

ATTACHMENT # 2 SPECIFICATIONS

GENERAL DESCRIPTION OF THE PROJECT

The following are the main characteristics of the work to execute at the Colombian Navy Coast Guard bases located at Bahia Solano and Pizarro, Choco along the Pacific coast.

The works include, but are not limited to, complementary work of two (2) existing 55 m high metallic towers in order to answer to new requirements submitted by the end user and by the entity that will supply and install the radars at each location. The works include the necessary activities for some finishing works for the shelter and tower, electrical and communications work, the installation of the obstruction lights of the tower, the fuel system for the electrical generator and the A/C units, and the transportation of two fuel tanks for the generator system. The complementary work for the towers consists of:

- Supply and installation of the metallic support platform for the radar transceiver at Bahia Solano and Pizarro, including support and accessories. (Refer to attached structural drawings; Contractor shall confirm existing equipment requirements, see attachment #1)
- Supply and installation of metallic radar support for the radars at Bahia Solano and Pizarro. (Refer to attached structural drawings; Contractor shall confirm existing equipment requirements, see attachment #1)
- Supply and installation of floor tile for the radars shelter in order to install the equipment at Bahia Solano and Pizarro, matching existing conditions.
- Supply and installation of Fiber cement panels along the shelter walls at Pizarro.
- Supply and installation of leveling grout along the metallic tower base at Pizarro.
- Supply and installation of door sweeps along the shelter doors at Bahia Solano and Pizarro.
- Supply and installation of stainless steel piping and accessories for the fuel system for Bahia Solano and Pizarro, including decanter filter, closing valves and flex hose. (Refer to attached drawing)
- Transportation and installation of 450 Gal fuel tank from Bogota to Bahia Solano's project site, including 50 Gal of fuel for testing purpose. (The contractor shall pick up the fuel tank at a warehouse in Bogota as indicated by the US Government).
- Transportation and installation of 450 Gal fuel tank from Bogota to Pizarro's project site, including 50 Gal of fuel for testing purpose. (The contractor shall pick up the fuel tank at a warehouse in Bogota as indicated by the US Government).
- Supply and installation of ladder cable tray inside the shelter at Bahia Solano and Pizarro.
- Supply and installation of exterior electrical outlets for tower platform at Bahia Solano and Pizarro. (Refer to attached electrical drawing)
- Installation of Obstruction lights supplied by US Government at Bahia Solano and Pizarro.
- Supply and installation of the cabling system for the electrical outlets for the tower platform and the obstruction lights at Bahia Solano and Pizarro.
- Supply and installation of the illumination system for the working points and the different platforms along the tower at Bahia Solano and Pizarro.
- Installation of Four (4) Air Conditioning units mini-split type supplied by US Government at Bahia Solano (2 units) and Pizarro (2 units), including drainage system.
- Supply and installation of stainless steel and rubber sleeves (Boot type) for the transition from the ladder outside shelter to the cable tray inside the shelter at Bahia Solano and Pizarro.
- Supply and installation of copper connectors for the joints along the Faraday cage at Pizarro.
- Installation and startup of the main 15 KW Generator supplied by the Colombian Navy at Bahia Solano and Pizarro.

- Supply two complete sets of equipment for working at heights at Bahia Solano and Pizarro. The use of these sets of equipment shall only be left to personnel certified for working at heights.

Transportation and Logistic

Transportation Bogota – Buenaventura

The contractor shall include the transportation of the complete metallic elements, shelter and electrical materials, and the rest of the materials mentioned above from the production site in Bogota's urban perimeter to the Buenaventura port where these elements shall be shipped to Bahia Solano and Pizarro. The work includes loading and unloading the metallic elements, shelter and electrical materials, and the rest of the materials, obtaining and renting a crane or forklift, and localization of these elements in the warehouse or indicated site according to the instructions of the Colombian Navy Base representative and US Government representative at the Buenaventura port. If the metallic elements, shelter and electrical materials, and the rest of the materials or nearby structures suffer any damage during transportation and/or movement to the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

Logistic On Site

The contractor shall include lodging, transportation and associated expenses of his personnel at the project area in Bahia Solano and Pizarro which are involved in the supply and installation process of the tower complements and elements included in the actual SOW. The contractor shall include as well the equipment, materials and elements require for the complete transportation and installation of the metallic tower complements, shelter and electrical materials, and the rest of the materials to the project area. If the nearby areas are affected by these lodging, transportation and associated expenses of the contractor personnel at the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

Specifically for the Pizarro tower the contractor shall include the transportation of the complete metallic elements, shelter and electrical materials, and the rest of the materials mentioned above from the Pizarro port to the project site where these elements shall be constructed and installed. The work includes loading and unloading the metallic elements, shelter and electrical materials, and the rest of the materials, obtaining and renting a crane or forklift, and localization of these elements in the Temporary facilities or warehouse according to the instructions and approvals of the Colombian Navy Base representative and US Government representative. If the metallic elements, shelter and electrical materials, and the rest of the materials or nearby structures suffer any damage during transportation and/or movement to the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

Transportation Bahia Solano Port – Project Site (Cerro Mutis)

The contractor shall include the transportation using Helicopter of the complete metallic elements, shelter and electrical materials, and the rest of the materials mentioned above from the Bahia Solano port to the project site at Cerro Mutis where these elements shall be constructed and installed. The work includes loading and unloading the metallic elements, shelter and electrical materials, and the rest of the materials, obtaining and renting a crane or forklift, and localization of these elements in the Temporary facilities or warehouse according to the instructions and approvals of the Colombian Navy Base representative and US Government representative. If the metallic elements, shelter and electrical materials, and the rest of the materials or nearby structures suffer any damage during transportation and/or movement to the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

Transportation Buenaventura – Bahia Solano

The contractor shall include the transportation of the complete metallic elements, shelter and electrical materials, and the rest of the materials mentioned above from the Buenaventura port to the Bahia Solano port where these elements shall be transported to the project site at Bahia Solano (Cerro Mutis). The work includes loading and unloading the metallic elements, shelter and electrical materials, and the rest of the materials, obtaining and renting a crane or forklift, and localization of these elements in the warehouse or indicated site according to the instructions of the Colombian Navy Base representative and US Government representative at the Bahia Solano port. If the metallic elements, shelter and electrical materials, and the rest of the materials or nearby structures suffer any damage during transportation and/or movement to the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

Transportation Buenaventura – Pizarro

The contractor shall include the transportation of the complete metallic elements, shelter and electrical materials, and the rest of the materials mentioned above from the Buenaventura port to the Pizarro port where these elements shall be transported to the project site at the Pizarro area. The work includes loading and unloading the metallic elements, shelter and electrical materials, and the rest of the materials, obtaining and renting a crane or forklift, and localization of these elements in the warehouse or indicated site according to the instructions of the Colombian Navy Base representative and US Government representative at the Pizarro port. If the metallic elements, shelter and electrical materials, and the rest of the materials or nearby structures suffer any damage during transportation and/or movement to the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

Transportation of two 450 G1 fuel tanks from Bogota to Bahia Solano (Cerro Mutis) / Pizarro Project Site

The contractor shall include the transportation of two 450 G1 fuel tanks from Bogota (Warehouse specified by INL representatives) to Bahia Solano project site at Cerro Mutis and Pizarro project site of each tank, where these elements shall be mounted and installed. The work includes loading and unloading the metallic fuel tanks, obtaining and renting a crane or forklift, and localization of these elements in the Temporary facilities or warehouse according to the instructions and approvals of the Colombian Navy Base representative and US Government representative. If the fuel tanks or nearby structures suffer any damage during transportation and/or movement to the site indicated, the contractor shall bear with all associated costs and expenses which might be incurred in carrying out repairs, all at no cost whatsoever to the US Government.

All the work mentioned above must comply with the General Specifications that are part of this document.

For the electrical and fuel system installations, the Contractor shall supply maintenance and inspection manuals for routine activities with recommendations for the inspection and maintenance.

GENERAL BUILDING REGULATIONS

The Contractor shall make the applicable verifications in order to certify the designs given to them to be adequate for this installation and shall guarantee the correct execution of the works, fulfilling the standards of the applicable codes before the start of the construction process.

The contractor shall give careful attention to the following recommendations.

1. The contractor shall provide all necessary tools, mechanical implements and vertical and horizontal transportation necessary for the proper work execution.
2. Temporary water, electricity and telephone facilities shall be at the contractor expense.
3. Elements and materials to be used on the construction shall be previously approved by the US Government representative by Submittal technical cards, samples or laboratory results, 15 days calendar before the material is required on the work. Also, necessary tests may be ordered by the contractor to ensure that these tests are consistent with specifications.
4. Storage sites, camps and utilities shall be at contractor expense. Other temporary buildings considered necessary for the proper works development shall be also at contractor expense. Their location shall be approved by the US Government representative.
5. As soon as the construction works are finished and prior to contract closed, the contractor shall remove all temporary constructions and excess material. The camps shall be thoroughly cleaned to the former conditions prior to undertaken construction works.
6. These specifications include ICONTEC, ACI Building Regulations, Seism resistant Construction Regulations NSR-10 (Act 100 of 1997, Act 1229 of 2008 and resolution issued by Standing Advisory commission of Seism Resistant Construction regime from National Government) ASIM, CHEC, RAS 2000 Regulation of safe drinking water and basic quality, Technical Regulations of Electrical Installations (RETIE in Spanish) as pit as the manufacturer recommendations for installation and use of their products.
7. The contractor shall assume the protection and preservation of the works until it is definitely delivered or received by the US Government representative. If reparation is needed; it shall be at the contractor expense and in accordance with the US Government representative.
8. The prices shall include the cost of materials, labor, tools, equipment, transportation, quality control testing. Other elements and expenses necessary are also included for suitable execute of the contract as pit as indirect and financial costs.
9. The US Government representative shall be demanding about works finishing and construction. Therefore, the contractor shall use high-quality materials and high-qualified labor. The US Government representative shall reserve the right of approval or refuse of any work if they consider the work does not comply with the regulations issued on these specifications.
10. Helmet, gloves, glasses, foundations, belts or any other necessary element required by the US Government representative shall be at the contractor expense. During the work, first-aid elements shall be available and fulfill all the labor safe regulations included on Colombian Acts.
11. Trademarks, trade names or manufacturers stated on the drawings or specifications are set out as reference for high-quality of required material. The contractor may propose other product names to the US Government representative in order to be approved, when these are considered equal or better in quality and comply with the regulations set out on these specifications. This shall not entail cost variation.
12. To start any operation, the contractor shall carry out tests clearly indicating the construction process to obtain the Government or representative approval.
13. Guard: facilities, stores, equipment, tools and other elements guard shall be provided by the contractor before and after their installation, until the work is finally received.
14. The Contractor shall guarantee that the project fulfill all the rules of the Ministerio del Medio Ambiente and the Departamento Administrativo de la Aeronáutica Civil.

PARTICULAR WORK CONDITIONS

Laboratory Tests

The contractor shall be responsible for all laboratory expenses. The laboratory shall be previously authorized by the US Government representative. The contractor shall include testing of laboratory samples. The results shall be delivered directly to the US Government representative. Its cost shall be included as part of the contractor proposal.

Construction Procedures

The execution procedures execution on the actual work shall be subject to the contractor initiative in accordance with technical specifications stated on this solicitation for proposal comparison purposes and referred to engineering practice. The contractor shall be ultimately responsible for the application of such procedures which shall aim at obtain the best results in the completion of the work. However, the US Government shall, at any time, have the right of ordering changes to the used procedures for safety purposes and percentage of completion method, its coordination with the works of other contractors related to this one or for requiring the contractor to adjust to the actual contract.

Unauthorized or Defective Work

If the actual work does not fulfill the specifications or the US Government instructions, it shall be considered defective. So in this case corrective actions shall be ordered and it shall not be accepted; completed work shall not be measured or paid before the necessary alignments and levels are met. The same is applied to any unauthorized work by the US Government representative and shall be corrected by the Contractor. The Contractor shall not have right to receive any compensation for not acceptable work.

Damage to the Executed Work and Third Parties

The Contractor shall take full responsibility for all executed work until the project is completed and finally approved. The Contractor shall also take full responsibility for any damage caused to third parties during the execution of construction work. If this is the case, The Contractor shall repair the damage at his expense without additional work or any exception to such responsibilities or to the agreed completion date.

Materials

The contractor shall include new materials and of first quality design for prolong use and heavy duty. The contractor shall assure good materials and excellent finishes. All the colors and finishes shall be submitted to the US Government representative for approval prior to purchase and installation.

In order to guarantee a normal work progress and to avoid any possible lack of materials or un-necessary high-quality elements, the contractor shall provide on a timely manner all the required materials to the construction site and permanently keep the necessary stock of material on site. The US Government representative shall have the right to reject material or used elements if they do not comply with specifications and construction standards. The material rejected shall be removed from the construction site and shall be replaced by an approved material. The defective work shall be corrected satisfactorily without additional cost to the US Government. If verifications to the general material specifications in accordance with the specifications and construction standards are required by The US Government, the contractor is required to carry out all necessary tests at its expense without implying additional cost to the US Government. Once contract is awarded and if the US Government representative considers it necessary, the Contractor shall deliver the supply schedule of the equipment and materials to the project site.

The contractor shall leave on site a stock of materials like bulbs, fuses, terminals or pipes that have been fitted, representing three (3) % of the total quantity, for future maintenance purposes. These items shall be handed over duly packed, identified and listed.

Equipment

The Contractor shall include in his proposal the equipment depreciation and maintenance, as well as all operational, parking, insurance, etc., expenses. The contractor shall also consider having an appropriate amount of equipment in good condition and approved by the US Government representative. This way delays or interruptions due to equipment damage can be avoided. Equipment in Bad conditions, deficiently maintained or damaged shall not be a cause to avoid any contractual obligation. The US Government representative may at any time during the execution of the contract demand the removal from the project site of any equipment or tool that is considered to be defective or not recommended to be used. The Contractor shall replace, as soon as possible, the equipment to be removed by damage or maintenance in order not to delay work.

Site Personnel

All of the onsite personnel shall be directly hired by the Contractor. The Contractor personnel shall not have any labor links with the US Government. Therefore wages, compensation payments, bonuses and social benefits to which the employee are entitled to shall be at the Contractor expense, in accordance with what the Colombian labor law demand.

Signaling

The contractor shall take all necessary cautions to prevent accidents from occurring during the construction process and specially those which can alter the normal vehicular and pedestrian traffic. The contractor shall comply with the necessary construction general standards.

The contractor shall install on site all the necessary warning signaling to prevent accidents during the daily activities and also at night, in accordance with the amount, type, extension, shape, class, color and distances required in accordance with the construction general standards or as recommended by the US Government representative.

Any accident caused by the lack of such warning signals shall be the responsibility of the contractor. The US Government representative shall, at any time, order the partial or total work suspension if systemic breach by the contractor occurs to carry out the signaling requirement or instruction given in this respect.

If work shall be performed without enough natural light, the contractor shall supply proper illumination according to the type of work to be executed. If the illumination is not appropriate to the type of work, the US Government representative shall order the suspension of work until the contractor provide the adequate safety conditions. Dragged cord extensions, dangerously hanging or cables poorly connected or insulated shall not be allowed in the project site. Fluorescent warnings and required flickering lights shall be placed to a proper distance from the work site.

The contractor shall be responsible for any expenses generated by the supply and installation of signaling as well as for the implementation of all necessary caution measures in order to prevent accidents.

Distinctive Insignias and safety of Personnel

The contractor personnel shall be equipped with an overall of the same design and color, or long pants and T-shirt with sleeves of the same type and color, boots, hardhats, gloves and any security elements required for their particular activity, such as face masks or shields, gloves, boots, ear plugs, etc. Use of these items at the work site is mandatory. Likewise, each employee shall wear a laminated recent photo identity card indicating his/her name and identification card number, position, and contractor name.

Prior to initiation of the work, a list of personnel to be employed at the site shall be submitted for review to be able to obtain access to work area, including full names, identification card numbers, place and date of birth, home address and, in some cases, a government valid certificate of good conduct and photographs. The US Government and the Navy Base shall reserve the right to admit or withdraw personnel from the work site for reasons of security and/or due to the quality of the work.

The Contractor shall supply, to the US Government representative the complete and correct information regarding the affiliations to general health system and pension funds. The contractor shall also be responsible for the vigilance and execution of the occupational health program in accordance with the stated on current regulations. The Contractor shall take the responsibility for any risks shall be present in the working environment and adopt the necessary cautions to reduce such risks (Decree 1295/94).

Prevention of Accidents and Safety Measures

The contractor shall, at any time during the execution of the project, provide the necessary resources to ensure hygiene, quality and safety facilities to all employees, workers, and subcontractors. The contractor shall as well provide training to its employees, workers, subcontractors, providers and to all persons related to the contract execution, on the compliment of all conditions related to hygiene, safety, quality, and prevention of accidents and the actual safety measures, as stated on the proposed safety plan.

The contractor shall be responsible for any accident that may occur on the project site not only to his personnel but also to subcontractors or third parties caused by negligence or careless through the project execution. The Contractor shall also be responsible for ensuring that their personnel as well as their subcontractors take the necessary cautions or safety measures to prevent accidents.

During the contract execution, the contractor shall fulfill all the regulations under its jurisdiction to be executed on the contract. The regulations are related to safety, accidents prevention, occupational disease, hygiene and quality and general regulations.

Prior to initiating the contract, the contractor shall prepare a complete safety plan with all the necessary measures to be taken during the works execution, which shall be submitted for approval to the US Government representative.

If the contractor does not satisfactorily comply with hygiene or safety requirements or with the US Government recommendations, the Contractor may be subject to a partial or total suspension of work by the US Government representative. In this regards the contractor shall not have the right to demand a time extension and shall be subject to penalties for this concept.

In case that the US Government representative detects imminent danger to personnel, work or goods, the US Government representative may omit the written notification and shall demand that corrective measures be taken immediately. In these cases, the contractor shall not have the right to any monetary recognition or compensation.

Cleaning and Debris Removal

The contractor shall keep personnel cleaning the construction site and nearby zones daily. The unit prices for all items, without exception, include the costs of cleaning up, loading and removal of all materials resulting from the building work. The contractor shall take these materials to an authorized dump, where the interests of the base, third parties and the environment shall not be affected (the contractor shall follow the parameters established in Resolution 541/94 and the subsequent that modify it). Material from excavations shall be

deposited in such a way as to avoid blocking the entrance to the site at all times or occupying public roads while the material is being loaded into trucks for removal.

Site Description

The contractor before beginning preliminary works shall complete a site description with photographs and an account of the actual conditions of roads, sidewalks, surrounding buildings, etc., this report shall be signed by the commander and contractor. This report is for the purpose documenting the actual status of the area before the work is performed. This report will be used to compare the site after the work is finished. Three identical copies must be furnished: one for the user (Colombian National Police), one for the contractor, and the other one for the US Government. If the Contractor caused any damage to the work site or other private or public property he/she shall do all the repairs prior to the contract closeout; these repairs are without cost to the US Government. At the end of the projects a closing review and memorandum should be done with the participants, a signed copy shall be furnished in the final report.

Submittals

The contractor before beginning preliminary works shall provide a submittal register to be approved by the COR, this will include all the information to be submitted to the government to include but not limited to product data, shop drawings, testing certificates, administrative information, schedules, Personnel information and qualification certificates, Field samples, closeout information etc. Once approved by the COR the contractor shall submit each of the items in the submittal register for review and acceptance by the government.

GENERAL BUILDING REGULATIONS

The work shall be executed in accordance with the general building specifications stated on the Colombian Seism resistant building regulation NSR-10 (400 act of 1997, act 1229 of 2008 and resolution published by permanent commission of seism resistant construction by the National Government) and the particular specifications. The general specifications are part of the documents present on this contract. The particular specifications take precedence over the general ones. Where specific regulations are not stated, the materials, the equipment, the testes and supplied work by the contractor shall comply with the requirements of applicable regulations mentioned below:

- NSR-10 The Colombian Seism Resistant building regulation.
- INCONTEC (the Colombian technical standards institute)
- ICPC (the Colombian institute of cement producers)
- ASTM American Society for Testing and Materials
- AISC American Institute of Steel Construction
- ACI American Concrete Institute
- RAS 2000 Local Health and Safety standards for drinking water.
- RETILAP Technical Regulations for public lighting.
- NEC National Electrical Code.
- ANSI American National Standards Institute.

The requirements here stated shall be seen as a basic guide, not a limitation for the work scope.

GENERAL SPECIFICATIONS FOR THE PROJECT

1) RADAR TOWER BAHIA SOLANO AND PIZARRO

1.01) General Requirements

1.01.01) Provisional installations

The Contractor shall submit a drawing with location of the camp, fencing of the construction site and temporary services (water, energy, telephone, etc.), before starting its installation, for the approval of the US Government representative. All the installations shall be removed by the Contractor with the approval of the US Government representative when the works are finished. The site shall be left as it was found before the start of the constructions, with grass, sidewalks, etc. This removal, along with the installation shall be quoted at a global price and shall be included in the total cost of the project.

Provisional services: the eventual supply of any service by the final user to the Contractor shall not be a conditioned help and its eventual suspension shall not give place to any claim by the Contractor. The Contractor shall provide alternative services for these situations.

1.01.02) Security of the construction site

The Contractor shall supply the services of security of the construction site and the camps. The US Government and the final user shall not be responsible for the payment of the security services nor for the elements left at the construction site.

1.01.03) Temporary Facilities

The Contractor shall construct a temporary camp using materials such as wood or galvanized sheet and cement-fiber tile, which conforms the material storage places, personnel dressing rooms, office and bathrooms.

The location of this campsite shall be in a place coordinated by the contractor, the commander of the Navy base and US government representative. After the work has been completed, the Contractor shall leave the as it was found before the start of the constructions, with grass, sidewalks, etc.

1.01.04) Provisional fencing

The work site shall be completely isolated from zones or roads surrounding the same. Similarly, if a materials storage area is built, this shall be fenced off in the same manner. A fence shall be built for this purpose, consisting of synthetic canvas with wooden posts every two meters, kept taut by means of wires at the top, middle and bottom. Props shall be fitted either side of the access door or whenever there is a change of direction. This fence shall have one access point only, a double door through which machinery, vehicles and personnel shall enter. While the works are in progress, the contractor shall ensure that the fence is maintained and repaired, so that it is always in suitable condition.

1.02) Steel Structure

This chapter consists in the construction of the complement work for the structure of the tower, in accordance with the drawings and terms of reference, including all the elements and accessories necessary for its fabrication, assembly and installation. Before the construction of the complement steel structure, the Contractor

shall verify the design supplied by the US Government, the shop and construction drawings, and the description of all the fabrication and assembly system, characteristics of bolts and welding, steel qualities, painting, etc. If it is found that in the design some changes shall be done in order to fulfill the standards, this changes shall be taken into account in the proposal. This way when executing the project, this shall be done in total accordance with the current standards.

The design standards are the EIA-222F, the code AISC and the standard NSR-10. The design shall also fulfill the following minimum specifications for the structural elements:

- The struts, diagonals and steps which are high resistance steel shall comply with the ASTM A572 Grade 50, with a leverage point of 50,000 psi or 350 Mpa.
- The brackets and union metal plates which are normal resistance steel shall comply with ASTM A36 with a leverage point of 36,000 psi or 250 Mpa.
- The nuts and bolts shall comply with the ASTM A394 and ASTM A A563.
- The anchor bolts shall be SAE 1020 normalize.
- The structural elements shall be galvanized in heat by immersion according to the standard ASTM-A123.

Before beginning with the fabrication of the structural elements, the contractor shall deliver the quality certificates of the elements in order to guarantee compliance of the specifications; otherwise the contractor shall perform mechanical and chemical tests as described on the ASTM A370 and the A-6 designation of the ASTM.

The fabrication of the steel structure shall be done following the design supplied by the US Government, the shop and construction drawings as well as the actual edition of the AISC and the NSR-10.

The welding works and materials shall comply with the AWS D1.0 as described on the design supplied by the US Government. The contractor shall follow the welding requirements described on the shop and construction drawings.

The US Government representative shall inspect the fabrication and welding at the workshop, before approving the material to be transported to the project site. Any defect or correction to the steel structure or the welding works detected during the inspection shall be corrected by the contractor with no additional cost to the US Government.

A complete section of the tower shall be assembled on the workshop as a sample of the structure. This section shall be chosen randomly and the adjustment of the parts shall be verified by the US Government representative along with the contractor representative. Any defect or correction to the steel structure detected during the inspection shall be corrected by the contractor with no additional cost to the US Government.

The application of the protection coating, epoxy base and paint for the elements of the structure shall be done following the procedures described on the design supplied by the US Government. The metallic coating for protection shall be alloy between galvanize and aluminum in a 95% - 5% proportion or as suggested by the contractor based on quality standards. The tower structure shall be painted using base primer epoxy "poliamida-poliamina" type with high solid content with a minimum dry paint thickness of 4.0 mils. And the finishing paint shall be aliphatic polyurethane type resistant to ultraviolet rays with orange and white colors approved by the Aeronáutica Civil with a minimum thickness of 3.0 mils. These paintings shall be applied with compressor, for aggressive atmospheric conditions.

The tower shall have enough resistance to support the radar and telecommunications equipment required by the Colombian Navy Coast Guard. The assembly shall be done following the procedures described on the design supplied by the US Government and shall include the tower erection, the aligning for the correct verticality and

the bolts connection according to the diameter and grade of the bolts. All safety measures shall be considered for the installation.

After the structure is assembled, the surface shall be cleaned with tow cloth, in order to eliminate residues of grease, dust or humidity.

1.04) Walls for Shelter interior

The Contractor shall supply and install prefabricated panels in Superboard or similar material along the walls of the shelter at Pizarro in order to cover the copper mesh of the Faraday Cage. The Super board system includes fiber cement panels along the two sides of wall supported by metallic studs, channels, bolts and accessories at a minimum thickness of 12 cm. The Contractor shall guarantee the appropriate anchoring of the fiber cement panel to the metallic structure following the recommendations of the manufacturer, and shall include the tape and sealant for the treatments of joints between the panels.

The Super board system shall follow the recommendations in the NSR-10 and shall be resistant to water and exterior conditions.

The Contractor shall consider the heights of the walls shown on the attached architectural drawings and the easily conducting of the electrical pipe inside the system.

The Contractor shall supply and install stucco along the Super board walls following the recommendations of the manufacturer and shall verify that the stucco is completely smooth and free of imperfections before interior painting is done.

The Contractor shall supply and apply three (3) coats of white paint brand Viniltex type 1 pintuco reference 1501 or equivalent on the clean and finished surface of the interior Super board walls. The Contractor shall apply the coats in different directions in order to achieve a high-quality finishing.

The Contractor shall include the paint of window and door interior bays, cutting edges, expansions joints, etc.

1.05) Floor tiles for Shelter interior

The Contractor shall install floor tiles inside the existing shelter floor, and shall consist in a 0.34 x 0.34 m ceramic tile type DUROPISO or equivalent, non-slippery, commercial traffic 5, with the corresponding ceramic tile skirting. The Contractor shall include floor-tile bonding material and joint sealing material. Samples shall be submitted for approval before purchasing and installation.

2) GENERAL ELECTRIC INSTALLATIONS

2.01) Electrical Scope

The electrical work consists of the following activities:

- Installation of two generator sets (One at Bahia Solano and One at Pizarro) to provide electricity to the radar tower.
- Supply and installation of the electrical power system - Low Voltage (LV) networks for the elements described in the General Description of the Project.
- Installation of the Air Conditioning system
- Installation of Obstruction lights.

2.01.01) Electrical Standards

The proposed work paper includes all the electrical designs, technical specifications, supply of materials and parts, which are required for the electrical work and its execution on site. The Contractor shall comply and strictly observe the last upgrade of the following electrical standards: NTC 2050, NEC 250, NTC 3475/ UL 67,

EIA/TIA 568-569, EIA/TIA 607, IEEE C62.41-C62.45, NFPA 780, NTC 4552, IEEE-80, RETIE and CIDET. The awarded Contractor shall have an electrical/electronics engineer, who shall oversee the execution of the work. The proposed electrical/electronics engineer shall also sign the installation conformity and material conformity acts requested on RETIE. The proposed engineer shall have experience of five years or more on similar projects, in fact his/her curriculum vitae shall be annexed in the proposal.

2.01.02) Material, Equipment and Parts

The Contractor shall use well known market brand materials, equipment and parts certified and approved by RETIE. All products to be used during the project execution shall be new, manufactured in a period not longer than six months when the contract is awarded. The products, equipment and parts to be supplied and installed shall comply with international standards and US Federal Regulations. The Contractor shall submit the custom clearance documentation (nationalization acts) for those assets which were directly imported, this is required to accredit afterwards the assets' ownership and to perform the process of donation in a suitable manner for the Colombian Government.

Important notes: The contractor shall submit in his proposal catalogs and technical sheets for all the electrical materials to be used during the project (detailing specifically the items to be used on the contract). Lack of information and omission of such data shall consider the proposal as invalid and shall not be taken into the awarding process. The required civil work for the underground raceway system shall include the costs for repairing the affected areas during the project execution (Sidewalks, pavements, green areas and concretes among others). The awarded Contractor shall comply with civil and electrical Colombian Constructions standards even if the affected areas do not.

The Contractor shall not supply and install products, materials, equipment or accessories during the contract execution, which have not been previously approved by the US Government representative. In that case the Contractor shall be responsible to assume costs (overruns) and time that might be necessary to comply with the US Government representative and contract requirements.

Testing: The Contractor shall include in his offer a list of equipment and devices required to achieve a testing process over the systems to be installed. The equipment to be used during testing processes shall be calibrated by a certified company. The equipment to be used shall count with a valid calibration certificate issued no longer than 12 months.

2.01.03) Main Electrical Circuits

The new electrical circuit branches shall support a 15KVA power system. The new circuit branches shall be three-phase and neutral system plus grounding line, THHN/THWN-2, 4X#8 + 1X#8 AWG. The installed feeder lines shall be brand Centelsa, Procables or equivalent RETIE certified.

2.01.03.01) Main circuit branches – Low Voltage (LV)

The Contractor shall supply and install a new main circuit branch, 208VAC/60Hz, running from each one of the two generator sets (Generator A and Generator B) to the Automatic transfer system (ATS). The approximately distance of each branch is 4 meters; however the Contractor shall verify the distance.

The Contractor shall supply and install a new main circuit branch, 208VAC/60Hz, running from the automatic transfer system to the general panel board (TP) located adjacent to the ATS. The approximately distance between both panel boards is 1 meter; however the Contractor shall verify the distance.

The Contractor shall supply and install a new main circuit branch, 208VAC/60Hz, running from the general panel board (TP), to the panel board located at the shelter (TAC). The approximately distance between both panel boards is 6 meters; however the Contractor shall verify the distance.

2.01.03.02) Raceway for LV system

The Contractor shall supply and install an underground raceway. The segment has a length of 8 meters approximately, which runs from the generators room to the new panel board (TAC). First, in the concrete base designed for the generator sets, the Contractor shall include the construction of a concrete ditch (width 30cm x depth 10cm) to canalize electrical cables between the generator sets and the panel boards (ATS and TP), according to the Drawing E1. The concrete ditch shall include an angled frame of 1" x 3/16" and shall be covered by a metallic surface (alfajor) sectioned every meter.

The Contractor shall supply and install two (2) pipes underground from the end of the concrete ditch to the shelter, two (2) inches gauge, PVC DB type for electrical purposes. Each extreme of the concrete ditches shall include a terminal type "chamber".

The raceway continues by means of an EMT pipe, two (2) inches gauge, COLMENA or RETIE certified equivalent which shall be overlaid along the shelter wall to the new panel board TAC. The graphic description of the requested raceway is shown in Drawing E1. All the electrical pipes shall be sealed to avoid the entrance of animals, insects or water.

2.01.04) Electrical Panel Boards

2.01.04.01) Metallic enclosure - TP

The Contractor shall install a board with the automatic transfer system supplied by the US Military Group. This ATS board shall be embedded in a wall built by the Contractor, inside the Generators room.

In addition, the Contractor shall supply and install a metallic enclosure (TP) for outdoor operation, 80cmX80cmX30cm (H,W,D), which shall allocate the industrial breaker, the control system, the power meter and the TVVS. This new LV enclosure shall be placed beside of the ATS. The construction parameters such as painting, CR sheet gauge, door, ventilation among other definitions, shall follow the Colombian standard ET 914.

Control system: The Contractor shall supply and install a control system to alternate the working of two generator sets. The control shall be programmable between 6 and 24 hours with a timer Legrand D21 or similar. The control system shall commutate the primary and secondary network services in the event that either of the two generators fail or have problems of over-voltage or under-voltage. The control shall permit to adjust delay times when a fail of voltage occurs in the primary network as well as the repositioning time once service is reestablished.

Power quality analyzer: For the new general panel board TP the contractor shall include the supply and installation of a power meter PM210 or equivalent (at least same number and function types), which shall be supplied and installed by the awarded Contractor; the proposed device shall be RETIE certified.

TVSS: The new general panel board shall also have a TVSS unit class B, Leviton or similar, which shall comply with US standard ANSI/IEEE C62.41-C62.45, interruption capacity up to 100KA, protection modes L-L-N, L-G, reject filtering rated > -30dB, led indicator of status, operational voltage 208VAC/120VAC, three pole system. The unit shall be installed internally or externally. The Contractor shall annex in his proposal the NEMA LS-1 format, specifying the equipment's technical sheet to be supplied.

2.01.04.02) General panel board - TAC

The Contractor shall supply and install a new electrical panel board (TAC), which allows the electrical distribution for the proposed services on the new facilities. The new panel board shall have space for the main breaker (3X40A), copper barrages for phases, neutral and ground. The phases' barrages shall be protected by a RETIE certified mechanism, in order to avoid direct manipulation (Dead front). The power capacity list for the new breakers is available in the Drawing E6 "Electrical calculations". The new unit shall have a single diagram, load sheet and markings for all circuits. The new panel board shall be installed/ overlaid at the shelter wall.

The Contractor shall supply and install two (2) industrial three-pole main breakers, 3X40 Amp. each one (with thermal adjustment of the 70% of the nominal current, Legrand DPX125 or similar), placing one unit in the general panel board (TP) and the other one in the TAC panel board. The new industrial breakers to be supplied and installed shall be a well-known brand such as Siemens, ABB, Schneider, Legrand or equivalent RETIE certified.

Electrical board characteristics: The new panel board units to be supplied and installed shall be new, Luminex or similar, made of metal and shall comply with Colombian standard NTC 3475 or US standard UL67. All the new electrical boards shall have frontal door, lock and external signaling according to RETIE. The phases' barrages shall be protected by a RETIE-certified mechanism, in order to avoid direct manipulation (Dead front). The new panel board units shall have a current capacity up to 200A (See capacity accordingly in NTC 3475, table 11.2), voltage isolation rate 600VAC and interruptive current capacity up to 10KA. The new panel boards shall be made in CR BWG No 16-18 and shall be painted using a special treatment in order to support current conditions such as oxidation, water and salinity, which are currently present in the area. The internal spaces shall comply with the US standard IEEE-142. The Colombian standard NTC 2050 and RETIE shall be observed during installation and hardware deployment. The Contractor shall guarantee that the circuit board is grounded to a grounding master bus.

Circuit breakers: Each breaker shall have these characteristics: 6,000 cycles of operation, 10 KA capacity interrupting, 600VAC insulation voltage and compliance UL 489. The power capacity list for the new breakers is available in the annex "Electrical calculations.pdf". The circuit breakers to be used during the project shall be brand new, RETIE-certified and of a well-known brand such as ABB, Legrand or Merlin Gerin.

2.01.05) Receptacles

2.01.05.01) Duplex receptacle 120VAC/15A with grounding pin

The Contractor shall supply and install twelve (12) single-phase receptacles duplex type, insulated grounding pin, hospital grade, 120VAC/15A, white color, Leviton or similar, which shall be distributed according to drawing E2. The new receptacles to be provided and installed shall be placed 40 cm over the finished floor level. The new receptacles to be supplied and installed shall have metallic box (Rawelt or similar) and metallic face plate. In addition, the two receptacles located inside the generators rooms shall have weatherproof covers for outdoor installation. The new receptacle shall be marked accord to US Government representative instructions. The AC receptacles shall be marked by using plastic labels, low relief; color font in white and background in black. A text sample is shown as follows (intentionally left in Spanish): # **TABLERO - # CIRCUITO, EJEMPLO: TAC-C1.**

2.01.05.02) Duplex receptacle 120VAC/15A, outdoor installation

The Contractor shall supply and install one (1) single-phase receptacle duplex type, insulated grounding pin, hospital grade, 120VAC/15A, beige color, which shall be located in the metallic tower to be supplied and

installed. The new electrical receptacle shall count with piping installation galvanized, $\frac{3}{4}$ inches, placed along the new metallic tray to be supplied and installed also. The location is in the middle of the height of the tower (27.5 meter approximately). The new receptacle shall count with metallic box (Rawelt or similar) and weatherproof cover for outdoor installation. The new receptacles to be supplied and installed shall be marked as indicated by the US Government representative.

2.01.05.03) Air Extractors

The Contractor shall supply and install two (2) air extractors units with capacity up to 350m³/h. The new units to be supplied and installed shall have power “contactor” for turning on. The new extractor shall have metallic grid protector, installation frame and indoor and outdoor protector. The units shall be 10 inches diameter, operational voltage 120VAC/60Hz. One of the air extractor units shall be placed 180 cm from finished floor level and the other shall be placed 20cm from finished floor level. The units shall be located a shown in drawing E2. This item includes the 120V single receptacle and the switch. The switch shall be placed 120cm above the floor.

2.01.05.04) AC receptacles for battery rectifiers

The Contractor shall supply and install two (2) receptacles, duplex, 120VAC/15A, isolated grounding pin, hospital grade, which shall be placed as shown in drawing E2.

2.01.05.05) AC Circuit raceway

The Contractor shall supply and install $\frac{3}{4}$ - inch ducts PVC DB for all electrical system (embedded) and $\frac{3}{4}$ - inch duct EMT (suspended), except for those places indicated on this technical paper. Pining shall be embedded or suspended and material may change such as indications in drawing E2. The new raceway shall run up to each duplex receptacle, socket, light switch, air extractor, among other electrical devices specified in this paper.

2.01.05.06) AC circuit cabling

The Contractor shall supply and install the new cabling system for each of the new AC circuits; the expected wiring shall be type THHN/THWN-2 AWG 3XNo.12, except where indicated. The information regarding wire’s caliber is attached in Drawing E6 “Electrical calculations”. Each conductor shall observe the color code requested on this technical paper. Each phase shall be colored in red, yellow and blue accordingly and phase’s color shall not repeat each other. Neutral shall be colored in white and ground in green. Cabling installation shall be removed if awarded Contractor does not observe the requested color coding. All conductors shall be marked by means of plastic rings. All cabling to be used for the AC system shall have the letters “AC” and the circuit number, example: AC-CTO-1.

2.01.06) Air Conditioner System

The contractor shall supply and install two (2) air conditioning (AC) units, mini-split type, with cooling capacity of 9000 BTU each one. The units shall contain their respective supports and anchor elements. The air conditioning units shall be fitted at a height of 2.00 m above floor level (measured to the top edge of the air conditioning unit). The units to be supplied and install shall be well-known brand with representation in Colombia, such as York, Samsung, LG SJ092CD or equivalent.

2.01.06.01) Interior evaporation unit

The units shall be two-phase system (230VAC), wall mounting and mini-split type. It will operate silently with ventilators and directional flow regulator. A remote control shall be delivered and installed with each unit for its operation.

The awarded Contractor shall place the new units such as shown in the Drawing E4. This item shall include the price for all fixing and retention elements, accessories, anchors and drains in order to guarantee operational condition required by the product's vendor.

2.01.06.02) Condensing unit

The air-cooled condensing units shall be provided and installed by the Contractor. The condensing units shall operate with R-410A coolant; they shall work silently with a rotary type compressor. The condensing units shall come with an air-condensing coil, horizontal air outflow from back outlet. The units shall be specifically designed for outdoors installation. The AC condenser units 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 unit is placed over a concrete pad. The expected location is showed in Drawing E4.

2.01.06.03) Electrical connection

The Contractor shall install the electrical receptacle according to Air Conditioning units' consumption and manufacturer conditions for the proposed equipment. The electrical installations shall comply with RETIE, NTC-2050 standards and Air Conditioning manufacturer requirements. The receptacles shall be distributed according to drawing E4.

2.01.06.04) Drainage

The Contractor shall connect the Air Conditioning drainage system for each Air Conditioning unit. The water drain system shall be designed in order to evacuate the water to a place away from the tower area.

2.01.06.05) Insulated copper pipes

The Contractor shall consider the supply and installation of type L copper pipes, dehydrated and sealed, free of contaminants. Welding shall be silver weld equal or similar to HARRIS-5 (5% Ag) for copper to copper joints and HARRIS-15 (15% Ag) for copper to bronze joints.

The Contractor shall install the PVC piping installed to confirm that it is in accordance with the capacity of the system, distance and coolant to be used, taking into account the best practices for minimizing pressure drop-off, guarantee oil return and make it possible to absorb vibrations.

Welding procedure: Once the material has been laid out and cut, the Contractor shall induce a flow of nitrogen through the pipes at a pressure of 2 psig to prevent internal rusting and slag during welding due to the oxyacetylene or oxypropane equipment.

Leakage test: When the welding activities are finished, the Contractor shall flush the system using nitrogen and guarantee that the system is completely closed in order to test for leaks up to 300 psig by means of a mixture of nitrogen and coolant. At that time, the Contractor shall inspect the system with an electronic leak detector that is sensitive to coolant, with water-soap or other reliable methods. Once this process is finished and the leaks found have been repaired, the test shall be repeated and the Contractor shall leave the system at a pressure of 150 psig for a minimum of 12 hours. The pipes shall be left pressurized up to the point in which they are emptied and the system is loaded.

Evacuation and dehydration of the system: The Contractor shall reduce the pressure in the pipes up to 1 psig and they shall be emptied with a high vacuum pump until it reaches a pressure of 1,500 microns. The vacuum shall be broken up to 1 psig of coolant and the evacuation shall be repeated at 1,500 microns. The Contractor shall load the pipe with coolant again with pressure up to 1 psig of coolant and a deep vacuum shall be done until an absolute pressure of 500 microns is reached. Once this is achieved, it is broken with coolant to a pressure of 2 psig.

Coolant load: The Contractor shall calculate the weight of the coolant needed for the system to work correctly and an electronic scale shall be used for introducing the amount of coolant with the system on. Once the loading is complete, the Contractor shall take measures in order to superheat the TXV and sub cool the condensing unit so that, by these means, the optimum functioning of the system is verified.

Thermal insulation: The Contractor shall insulate the suction line with a closed cell flexible hose equal, or a similar approved one, to RUBATEX that has a minimum thick of ½-inch and shall be installed in accordance with the manufacturer's recommendations. Insulation with 35 Kg/m³ polyurethane wrap lined with aluminum foil as a vapor barrier and covered with a 0.7 mm aluminum sheet as a mechanical protection jacket. In this case, neither screws nor rivets shall be used but rather aluminum bands.

2.01.06.06) Warranty

The Contractor shall supply the knowledge, experience and labor needed for the correct operation and for all of the corrective maintenance necessary on all of the equipment and controls supplied in this contract, not including mal usage of the A/C units by the end user as described on the manufacturer manual. This obligation shall be valid for one (1) year starting from the date the A/C units are finally turned over and fully operational.

The Contractor shall make four visits to inspect all of the equipment and take notes of the results on an inspection sheet specified later. Entrances permits shall be requested to the Colombian Navy Base officer in charge. These preventive services shall include cleaning, adjustments, replacing of consumables and technical support. These services shall be provided by qualified technicians with at least two years of experience in maintenance and competences on the A/C brand to be used in the project.

The Contractor shall accept calls made to him with respect to any problem that appears in the operations of the equipment supplied under this contract and shall take the necessary measures within the next 3 days to correct any deficiency that exists.

Inspection sheet: The Contractor shall provide an inspection sheet and place a copy of it in the main machine room. This sheet shall have a list of all of the air conditioning equipment provided under this contract. The inspection sheet shall have space for the next 12 months to be able to indicate that the inspections had been done.

The person that has performed the inspections shall certify on this inspection sheet that he guarantees he has examined each part of the equipment and that, in his opinion, it is operating as recommended by the manufacturer, that it has been lubricated correctly and that all of the corrective and preventive maintenance operations have been done in accordance with the recommendations of the manufacturer and normal accepted practices.

2.01.07) Illumination Plan

2.01.07.01) Fluorescent Lamps

The contractor shall install an illumination system for the shelter as shown in drawing E3. The contractor shall verify the level of 500 luxes at work surface according to the RETILAP standards.

The Contractor shall supply and install six (6) lamps 2 x 32W fluorescent type, each lamp shall fulfill these characteristics: IP 65 waterproof fluorescent lamp, 120 V electronic ballast with harmonic distortion < 10%, power factor >= 98%, two T8 32W fluorescent tubes white 8000 hours of life, Casing polycarbonate, Clips closure, 2-years warranty, Sylvania or similar. These lamps shall be fitted to the roof. The item includes the lamps themselves, single receptacles 120V, wiring with jack and rubber conduit for low smoke emission, switches and fluorescent tubes (See drawing). The switches shall be placed 120 cm above the floor.



The Contractor shall supply and install ¾-inches ducts PVC DB (embedded) and ¾-inches duct EMT (suspended). The price shall also include accessories such as unions, connectors, and miscellaneous elements which are required for the canalization work.

2.01.07.02) Obstruction lights

The Contractor shall supply and install two obstruction light and signaling systems, which shall be located as follows: one at the top of the tower and the other at the middle of the tower height. Each system shall have one omni-directional, red, energy-saving LED double light, cable protected with galvanized pipe, supports. The system shall have a Photocell for automatic activation at night and a controller for flashing mode. The installation shall include all necessary materials, which shall comply with Colombian electrical standards (NTC2050) and REITE, as well as Colombian Aerial Agency “Aeronáutica Civil”. The circuit for each light system shall run from the Communications Room (AC panel board) to be constructed by the awarded Contractor. The contractor shall include in his proposal the AC/DC power supply unit in order to feed the light system as well as the required galvanized piping system ¾-inches, which shall connect both beacon lights at 27.5 meters and 55 meters accordingly. The new independent circuit shall be installed using metallic junction boxes with dimension of 10 cm X 10 cm, enclosures are for outdoor installation, being placed on the change of directions and for the electrical split points between the beacons’ boxes.

2.01.08) Ladder Cable Tray

The Contractor shall supply and install a ladder cable tray (plenum ventilation), metallic, galvanized, for outdoor installation, antistatic treatment, which shall be used to carry in communication cables from the rack located at the shelter up to top of the metallic tower (60 meters approximately).

The ladder cable tray of 0,3 m wide, shall run from the shelter, the ladder cable tray shall be placed 220 cm from finished floor level, this level is hold up to the metallic tower. Beside each side of the tray, the awarded Contractor shall install two ¾-inch galvanized pipes, which shall be used to canalized the obstruction lights as well as to place an outdoor receptacle 120VAC/15A and for further applications.

Both piping and ladder cable tray shall be grounded and tied to the grounding system. A grounding line shall be placed along the structure THHN/THWN-2 AWG No. 8; such line shall be screwed every meter. Junction boxes and change of directions shall be grounded as well by using grounding kits.

Civil work and any other task required to install the piping and tray system such as painting, arrangements and waterproofing treatments shall be included as part of the scope of the contract.

The Poke-thru to be done for the tray installation shall have a system that prevents for water going inside and/or insects into the shelter. Finally, the ladder cable structure shall support total weight of all the elements like cables, pipes and trays itself, for that reason accessories and anchors shall be install providing rigidity and avoiding any kind of deformation. Details and locations are shown in drawing E4.

2.01.11) Marking

The Contractor shall supply and install plastic plates with black bas-relief and printed white letters of no less than one centimeter in height, on all the main equipment for distribution such as measuring center, panels and telephonic or voice and data distributors. These plates shall indicate the use for each device or element according to the diagrams.

- All electrical panels shall have the single line diagram and power distribution chart; each circuit shall be identified.
- The main distribution panel shall be identified with 10 cm x5 cm labels, with white letters and black background. Secondary panels shall have similar 5 cm x3 cm labels.
- Each breaker in the main electric panel shall have a 5 cm x 3 cm label.
- Solid plastic safety signs (electric risk) shall be installed in every electric panel, in the electric room, emergency generator and electrical sub-station.
- 5 cm x 3 cm solid plastic labels shall be installed in the grounding lines coming out of the main distribution panel, with red letters and yellow background.
- 3 cm x 4 cm metallic labels shall be installed for the inspection boxes.
- 10 cm x5 cm plastic labels with white letters and black background shall be installed or each end of the main circuit.
- 10 cm x5 cm plastic labels with white letters and black background shall be installed for secondary circuits; the cables shall have plastic ties every 1.5 meters.
- Electric outlets shall indicate the respective panel and secondary circuit, as well as the corresponding voltage.
- Switches shall indicate the respective panel and secondary circuit.
- Each faceplate shall indicate the number of the corresponding port in the patch panel.

3.01) Fuel System

3.01.01) Supply and installation of stainless Steel pipe, decanter filter, valves and Hose

The Contractor shall supply and install ANSI SCH 40 Stainless steel pipe needed to transport fuel to the electrical generator, taking into account the distance from the fuel tank and the generator. This item includes all piping and accessories, reductions, filters, valves, hoses and joints required for the system as shown in the

attached drawings. Furthermore, it must include pipe supports, which must be also in stainless steel. Also, this item includes the fuel piping grounding.

4.01) Others

3.01.01) Supply of complete equipment for working on high (2 Units at each site)

The Contractor shall supply two complete sets of equipment for working in high (following the latest Colombian or US safety regulation for working on high) which shall include but are not limited to the following elements:

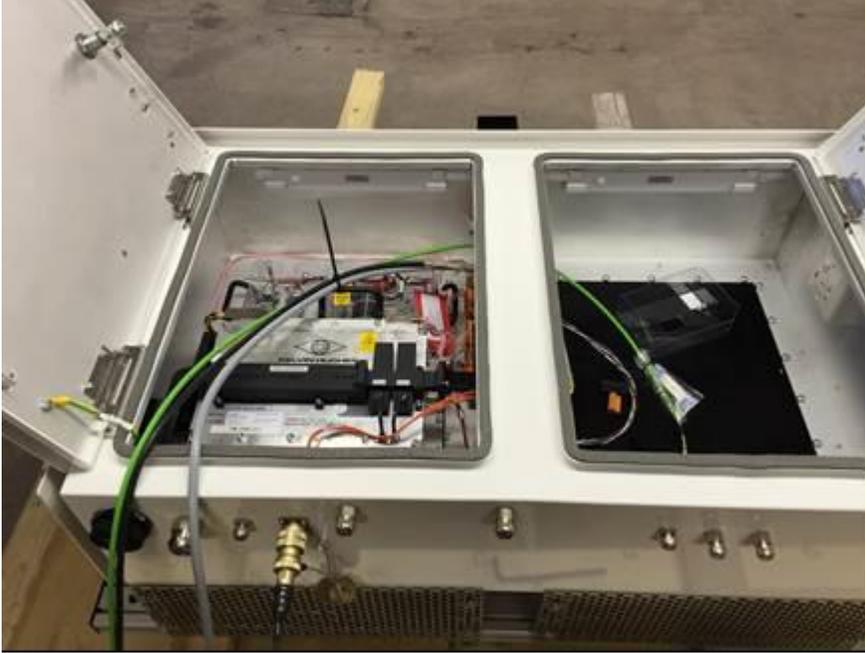
- Harness (Arnes)
- Carabiner (Mosqueton)
- Landyards (Cabos de Anclaje)
- Helmet (Casco)
- Ropes (Cuerdas)
- Energy absorbers (Absorbedores de Energia)
- Ascension system (Sistema de ascensión)
- Descending system (Sistemas de descenso)
- Fall protection blocker (Bloqueado anticaida)

ATTACHMENT #1

TRANSCEIVER INFORMATION

- DIMENSIONS: 63" X 59" X 38"
- WEIGHT: 739 lbs

PICTURES





RADAR ANTENNA TUNING UNIT INFORMATION

- DIMENSIONS: 34" X 34" X 54"
- WEIGHT: 587 lbs

PICTURES

