied down into the NSPB's grounding bar. The grounding line shall be screwed every meter along the raceway, complying with electrical standard EIA/TIA 607. The raceway shall be installed at the same level of the furniture's baseboard. For the glass division, the awarded contractor shall install holders on the floor for sustaining the raceway portion, since glass division cannot be used for holding such type of structures.

#### **8.16 Piping distribution (Internal areas)**

The bidder shall quote for supply and install ducts and raceways for internal areas. If not specified all piping distribution shall be done in caliber ¾ inch, PVC for embedded installation (walls) and EMT for piping installation along wall or hanging on ceiling. Internal raceway shall comply with standards RETIE, EIA/TIA 607, NCT 2050, EIA/TIA 568-569 last update. The works to be done shall include civil work and necessary materials for proper piping installation, this also includes accessories and parts required for the work.

#### **8.17 Junction boxes (Internal areas)**

The bidder shall quote for supply and install junction boxes according to plans E1 thru E6. The junction boxes shall be metallic type, 10cm X 10cm.

#### **8.18 Secondary circuits cabling**

The bidder shall quote for supply and install the new cabling system for each of the new circuit on the new facilities. The expected wiring shall be type THHN/THWN. The information regarding wire's caliber is attached in annexed file "Electrical calculations.xls". The plans E1 thru E6 indicate the pathways and expected distribution to be supplied and installed by the awarded contractor.

The wiring to be used for phases shall be colored as follows: phase S in yellow, phase R in blue and phase T in red, neutral colored in white and ground in green. All circuits shall preserve the same color up to each service access point (receptacle or socket). The cabling type shall be plenum ventilation type.

#### **8.19 Single-phase receptacle with grounding pin.**

The bidder shall quote for supply and install single-phase receptacles duplex type, 120VAC/15A, white color, which shall be distributed according to plan E1. The bidders shall quote for supply and install twenty seven (27) units. The new receptacles to be provided and installed shall be placed along the new raceway. Each new receptacle shall count with its own faceplate. The new receptacle shall be marked accord to NAS-COR instructions.

#### **8.20 Lamps 4X17W**

The bidder shall quote for supply and install lamps type 4X17W, parabolic reflector, dimension of 60cmX60cm, light bulb T5, electronic ballast and starting condenser. The new lamps, piping and light switches are located as shown in plan E2. This item includes lamps, junction boxes, light switch (which shall be installed 1.20m above the level of the finished floor), wiring, ¾ inch PVC ducts and installation accessories. In fact the PVC piping to connect lamps shall be placed above ceiling and piping to connect light switches and panel board shall be embedded in walls (panels). Single receptacle monopole 120VAC shall be supplied and installed in order to connect each lamp. Each lamp shall have its own power cord, which shall be made in rubber of low smoke emission and shall end with a plug. The lamps and

accessories to be supplied and install shall be RETILAP certified. The bidder shall quote for supply and install eighteen (18) units.

#### **8.21 Decorative lamps (main entrance office)**

The bidder shall quote for supply and install four (4) lamps type 2X25W/120V, Reference 2XE27 or equivalent. Piping installation shall observe the same conditions mentioned in section above. The lamp locations shall be done according to Plan E4.

#### **8.22 Air conditioning (AC)**

The bidder shall quote for supply and install four Air Conditioning (AC) units as follows: two (2) units of 12KBTU cooling capacity and two (2) AC units of 9 KBTU cooling capacity, all of them shall be cassette type, well known brand such as York or LG. The units shall be three-phase system (208V). The contractor shall place the units such as shown in plan E3. This item shall include the price for all fixing and retention elements, accessories, electrical piping, drains and external devices (condenser) in order to warranty a well functioning. The required civil works shall be also included and quoted.

The AC condenser unit shall be overlapped over circular rubber appliance, 2 ½ inches external diameter, with internal hole ½” and 2 inches thickness, this way shall warranty that condenser AC unit shall not contact the concrete on site. The condenser shall be place on the roof of the building (building’s terrace).

#### **8.23 AC circuit branch**

The bidder shall quote for supply and install a three-pole circuit branch for each AC unit. This work shall include duct installation and cabling such as requested in electrical annex “Electrical Calculations.xls”. Each branch circuit shall run from the secondary circuit board, taking into account that each unit shall have its own three-pole breaker as requested in the electrical annexed file or according to manufacturer conditions.

The bidder shall include in his proposal the price of the rectangular boxes, breakers, ducts, cabling and elements for proper installation of the new AC units. The internal piping shall be made in PVC EB de ¾

#### **8.24 AC drain system**

The bidder shall quote for supply and install an AC drain system for each AC unit, the proposal shall indicates piping caliber and necessary work required to perform this item. The plan E3 shows the suggested pathway for the AC drain. The AC drain piping line shall finish in the restroom located in the offices to be refurbished.

#### **8.25 General grounding system**

The awarded contractor shall ground the electrical network, spreading out the grounding lines in radial manner, avoiding grounding loops. The awarded contractor shall inspect for residual currents, which may be presented on the master grounding line that comes from power building’s substation, found current values cannot be over limits permitted on standard IEEE 1100 table 4.3. If residual current values are superior of the mandatory limits, the awarded contractor shall provide mechanism to reduce these values in order to filter an reduce such effect on the grounding line.

#### **8.26 Secondary panel board grounding system**

The new secondary circuit boards shall be grounded by a line that shall run from the main distribution panel board to be installed and provided by the awarded contractor.

## 9. DATA NETWORK WORK

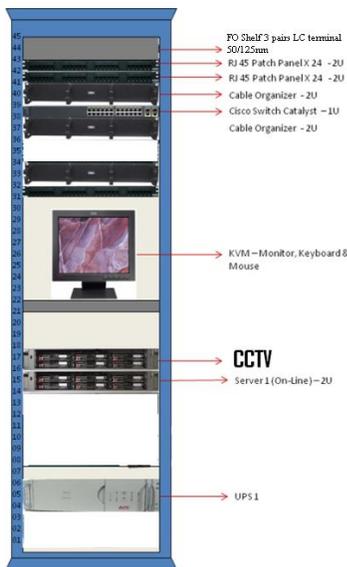
### 9.1 UTP wiring

The bidder shall quote for supply and install data drop, ANSI/TIA/EIA 568-B.2-1 CAT 6E, which shall be certified according to stated standard. The data drops are located as shown in plan E2 (twenty five units as total) Each data access point shall have jack connector, wiring type “Plenum Ventilation”, faceplate and marking icon, marking rings to identify both ends of the data drop. The bidder shall quote for supply twenty-five patch cords seven feet length each one (for work place) and twenty-five patch cords five feet length each one (Telecommunication closet administration). The bidder shall quote well known trades such as AMP, Siemon or Panduit. The wiring certification shall be done by using a cabling network analyzer, which shall have a calibration certificate issued with no more than six months. The data drops shall be installed into the raceway and furniture’s baseboard.

### 9.2 Communication Closet (CC)

The bidder shall quote for supply and install a telecommunication closet of 81 inches height. The new TC shall be metallic, painted with electrostatic painting, built in cold rolled caliber BWG No. 16. The new TC shall have door with lock and ventilation mesh as well as two fans on top. The TC shall have a grounding barrage; taking into account that TC’s grounding bar is connected with master barrage by using an insulated conductor THHN/THWN AWG No. 8 and connecting both metallic raceways by using an insulated conductor THH/THWN AWG No. 10. The TC shall have a power strip, which shall have the following features: TVSS class A, current interruption of 12KA, EMI/RFI filter, 5 duplex outputs 120VAC/15A, manufactured by well know vendor and RETIE certified.

The TC shall be divided in two parts, the first one shall be used for data purposes and it shall have, one Fiber Optics shelf for 6 multimode fibers 50/125 nm LC or SC connector, two patch panel 24 ports UTP, CAT 6 ANSI/TIA/EIA-568-B.2-1 certified and horizontal and vertical wiring organizers. The second part (bottom) shall be used for leave a CCTV system, a server Ref DELL PowerEdge R710 (Which shall be provided by US Government) and an UPS device. The TC distribution is shown as following image (Spanish texts are intentionally left).



### **9.3 Internetworking device**

The bidder shall quote for supply and install a data switch unit as following futures: 24 UTP port (10/100/100 Mbps), power over Ethernet, layer 2/3, manageable via Web. The suggested brand is Cisco Catalyst 2950. The system configuration is done under NAS-COR instructions.

### **9.4 UPS 3KVA- CC**

The bidder shall quote for supply and install of one (1) UPS 3KVA, true online system, double conversion, single-phase, which shall have LAN port for management purposes (it shall have NIC), to be deployed in proposed communication closet, batteries for 30 minutes autonomy under full power load. The unit shall be new brand, APC or Powerware, time of manufactured shall not be over six months (this time includes import process to Colombia). Suggested UPS brand PowerWare (Eaton) or APC.

### **9.5 UPS 1KVA- Cubicle**

The bidder shall quote for supply and install six (6) UPS 1KVA, true online system, double conversion, single-phase, 10 minutes autonomy and USB port. The proposed UPS shall be located on each cubicle. The unit shall be new brand, APC or Powerware, time of manufactured shall not be over six months (this time includes import process to Colombia). Suggested UPS brand PowerWare (Eaton) or APC.

### **9.6 Fire Alarm System (FAS)**

The bidder shall quote for supply and install a Fire Alarm System which shall be composed by a control unit, manual stations, stroboscope flashing lights and photoelectric smoke detectors. The installations work shall comply with standard NFPA and fire American's standards, NEC 250, ACODAL, ICONTEC accordingly. The awarded contractor shall supply and install a FAS, such as indicated in annexed drawings. The FAS shall be controlled by a new brand control system equal or similar Notifier SFP-2404, photoelectric smoke sensor equal or similar Notifier I3 series and four lines wiring, manual station equal or similar Notifier BNG-1TSL and stroboscope light equal or similar Notifier CH70. The smoking photoelectric detectors system shall be interconnected each one and it shall comply with standard EN-54. The whole system shall support two zones: classroom and management building. The awarded contractor shall install a set of two (2) stroboscope lights and two manual commanders to be installed 1.2 m above finished floor, such as indicated in plan E5. The control wiring for sensor system shall be canalized by piping type EMT ½ inches gauge.

The FAS' piping system shall be painted in red color. The new tubes shall be suspended along the ceiling in parallel and perpendicular manner to existing ceiling structure. The new piping system shall be tied into the grounding system by using grounding kits and by an isolated grounding line AWG No. 12. The bidder shall also quote for supply and install an office signaling colored in blue for general information and evacuation routes, similarly colored in red for fire alarm system including extinguisher and fire alarm banners. The FAS shall be connected to the new UPS 3KVA to be supplied and installed by the awarded vendor, which shall be placed into the new communication closet. The new FAS shall include batteries for operational autonomy up two hours in case of power outage. The whole solution shall be composed as follows:

Active system: FAS

Passive system: composed by six ABC extinguishers, including their wall mounting holders and wall banners. The bidder shall quote for supply and install a safety signaling for offices (fluorescent) and two lighting signals "Exit", which shall be defined during project execution.

### **9.7 CCTV**

The bidder shall quote for supply and install a CCTV system which shall be composed by four (4) fixed cameras to be installed as shown in Plan E5, IP system, which shall be connected to a next generation PC.

The cameras shall be interconnected by a switch device. The total number of cameras will be managed by a new PC. The minimum technical features for the expected system are as follows:

- Day/night operation infrared red type, UTP connection FastEthernet 100Mbps, zoom Analog/Digital 10X/8X, focus and Iris control functions, light input correction, High Definition (HD) format, noise reject ratio 50dB, lens with optical aperture not lower than 70 degrees, PoE (If the camera has not such functionality, each device shall have its own PoE interface to be directly connected to the new switch to be provided by the awarded contractor). The new cameras to be supplied and installed shall support the following protocols: TCP/IP, UDP/IP (Unicast, Multicast IGMp), UPnP, DNS, DHCP, RTP, NTP. The new cameras shall be managed by a new PC to be provided and installed by the awarded contractor. The new cameras shall be brand PELCO, BOSCH, PANASONIC, SONY or similar.
- Supply and install one (1) computing device: which shall allow managing two new cameras to be installed and provided by the awarded contractor as previously depicted. The new equipment shall have a data storing capacity for recording up to 30 frames (adjustable) per second of continuous video during a period of two months per each camera. The new equipment shall have 4 Gb RAM, two hard drives 15KRPM each one (RAID 1- mirrored) and total capacity enough to comply with video storing specification, previously requested. The processor shall be Intel Core i7-960 3.2GHz and 64 bit architecture or better. The new equipment shall have a DVD RW unit, mouse, Spanish keyboard and TFT LCD XGA screen 24 inches size, which shall be located in the main entrance gate of the offices to be refurbished. The Operating system shall be Windows 7 professional edition. The new equipment shall be brand new DELL, HP or LENOVO.
- Supply and install a new brand TFT LCD XGA, 24 inches size, which shall be installed 50 meters from the offices to be refurbished (Just in the area of entrance of the US government offices, which are located on the 5<sup>th</sup> floor of the same building). The video output installation that runs from the new CC will connect the proposed screen, such video link shall be canalized by means of EMT ¾ inches pipe. The new raceway installation shall count with junction boxes and accessories/materials for piping installation. The video wire to be installed shall be type coax RG59 and expected terminals to be supplied and installed shall match with video input/output ports of the video system to be supplied and installed by the awarded vendor.
- CCTV management software: The new camera system shall have a software tool to manage and monitor the total set of requested cameras. The main functions shall include but not limited to playback video, setup and camera configuration and telemetry. The software shall have a user administration panel, which also includes functions such as user creation, password assignation and roles. The new software shall provide user restriction according to roles; it shall include Administrators, operators and users profiles.
- Configuration and training: the awarded vendor shall include the installation and configuration service as well as training for using the system. The training session shall also include manuals and recommendation for operation and preventive maintenance.

### **9.8 Grounding lines' labeling**

The grounding lines which are running from the main distribution panel board shall be marked. These marks shall be done in solid plastic, 5cmX3cm, fonts colored in red and background colored in yellow.

### **9.9 Panel board labeling**

The main distribution panel board, the breaker on the substation's main panel board, the new distribution panel board for each module (building) and their breakers shall be marked. All marks shall be done in

solid plastic, fonts colored in white and background colored in black. The following dimensions are expected:

- 10cmX5cm, for the main distribution panel board
- 5cmX3cm, for each distribution panel board
- 5cmX3cm, breaker on the substation; main panel board

All panel boards shall have their own single diagram, load diagram and all circuits shall be labeled.

#### **9.10 Marking codes**

The texts and fonts to be used in the project shall be submitted by the awarded contractor, in order to get the COR-NAS's approval.

#### **9.11 Main circuit branch cabling**

The wiring to be used for phases (Lines) shall be labeled by color tapes in yellow, blue and red. Neutral line shall be colored in white and grounding line colored in green. The main circuit branch shall be labeled by using solid plastic marks, size 10cmX5cm, fonts in white and background in black. The font size is selected during contract execution. The new labels shall be placed on the new junction boxes. The cabling to be supplied and installed shall be Centelsa or equivalent RETIE certified brand. The new piping installation shall be grounded by using grounding kits, which shall be installed in junction boxes and curves. The grounding line (AWG No. 8 isolated cord) shall connect piping and boxes with the power building's substation main panel board (master grounding bar)

#### **9.12 Secondary branch cabling**

For cabling gauge bigger than (AWG No4, 2, 1/0, etc) or equal to AWG No. 6, the contractor shall observe the same protocol depicted in the previous item. For cabling gauge such as AWB No. 8, 10 and 12, the contractor shall use colored cabling in red, yellow and blue for each phase (not repeating each others) neutral in white and ground in green. The secondary circuits shall have plastic moorings, holding the cabling every 1.5 meters. The secondary branches shall be labeled by solid plastic marks, size 10cmX5cm , fonts in white and background in black. The font size is selected on site. The new labels shall be placed on the new junction boxes. The cabling to be supplied and installed shall be Centelsa or equivalent RETIE certified brand

#### **9.13 Indoor buildings cabling**

The contractor shall use colored cabling in red, yellow and blue for each phase (not repeating each others) neutral in white and ground in green. The contractor shall install solid plastic marks on faceplates. The marks shall have the following dimensions 3cmX1cm, fonts colored in white and background colored in black. The cabling to be supplied and installed shall be Centelsa or equivalent RETIE certified brand

#### **9.14 Fiber Optics (FO) backbone**

The bidders shall quote for supply and install one (1) fiber Optics data link, which runs from the existing communication rack located on the 5th floor (Communication room) and the new communication closet located on the office to be refurbished (office 403), such as shown in plan E2. The data link's length is 100 meters approximately; however the bidder shall review and adjust the value during on site pre-awarding visit. The FO shall be multi-mode type, six fibers, armored, 850nm laser-optimized with a core/cladding size of 50/125microns, certified for ANSI/TIA/EIA 568-B.2-1 CAT 6E. The maximum attenuation of the cable shall be: 850 nanometers: 3.5dB/km and 1300 nanometers: 1.5dB/km.

The nominal connector loss using either termination method will not be greater than 0.30 dB per mated pair. The bidder shall quote for supply and install two FO shelves which shall be placed in the communication racks mentioned above, one for the communication closet on the 5th floor

(Communication room) and the second one on the new communication closet on the office 403. The shelves shall receive the fiber optic line from both ends. The shelves shall have capacity for three pairs (six fibers). The shelves shall be metallic and shall have support for sliding mounting on 19 inches racks.

The shelf shall have LC or SC terminations. The fiber optics shall be bonded by crimping or epoxy, the insertion loss per connector shall not superior than 0.3 dB. The testing certification results shall comply with EIA/TIA 568B 3. The bidder shall include in his proposal the necessary testing equipment and qualified technician in order to achieve testing and certification process. The bidder shall include cabling analyzer brand and model to be used during testing process, this also include the certificate of calibration, which shall be longer than one year. The bidder shall leave a FO extension (loop) of 2 meters for maintenance purposes, which shall be present on each termination (Communication rack) of the FO link.

### **9.15 Fiber Optics Raceway**

The bidders shall quote for supply and install a galvanized piping system, metallic tube 1 ½ inches, which shall run from communication rack located on the 5th floor (Communication room) and the new communication closet located on the office to be refurbished (office 403). The proposal shall include civil work required to install piping system, this work include but not limited to both labor and material, poke-through in walls, painting and repairing of the affected areas. The awarded contractor shall install metallic junction.

The bidder shall quote for supply and install junction boxes according to distance (90 meters approx.), pathway and spaces shall observe direction changes, which shall not exceed 180 degrees in continues curves. The junction boxes to be provided and installed shall be metallic type, 20cm X 20cm. The proposed junction boxes to be used shall be RETIE certified. Piping installation shall run through existing duct systems. Piping installation shall include installation accessories, anchors, holders, screws and grounding kits, which shall be installed between junction boxes.

The installation of the new raceway system shall observe NTC 2050, RETIE and standard EIA/TIA 569. The awarded contractor shall label the piping system every 1.5 meters, using solid plastic markings, which shall be defined during project execution. The installation work shall be coordinated with building's administration.

**The contractor, who is awarded the contract, shall submit all construction elements before assembling them.**

**PLANS ARE ATTACHED, WHICH SHOULD BE RECTIFIED IN ORDER TO ADAPT THEM TO THE MEASUREMENTS OF THE SYSTEM. ALL MATERIAL AND COLOURS HAVE TO BE APPROVED BY NAS BEFORE ITS PURCHASE AND INSTALLATION.**

The plans & Calculations listed below are attached.

1. Architectural
2. Electrical
3. Electrical calculation
4. Structural Concept

Attachments:

1. 5 Minute FE Wall standard detail: GPK-05N-DOS-03
2. SHW-2 Hardware details
3. Typical installation detail of metal detector
4. Chemical anchors and flat steel plate installation detail
5. 5 Minute FE Grilles detail